

Arctic Petroleum and the 2°C Goal: a Case for Accountability for Fossil-Fuel Supply

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Abstract

The Arctic is both a place disproportionately affected by climate change and a place that has been, and continues to be, subject to large-scale oil-and-gas development. Production and subsequent combustion of these resources would compromise the treaty-established target of keeping global warming ‘well below’ 2°C. The global regulatory efforts on climate change are centred on greenhouse gas emissions from fossil-fuel consumption, almost ignoring the supply side. In the absence of universal and strict emission-reduction targets, petroleum exports and carbon leakage jeopardize the effectiveness of the climate change regime. Through the examination of treaties and national practice, this paper argues for the establishment of accountability for the production of Arctic petroleum in light of climate change.

Keywords

fossil fuels, supply side – Arctic Ocean – Arctic petroleum production – Arctic governance – international environmental law – *Greenpeace v. Norway* case (*People v. Arctic Oil* case, Norwegian Court of Appeal, 2020) – environmental impact assessment

1 Introduction

The IPCC’s Fifth Assessment Report stated that the ‘the estimate of the total fossil fuel reserves and resources¹ contains sufficient carbon to yield, if released,

1 The IPCC distinguished reserves and resources in that ‘reserves are those quantities able to be recovered under existing economic and operating conditions; resources are those where

radiative forcing above that required to limit global mean temperature change to less than 2°C.² In order to meet climate goals, a third of the oil reserves and half of the gas reserves must remain unused.³ In particular, the development of Arctic fossil-fuel resources is ‘incommensurate with efforts to limit average global warming to 2°C.’⁴ The US Geological Survey estimates that around 22 per cent of the world’s undiscovered oil and gas resources are located in the Arctic, with about 85 per cent lying offshore.⁵ This has been confirmed by a number of large offshore discoveries in the last decade, including large oil-and-gas fields in Norway, Russia, and the United States.⁶

In January 2020, the Norwegian Court of Appeal confirmed that the Norwegian government did not violate the right to a healthy environment or its international climate obligations when it awarded petroleum production licenses in the Barents Sea.⁷ This article explores the reasoning of the court and potential avenues for accountability for the climate effects of Arctic petroleum production. While the mainstream interpretation of the current international

economic extraction is potentially feasible.’ Thomas Bruckner, Igor Bashmakov, and Yacob Mulugetta, ‘Energy Systems,’ in *Climate Change 2014: Mitigation of Climate Change Working Group III Contribution to the IPCC Fifth Assessment Report Intergovernmental Panel on Climate Change*, edited by IPCC (Cambridge: Cambridge University Press, 2014), at 525.

2 Ibid.

3 Christophe McGlade and Paul Ekins, ‘The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2 °C,’ 517 *Nature* 187 (2015). While not all of the crude oil is used for energy production, only about 7 per cent of fossil fuels is used for non-combustion purposes in the United States (US Energy Information Administration, 2018), <www.eia.gov/todayinenergy/detail.php?id=35672>; in the European Union, about 14 per cent of oil is used for non-energy purposes (Eurostat, 2017), <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Oil_and_petrolium_products__a_statistical_overview#Use_of_petrolium_products>.

4 McGlade and Ekins, *ibid.*, at 187.

5 Arctic Ocean States are Denmark (via Greenland), Canada, Norway, Russia, and the United States. On resource estimations see Peter Stauffer, ‘US Geological Survey (USGS) Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle,’ <<http://library.arcticportal.org/1554/>>.

6 For discoveries in Norway, see Norwegian Petroleum ‘Discoveries,’ <www.norskpetroleum.no/en/facts/discoveries/>. For an overview of offshore projects in the Russian Arctic, see Rosneft ‘Offshore Projects,’ <www.rosneft.com/business/Upstream/Offshoreprojects/>. For the US Arctic, see Bureau of Ocean Energy Management ‘Exploration Plans,’ <www.boem.gov/regions/exploration-plans>.

7 *Natur og Ungdom, Föreningen Greenpeace Norden v. Government of Norway* (23 January 2020) Bogarting Court of Appeal 18-060499ASD-BORG/03. English translation available at <<http://climatecasechart.com/non-us-case/greenpeace-nordic-assn-and-nature-youth-v-norway-ministry-of-petroleum-and-energy/>> (hereinafter *Greenpeace v. Norway 2020*). Throughout the paper the word ‘petroleum’ is used as a collective term for hydrocarbons and includes both oil and gas, in line with the definition of the Norwegian Petroleum Directorate, <www.npd.no/en/About-us/Information-services/Dictionary/>.

legal framework does not pronounce Arctic petroleum production unlawful on climate-protection grounds, transparency about the full climatic effects of petroleum exploration and production (E&P) activities, about subsidies for fossil fuels, and about any further support for the petroleum industry, is in line with the current climate change regime.

The idea of regulation of the supply side of the fossil-fuel industry for effective mitigation of climate change is gaining increasing support among scientists, economists, and lawyers alike.⁸ *Climatic Change* and *Climate Policy* hosted special issues on the role of fossil-fuel supply and climate policy, contributions to which examined, among other things, the emerging trend of ‘anti-fossil fuel norms,’⁹ as well as equity and justice concerns of a managed fossil-fuel phase-out.¹⁰ Scholars also have argued that certain fossil-fuel development projects are incompatible with global climate goals. They include Canada’s oil-sands expansion¹¹ and new coal development,¹² even where permits have already been awarded.¹³ At the same time, there is a growing body of scholarship on

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- 8 Beate Sjøfjell and Anita Margrethe Halvorsen, ‘The Legal Status of Oil and Gas Exploitation in the Arctic: The Case of Norway,’ 2 *OGE* 1 (2016); Roman Sidortsov, ‘Creating Arctic Carbon Lock-In: Case Study of New Oil Development in the South Kara Sea,’ *CCLR* 3 (2012). In economics, see Hans-Werner Sinn, *The Green Paradox: A Supply-Side Approach to Global Warming* (Cambridge, MA: MIT Press, 2012). See also Georgia Piggot et al. ‘Swimming Upstream: Addressing Fossil Fuel Supply under the UNFCCC,’ 18(9) *Climate Policy* 1189 (2018); Michael Lazarus and Harro van Asselt, ‘Fossil Fuel Supply and Climate Policy: Exploring the Road Less Taken,’ 150 *Climatic Change* 1 (2018); Cleo Verkuijl et al., ‘Aligning Fossil Fuel Production with the Paris Agreement: Insights for the UNFCCC Talanoa Dialogue’ (Stockholm Environmental Institute, 2018), <https://unfccc.int/sites/default/files/resource/11_12_13_SEI_Talanoa_Fossil_Fuels.pdf>; Frank McDonald, ‘Two-Thirds of Energy Sector Will Have to Be Left Undeveloped, Bonn Conference Told’ *The Irish Times*, 12 June 2013, <www.irishtimes.com/news/world/europe/two-thirds-of-energy-sector-will-have-to-be-left-undeveloped-bonn-conference-told-1.1425009>.
- 9 Fergus Green, ‘Anti-Fossil Fuel Norms,’ 150 *Climatic Change* 103 (2018).
- 10 Sivan Kartha et al., ‘Whose Carbon Is Burnable? Equity Considerations in the Allocation of a “Right to Extract”,’ 150 *Climatic Change* 117 (2018); Greg Muttitt and Sivan Kartha, ‘Equity, Climate Justice and Fossil Fuel Extraction: Principles for a Managed Phase Out,’ 20(8) *Climate Policy* 1024 (2020); Fergus Green and Ajay Gambhir, ‘Transitional Assistance Policies for Just, Equitable and Smooth Low-Carbon Transitions: Who, What and How?’, 20(8) *Climate Policy* 902 (2020).
- 11 Mark Jaccard, James Hoffele, and Torsten Jaccard, ‘Global Carbon Budgets and the Viability of New Fossil Fuel Projects,’ 150 *Climatic Change* 15 (2018).
- 12 Roman Mendelevitch, ‘Testing Supply-Side Climate Policies for the Global Steam Coal Market—Can They Curb Coal Consumption?’, 150 *Climatic Change* 57 (2018).
- 13 Ryan Rafati, Sugandha Srivastav, and Björn Hoops, ‘Revoking Coal Mining Permits: An Economic and Legal Analysis,’ 20(8) *Climate Policy* 980 (2020).

the legal nature of state obligations under the climate change regime.¹⁴ With the turn from the top-down approach of the Kyoto Protocol to the transparency-oriented Paris Agreement, the importance of reporting obligations is growing.¹⁵

This paper builds on existing studies by considering the supply-side regulation of climate change mitigation in the Arctic context. Two arguments are made: first, that there is a case for the consideration of the climatic effects of fossil-fuel supply that is not limited to the effects of E&P activities but extends to the use of the supplied resources (what I call the “entailed” impacts or effects). To that end, while the current international legal framework does not impose limits on fossil-fuel production or tackle the entailed impacts of such activities, procedural obligations based on accountability and transparency should be put in place, with the ultimate goal of limiting environmental harm, including from climate change. The second argument is that, if such obligations were to arise, it would be appropriate to apply them to Arctic offshore petroleum as a matter of priority because of the Arctic’s significance to the climate system and the Arctic states’ historic contribution to climate change and their current economic capabilities.

Nevertheless, the arguments and proposals made in this paper are not uniquely applicable to the Arctic Ocean states; instead, the region is chosen as a case study because of its unusual importance to the global climate system and its emerging role as a petroleum-producing area on a large scale.

The next section discusses the Norwegian case and its reasoning. Section 3 considers the arguments for and against supply-side regulation and discusses the incompatibility of global climate goals with the further development of Arctic petroleum. Lastly, section 4 considers how climate treaties approach fossil-fuel production and examines further options for increased accountability for such production in Arctic waters through the establishment of transparency systems and the inclusion of entailed climatic effects in reporting and in environmental impact assessment (EIA) processes.

14 See, e.g., Daniel Bodansky, Jutta Brunnée, and Lavanya Rajamani, *International Climate Change Law* (Oxford: Oxford University Press, 2017); Benoit Mayer, *The International Law on Climate Change* (Cambridge: Cambridge University Press, 2018); Benoit Mayer, ‘International Law Obligations Arising in Relation to Nationally Determined Contributions,’ 7 *Transnational Environmental Law* 251 (2018).

15 See, e.g., Meinhard Doelle, ‘The Heart of the Paris Rulebook: Communicating NDCs and Accounting for Their Implementation,’ 9(1–2) *Climate Law* 3 (2019).

2 The Norwegian Case: 'People v. Arctic Oil'

In the case dubbed *People v. Arctic Oil*, two environmental NGOs argued that the Norwegian government's decision to award production licenses in the Barents Sea violates the right to a healthy environment recognized in the Norwegian Constitution and is incompatible with Norway's obligations under the climate change treaties, notwithstanding the fact that Norway exports most of the petroleum it produces.¹⁶ The case had been decided in favour of the government.¹⁷ While the Court of Appeal, in January 2020, confirmed the holding,¹⁸ the judgment does not in principle dispense with the possibility of accountability for what might be called exported emissions, and it offers some insights on the inclusion of entailed climatic effects at the planning stage.

2.1 Role of the Paris Agreement

The main legal basis for the case was not international climate change law but Article 112 of the Norwegian Constitution, which establishes a right to a healthy environment. The Paris Agreement was imported into the discussion by the claimants, who asserted before the Oslo District Court that international obligations are relevant to the interpretation of Article 112.¹⁹ One limb of the claimants' argument concerned the incompatibility of new petroleum development with Norway's obligations under the climate change treaties. The government retorted that there existed 'no duty for Norwegian authorities to take measures with respect to emissions abroad nor emissions stemming from the export of oil and gas from Norway.'²⁰ The District Court considered the aims of the Paris Agreement and highlighted the ambitious climate-related pledges that Norway had made pursuant to it, including a multitude of mitigation measures, concluding, nevertheless, that the Agreement was not an appropriate legal basis for the consideration of the lawfulness of exported emissions, as it attributes to a state only those emissions that arise in the state's own territory.²¹ With regard to obligations under international law, the Court decided that 'Neither Norway

16 *Föreningen Greenpeace Norden, Natur og Ungdom v the Government of Norway* (4 January 2018) Oslo District Court 16-166674TVI-OTIR/06. English translation available at <<http://climatecasechart.com/non-us-case/greenpeace-nordic-assn-and-nature-youth-v-norway-ministry-of-petroleum-and-energy/>> (hereinafter *Greenpeace v Norway 2018*).

17 *Ibid.*

18 *Greenpeace v Norway 2020*, supra note 7.

19 *Greenpeace v Norway 2018*, supra note 16, at 7.

20 *Ibid.*, at 10.

21 *Ibid.*, at 21.

nor countries in the same situation have any duty to take measures to compensate for the effect from oil and gas exported to other countries.²²

2.2 *Exported Emissions*

On appeal, the Court of Appeal held that while there may be legal implications for the entailed climatic effects of petroleum production, these would have to stem from Article 112 of the Norwegian Constitution;²³ from which it followed that, even if Norwegian oil-and-gas exports had global effects, ‘it will be the environmental effects in Norway that are the key issue’²⁴ for the purposes of the assessment.

The Court of Appeal gave weight to the defences of ‘marginal contribution’ and ‘market substitution,’ as well as to the limited powers of the judiciary in questions of climate change. In particular, it found that the greenhouse gas contribution of Norway’s petroleum production was ‘marginal’ in the context of both global emissions and Norway’s national emissions.²⁵ From a counterfactual analysis of what would happen if Norway gradually phased out its oil-and-gas exports, the Court concluded that it would ‘not necessarily mean that the world’s energy requirements as a whole will be covered in a more climate-friendly manner.’²⁶ To support these conclusions, the Court relied on studies of production substitution, which, the Court conceded, were ‘controversial.’²⁷

Lastly, the Court of Appeal emphasized the ‘socio-economic and political balancing’²⁸ and the limited power of the courts in general to review certain decisions (presumably including the decision to authorize petroleum production).

2.3 *Entailed Climatic Effects in EIA*

It is noteworthy that the Court of Appeal took a stance on the potential inclusion of the implied climatic effects of petroleum production in the scope of the EIA process. While the climatic effects of proposed petroleum E&P activities do have to be considered under current arrangements, the down-the-line combustion of the produced resources need not be taken into account. However, the relevant EIA provisions use flexible language and include ‘positive, negative,

22 Ibid., at 20.

23 *Greenpeace v Norway 2020*, supra note 7, at 21.

24 Ibid., at 30.

25 Ibid., at 29.

26 Ibid., at 30.

27 Ibid.

28 Ibid., at 31.

direct, indirect, temporary, permanent, short-term and long-term effects'²⁹ of a proposed activity, which could include entailed emissions from exports.³⁰ The Court of Appeal acknowledged that there is a connection between production and combustion, and 'by far, the greatest emissions occur in connection with the combustion.'³¹ It considered the effects of Norwegian oil and gas on the climate system, but concluded that the climatic effects associated with the petroleum licenses in question were negligible in the global context.³² While the Constitution's environmental-rights provision did not provide a specific threshold of acceptable harm, the 'threshold for finding a violation of Article 112 ... is high.'³³ In the case in hand, the Court of Appeal found that 'on the basis of an overall assessment of the elements that have been reviewed,' the threshold had not been exceeded.³⁴

Nevertheless, the judgment offers the first judicial interpretation of the entailed climatic effects of Arctic petroleum production, and the final decision is yet to be made by the Norwegian Supreme Court; hearings were due to start in November 2020.³⁵ The decision has already indirectly been addressed by the UN Economic and Social Council, which expressed concern about the Barents Sea petroleum licenses and recommended that Norway '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.'³⁶

The next section considers how the Norwegian courts' arguments could be countered in the future with the aim of giving special consideration to Arctic petroleum resources.

3 Supply-Side Regulation of Fossil Fuels, and the Arctic's Resources

In global regulatory efforts on climate change, most attention is given to fossil-fuel consumption, disregarding the supply side, except for fugitive

29 Norwegian Regulations on Impact Assessments (2017) section 21, <www.regjeringen.no/en/dokumenter/regulations-on-impact-assessments/id2573435/>.

30 *Greenpeace v Norway 2020*, supra note 7, at 41.

31 Ibid.

32 Ibid., at 25–6.

33 Ibid., at 31.

34 Ibid.

35 Alte Staalesen, 'Supreme Court to Decide in Landmark Climate Case against Arctic Oil in November' *The Barents Observer*, 10 June 2020, <<https://thebarentsobserver.com/en/ecology/2020/06/supreme-court-decide-landmark-climate-case-against-arctic-oil-november>>.

36 UN Economic and Social Council, Concluding Observations on the Sixth Periodic Report of Norway (2 April 2020) E/C.12/NOR/CO/6, para. 11.

emissions.³⁷ Under such a framework, it is entirely acceptable for a state, such as Norway or the United Kingdom, to aim for carbon neutrality³⁸ while concurrently approving large-scale fossil-fuel production,³⁹ providing subsidies to the fossil-fuel industry,⁴⁰ managing state oil-and-gas companies involved in E&P at home and abroad, and producing petroleum within the state's jurisdiction for export. All of this may be done without any requirement for being transparent about the potential extraterritorial contribution of these actions to climate change.⁴¹

There is growing support for supply-side measures in general. Over 500 environmental NGOs from 76 countries signed the 2017 Lofoten Declaration calling for 'the wealthy fossil fuel producers to lead in putting an end to fossil fuel development and to manage the decline of existing production.'⁴² This position is supported by some politicians and industry representatives. In the last two years of the Obama Administration, for example, much attention was focused on climate change.⁴³ In discussing the controversial Keystone XL Pipeline

37 Fugitive emissions refer to emissions from oil-and-gas production activities (excluding the combustion of produced resources). See Christian Boettcher et al., 'Fugitive Emissions,' in 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (vol. 2, 2019) at 4.2, <www.ipcc-nggip.iges.or.jp/public/2019rf/vol2.html>.

38 Norway's Intended Nationally Determined Contribution (2016), <[www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Norway%20First/NorwayINDC%20\(Archived\).pdf](http://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Norway%20First/NorwayINDC%20(Archived).pdf)>; United Kingdom, Climate Change Act 2008, section 1.

39 E.g. in January 2020, the Norwegian Petroleum Directorate offered 69 new production licenses, including 13 in the Barents Sea; see 'APA 2019: Licence Shares Offered to 28 Companies' (14 January 2020), <www.npd.no/en/facts/news/general-news/2020/apa-2019-licence-shares-offered-to-28-companies/>. The UK is pursuing the 'Maximising Economic Recovery' strategy with regards to its petroleum production since 2016; see Oil and Gas Authority, <www.ogauthority.co.uk/media/3229/mer-uk-strategy.pdf>.

40 On the links between the climate change regime and fossil fuel subsidies, see Harro Van Asselt, Laura Merrill, and Kati Kulovesi, 'Fossil Fuel Subsidies and the Global Climate Regime,' in *The Politics of Fossil Fuel Subsidies and Their Reform*, edited by Harro Van Asselt and Jakob Skovgaard (Cambridge: Cambridge University Press, 2018).

41 Indeed, the fourth biennial reports for Canada, Norway, and Russia, in their sections on the energy sector, refer to the consumption of energy (e.g. increasing the share of low carbon sources and improving energy efficiency) and fugitive emissions of the upstream petroleum sector. Norway's Fourth Biennial Report under the Framework Convention on Climate Change (2 April 2020), at 30–39; Canada's Fourth Biennial Report on Climate Change (13 February 2020), at 14–21; Russia's Fourth Biennial Report Submitted in Accordance with the UNFCCC COP Decision 1/CP.16 (30 April 2020), at 22–30, 38–40 (in Russian), <<https://unfccc.int/BRs>>.

42 See <www.lofotendeclaration.org/>. The declaration is not legally binding.

43 Wilfrid Greaves, 'Climate Change, Energy Security, and the Arctic Under the Obama Presidency,' *World Policy Blog*, 13 October 2016, <www.worldpolicy.org/blog/2016/10/13/climate-change-energy-security-and-arctic-under-obama-presidency>.

project, the US president said: 'if we're going to prevent large parts of this Earth from becoming not only inhospitable but uninhabitable in our lifetimes, we're going to have to keep some fossil fuels in the ground rather than burn them and release more dangerous pollution into the sky.'⁴⁴ A 2016 report by the French energy company Total stressed that 'the 2°C scenario highlights that a part of the world's fossil fuel resources cannot be developed.'⁴⁵ The World Bank is no longer financing oil-and-gas projects, on climate change grounds.⁴⁶ For the Arctic context specifically, Sjøfjell and Halvorsen examined the climatic implications of new oil development in Norway, arguing that investing in oil-and-gas operations and carbon-intensive infrastructure over the next thirty years in the Arctic 'is clearly against the object and purpose of the UNFCCC and the Paris Agreement, when the international community should be phasing out fossil fuel use and moving toward renewable energy across the globe.'⁴⁷

There are two main objections to supply-side regulation: first, current climate change regulation concentrates on emissions, so placing any limitation on the supply of fossil fuels is outside the scope of regulation and could lead to duplicative regulation; second, the unaffected demand will cause the fossil fuels to be produced elsewhere. In relation to the latter, the question arises: Why should the Arctic states be the ones to bear responsibility when they have vast experience in offshore development and can do it in a more environmentally friendly manner?

The responses to these two main objections are discussed in the sections below.

3.1 *'But We Have an Emission-Centred Regime'*

Economists, environmental NGOs, and political scientists have advanced arguments in favour of supply-side regulation.⁴⁸ There are two main lines. The first

44 The White House Press Secretary, 'Statement by the President on the Keystone XL Pipeline (6 November 2015).

45 Justin Leroux and Daniel Spiro, 'Leading the Unwilling: Unilateral Strategies to Prevent Arctic Oil Exploration,' 54 *Resource and Energy Economics* 125 (2018).

46 The statement reads 'in exceptional circumstances, consideration will be given to financing upstream gas in the poorest countries where there is a clear benefit in terms of energy access for the poor and the project fits within the countries' Paris Agreement commitments'. World Bank Group Announcements at One Planet Summit (12 December 2017), <www.worldbank.org/en/news/press-release/2017/12/12/world-bank-group-announcements-at-one-planet-summit>.

47 Sjøfjell and Halvorsen, supra note 8, at 16–17. See also Sidortsov, supra note 8, on Russian Arctic oil and climate change goals.

48 Lazarus and van Asselt, supra note 8; Taran Faehn et al., 'Climate Policies in a Fossil Fuel Producing Country: Demand versus Supply Side Policies,' 38 *The Energy Journal* 77 (2017); Greg Muttitt, 'The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline

is the 'green paradox' argument advanced by Sinn, which posits that fossil-fuel producers, facing stringent emission-reduction policies in the long term, are incentivized to increase production in the short and medium terms.⁴⁹ Because demand decreases inconsistently, the produced fossil fuels will flood those markets in which emission standards are not as ambitious. Considering that large-scale Arctic resource development will only occur when most European countries will have a significantly reduced demand for fossil fuels, these resources are likely to end up in countries with less ambitious climate goals.

The second line of argument relates to just transition. As it is already clear that not all fossil-fuel resources can be developed, a managed reduction in supply can help achieve a just transition for states and their citizens.⁵⁰ In petroleum-producing countries, the oil-and-gas industry normally plays a central role in revenue generation and employment. Despite full knowledge of the boom-and-bust cycle that characterizes most extractive-industry projects, the impact of a sudden petroleum-industry crash on communities could be economically devastating.⁵¹ A managed decline in fossil-fuel production, as opposed to unexpected downturns caused by an oil-price crash or a global pandemic, will help diversify economies and decrease the social costs of the transition process.⁵²

At a global scale, the emission-focused framework is proving insufficient on its own, in the absence of universal, binding emission targets. The issue of duplicative regulation is an important one, but is not prohibitive to supply-side measures. The principle of extended producer responsibility is common in environmental policy, particularly in waste regulation, extending responsibility

of Fossil Fuel Production' (Oil Change International, 2016), <http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf>; Geir B. Asheim, 'A Distributional Argument for Supply-Side Climate Policies' 56 *Environmental and Resource Economics* 239 (2013); Sinn, supra note 8.

49 Sinn, supra note 8. See also Asheim, *ibid*.

50 Kartha et al., supra note 10; Muttitt, supra note 48; Muttitt and Kartha, supra note 10.

51 In Aberdeen (Scotland), in the year following the 2014 oil-price fall, the number of people claiming unemployment benefits more than doubled, having a knock-on effect on the local councils, housing market, and hospitality industry: Andrew Aiton et al., 'Aberdeen and Aberdeenshire since the Oil Price Fall' (Scottish Parliament Financial Scrutiny Unit Note, 2015), <www.parliament.scot/ResearchBriefingsAndFactsheets/S4/SB_15-44_Aberdeen_and_Aberdeenshire_since_the_oil_price_fall.pdf>. See more generally, Philippe Le Billon and Elizabeth Good, 'Responding to the Commodity Bust: Downturns, Policies and Poverty in Extractive Sector Dependent Countries', 3(1) *Extractive Industries and Society* 204 (2016); Muttitt and Kartha, supra note 10, at 1026–7.

52 Kartha et al., supra note 10; Muttitt, supra note 48; Muttitt and Kartha, supra note 10.

for a product ‘to the post-consumer stage of a product’s life cycle.’⁵³ A number of alternative accounting methodologies have been put forward, not only for the consideration of fossil-fuel production but also for the ‘carbon footprint [of countries] based on the products they import.’⁵⁴ Accounting for exported emissions does not have to replace the existing framework, but could run ‘in parallel to monitor the alignment of fossil fuel supply with climate goals.’⁵⁵

3.2 *‘If It Doesn’t Come from the Arctic, It Will Come from Elsewhere’*

The second objection is related to the so-called market-substitution assumption, which claims that if petroleum is not produced in the Arctic, it will come from elsewhere, making no difference to global emissions.⁵⁶ This argument was used by the US Bureau of Ocean Energy Management in the EIA for the latest Arctic offshore field, Liberty. Citing ‘market substitution’, the Bureau stated that if oil is not produced at Liberty, it would ‘be procured from other sources.’⁵⁷

There are a number of factual, economic, and ethical arguments against the market-substitution assumption.⁵⁸ Supporters of it are correct in saying that the type of resource that would substitute the proposed development has a direct effect on the level of potential climate benefits from abandoning a

53 See, e.g., European Commission DG Environment, ‘Development of Guidance on Extended Producer Responsibility’ (2014), <https://ec.europa.eu/environment/archives/waste/eu_guidance/pdf/Guidance%20on%20EPR%20-%20Final%20Report.pdf>.

54 Steven J. Davis, Glen P. Peters, and Ken Caldeira, ‘The Supply Chain of CO₂ Emissions’, 108(45) *PNAS* 18554 (2011); Peter Erickson and Michael Lazarus, ‘Accounting for Greenhouse Gas Emissions Associated with the Supply of Fossil Fuels’ (Stockholm Environment Institute, 2013), <www.sei.org/publications/accounting-for-greenhouse-gas-emissions-associated-with-the-supply-of-fossil-fuels/>; Karl W. Steininger, et al., ‘Multiple Carbon Accounting to Support Just and Effective Climate Policies’, 6(1) *Nature Climate Change* 35 (2016). On imported emissions accounting see, e.g., Arnold Tukker, Richard Wood, and Sarah Schmidt, ‘Towards Accepted Procedures for Calculating International Consumption-based Carbon Accounts’, 20(S1) *Climate Policy* s90 (2020).

55 Piggot et al., *supra* note 8, at 1194.

56 See criticism of Australian courts adopting this argument, in 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’, 37 *Environmental and Planning Law Journal* 167 (2020).

57 Liberty Development and Production Plan, Final Environmental Impact Statement, vol 2 Chapter 7 and Appendices A through C.’ OCS EIS/EABOEM 2018–050, <www.boem.gov/sites/default/files/about-boem/BOEM-Regions/Alaska-Region/Leasing-and-Plans/Plans/Vol-2-Liberty-FEIS.pdf>.

58 See Bell-James and Collins, *supra* note 56.

given fossil-fuel project.⁵⁹ However, it should not be assumed that undeveloped oil would be substituted by coal or like-oil and not a less climatically impactful energy source. Supply of fossil fuels has a long-term impact on demand through price formation and availability, especially in the presence of alternative energy sources.⁶⁰ The market-substitution assumption allows for deflection of responsibility for emissions through oversimplification of the supply-demand interactions in the global energy market.⁶¹ For an argument with such potential legal and policy strength, the burden of proof that its proponents carry does not seem to be very high.⁶² In the Norwegian case, the court simply referred to one scholarly article without further considering the counter-arguments.⁶³

Finally, there is a logical issue with this argument. As Justice Preston, of the New South Wales Land and Environment Court, put it: 'If a development will cause an environmental impact that is found to be unacceptable, the environmental impact does not become acceptable because a hypothetical and uncertain alternative development might also cause the same unacceptable environmental impact.'⁶⁴

With regard to the Arctic, this section will further develop three arguments related to the special nature of Arctic resources.

First, economic analysis shows that leaving in place high-cost reserves would result in 'reduction of total and early emissions.'⁶⁵ 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.⁶⁶ Arctic offshore petroleum resources are among the most expensive

59 See, e.g., Michael Hoel, 'Supply Side Climate Policy and the Green Paradox' (CREE Working Paper 2/2013 2013) <www.cree.uio.no/publications/CREE_working_papers/pdf_2013/supplysideclimate_14jan_v9_withfigv3_cree_wp2_201.pdf>.

60 See Bell-James and Collins, *supra* note 56, at 174–5, discussing these arguments vis-à-vis the coal market in Australia.

61 Both supply and demand are influenced by a number of factors not related to available quantities and price, including environmental disasters, energy security considerations, and energy and climate policies. See, e.g., Subhes C. Bhattacharyya, *Energy Economics: Concepts, Issues, Markets and Governance* (London: Springer, 2011).

62 On the criticism of the expert submissions regarding market substitution in Australian courts, see Bell-James and Collins, *supra* note 56, at 180–2.

63 *Greenpeace v. Norway 2020*, *supra* note 7, at 30.

64 *Gloucester Resources Limited v. Minister for Planning* [2019] NSWLEC 7, at paragraph 545.

65 Hoel, *supra* note 59, at 15. 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.

66 Hoel, *supra* note 59; Bård Harstad, 'Buy Coal! A Case for Supply-Side Environmental Policy,' 120 (1) *Journal of Political Economy* 77 (2012).

oil resources to extract globally due to the need to develop substantial new weather-appropriate infrastructure, higher costs of shipping, and higher costs of compliance with environmental and safety regulations.⁶⁷ The Arctic region is not homogenous, and Norwegian Arctic oil is easier and cheaper to develop due to milder weather conditions and existing infrastructure in that region.⁶⁸ Furthermore, a high price for development is not always a deterrent when there are considerations of maintaining export output or preservation of energy security. For example, the Russian government continues to provide substantial support for its petroleum industry in the North while pursuing its wider national policies.⁶⁹

Second, considering the problem of carbon lock-in, it is unlikely that only a small part of Arctic resources would be developed. The costly infrastructure required to develop these resources and deliver them to the market would require large, long-term investments, prompting increased petroleum development activities in an attempt to make profitable returns.⁷⁰ Companies developing such resources, and states profiting from them, are motivated to maximize their revenue generation. Legal measures adopted to maximize economic recovery from mature and maturing provinces, especially with high-cost reserves, include special-condition licenses and tax regimes.⁷¹ Such measures

67 Russian Arctic oil development break-even cost is about 120 USD per barrel, <<https://knoema.com/OILSTAT2017/oil-statistics-production-costs-breakeven-price-discontinued?tsId=1000310>>. The average cost of Arctic oil production is US\$75 per barrel, more expensive than deep water drilling and Canadian oil sands production: Deloitte, *Crude Awakening* (2015), <www2.deloitte.com/uk/en/pages/energy-and-resources/articles/crude-awakening.html>. See also James Henderson and Julie Loe, *The Prospects and Challenges for Arctic Oil Development* (The Oxford Institute for Energy Studies, 2014), at 55–6.

68 Justin Leroux and Daniel Spiro, 'Leading the Unwilling: Unilateral Strategies to Prevent Arctic Oil Exploration,' 54 *Resource and Energy Economics* 125 (2018).

69 See Daria Shapovalova, Eduard Galimullin, and Ekaterina Grushevenko, 'Russian Arctic Offshore Petroleum Governance: The Effects of Western Sanctions and Outlook for Northern Development,' 146 *Energy Policy* (2020).

70 See, e.g., Sidortsov, supra note 8; Peter Erickson et al., 'Assessing Carbon Lock-In,' 10 *Environmental Research Letters* 084023 (2015); Arild Moe and Svein Vigeland Rottem, 'Offshore Petroleum and Maritime Infrastructure,' in *Arctic in World Affairs*, edited by Oran Young et al. (KMI/East-West Center, 2014).

71 Greg Gordon, John Paterson, and Uisdean Vass, 'The Wood Review and Maximizing Economic Recovery upon the UKCS,' in *UK Oil and Gas Law: Current Practice and Emerging Trends (Vol. I: Resource Management and Regulatory Law)*, edited by Greg Gordon, John Paterson, and Emre Üşenmez, (3rd edition, Edinburgh: Edinburgh University Press, 2018); Tina Hunter, 'Converging Energy Governance in Mature Petroleum Provinces: Political, Legal and Economic Dimensions in Governing Mature Petroleum Fields in the North Sea,' in *The International Political Economy of Oil and Gas*, edited by Slawomir Raszewski (Cham: Springer, 2018).

have been adopted in a number of countries, including the United Kingdom and Norway.⁷²

Third, building on notions of equity and justice, the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC) applies in these circumstances.⁷³ Considerations of equity are paramount in establishing procedural obligations regarding petroleum development. This is especially relevant in the context of the scholarly debates on the 'right to extract.'⁷⁴ It is relevant to consider historical contributions, the present economic capabilities, and the level of dependence on fossil-fuel rent.⁷⁵ While devolved or indigenous self-governance entities exist in the Arctic which could potentially benefit economically from offshore petroleum development, these resources are regulated primarily by central or federal governments. The Arctic Ocean states which are currently involved (or planning to be) in oil-and-gas development in the region are (except for Greenland) historically large petroleum producers and exporters with a relatively high GDP.⁷⁶ Petroleum exports have had a central role in the economies of Canada, Russia, and Norway, and to a lesser extent the United States.⁷⁷ Historical responsibility for greenhouse gas emissions is high for the United States, Canada, and Russia, and to a lesser extent for Norway—and

72 UK Oil and Gas Authority, *The Maximising Economic Recovery Strategy for the UK* (2016), <www.ogauthority.co.uk/media/3229/mer-uk-strategy.pdf>; Hunter, *ibid*.

73 On differentiation in the climate change regime, see Christina Voigt and Felipe Ferreira, 'Differentiation in the Paris Agreement,' 6(1–2) *Climate Law* 58 (2016); Lavanya Rajamani, 'Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics,' 65(2) *International and Comparative Law Quarterly* 493 (2016). Cf. Eric A. Posner and David Weisbach, *Climate Change Justice* (Princeton, NJ: Princeton University Press, 2010).

74 Kartha et al., *supra* note 10.

75 Philippe Le Billon and Berit Kristoffersen, 'Just Cuts for Fossil Fuels? Supply-Side Carbon Constraints and Energy Transition,' *Environment and Planning A: Economy and Space* 1 (2019), at 10.

76 International Monetary Fund rankings of GDP per capita place Canada in the 19th, Norway in the 5th, the United States in the 7th, and Russia in the 68th place, 2019 data, <www.imf.org/external/datamapper/NGDPDPC@WEO/OEMDC/ADVEC/WEO_WORLD>.

77 In Canada and the United States, crude oil's share in exports share is 14 and 6 per cent respectively, according to the Observatory of Economic Complexity, <<https://oec.world/en/>>. In Norway the petroleum sector comprises 16 per cent of GDP and 37 per cent of total exports: Norsk Petroleum, Government Revenues (2020), <www.norskpetroleum.no/en/economy/governments-revenues/>. In Russia, revenue from the oil-and-gas sector consistently accounts for about 40 per cent of the federal budget (Russian Ministry of Finance, Statistics), <www.minfin.ru/ru/statistics/fedbud/execute/?id_65=80041-yezhegodnaya_informatsiya_ob_ispolnenii_federalnogo_byudzhetadannye_s_1_yanvarya_2006_g>).

negligible for Greenland.⁷⁸ Greenland is a clear outlier, with potentially high economic dependency on petroleum exports should commercial production begin. On the other hand, Canada, Norway, Russia, and the United States have more capacity for transition and a greater degree of responsibility.⁷⁹

3.3 *The Current State of Arctic Petroleum Development*

The Arctic Ocean states are on the brink of large-scale offshore petroleum production. Although large discoveries have been made, offshore production is limited for now to a small number of fields in Norway, Russia, and the United States. Despite the slow pace of development, with the rapidly melting sea ice, the Arctic offshore oil-and-gas deposits are likely to be extracted in the next few decades if no regulatory constraints are put in place. All Arctic Ocean states place resource extraction at the centre of their Arctic and energy policies,⁸⁰ while Russia also heavily subsidizes its Arctic E&P activities.⁸¹

Russia was the first country to start developing Arctic oil offshore, at its Prirazlomnaya field, in 2014. Norway followed, with Barents Sea oil production at the Gøliat field starting in 2016; the Johan Castberg field, currently under development, is due to start production in 2022.⁸² Off the coast of Alaska, oil is being produced using artificial islands, at the Northstar, Nikaitchuq, and Oooguruk fields. Further offshore, the Liberty project, which also uses an artificial island, received regulatory approval for its final Environmental Impact Statement in August 2018.⁸³ As for natural gas, only Norway is currently producing it offshore, at the Snøhvit field; Russia is opting for onshore development, using liquefied natural gas (LNG) technology to deliver the gas to the market.⁸⁴ Canadian offshore development in the Arctic is on hold due to the harsher

78 World Resources Institute, Ranking of Countries by Greenhouse Gas Emissions over Time, 1850–2014, <www.wri.org/blog/2018/04/5-charts-show-how-global-emissions-have-changed-1850>.

79 See the analysis in Muttitt and Kartha, *supra* note 10, arriving at a similar conclusion.

80 Daria Shapovalova, 'Special Rules for the Arctic? Comparative Analysis of Safety and Environmental Regulation of Offshore Petroleum Development in the Arctic Ocean States,' in *In Search for Arctic Marine Sustainability: Arctic Maritime Businesses and Resilience of the Marine Environment*, edited by Eva Pongrácz, Victor Pavlov, and Niko Hänninen (Cham: Springer, 2020).

81 Lars Petter Lunden and Daniel Fjaertoft, *Government Support to Upstream Oil and Gas in Russia: How Subsidies Influence the Yamal LNG and Prirazlomnoe Projects* (The International Institute for Sustainable Development/WWF, 2014); Shapovalova, Galimullin and Grushevenko, *supra* note 69.

82 Norsk Petroleum, <www.norskpetroleum.no/en/facts/field/johan-castberg/>.

83 US Bureau of Ocean Energy Management, <www.boem.gov/about-boem/hilcorp-alaska-llc>.

84 See, e.g., Yamal LNG, <<http://yamallng.ru/en/>>.

climatic conditions, lack of infrastructure, and stringent regulatory requirements.⁸⁵ In Greenland, industry interest has declined as a result of a number of unsuccessful exploration efforts in 2010–11.⁸⁶

International law confirms the right of a coastal state to regulate resource extraction in its exclusive economic zone and on its continental shelf.⁸⁷ However, this right is not absolute and is subject to the applicable rules on prevention and mitigation of environmental harm, contained both in treaties and customary law.⁸⁸ Aside from climatic concerns, Arctic petroleum development raises a number of questions on the role of international law in effectively regulating maritime delimitation,⁸⁹ shipping,⁹⁰ marine pollution,⁹¹ and indigenous rights.⁹²

4 Accountability for Arctic Petroleum Production through Assessment and Transparency

Although the climate treaties do not impose direct obligations to limit petroleum production, there is a case to be made for enhanced accountability through assessment and transparency of the contribution of new petroleum-production projects to climate change. This is already required by the

85 See section on Canada in Shapovalova, *supra* note 80. Since 2016, a moratorium on new offshore licenses has been in place in the Canadian Arctic. United States-Canada Joint Arctic Leaders' Statement, 2016, <<http://pm.gc.ca/eng/news/2016/12/20/united-states-canada-joint-arctic-leaders-statement>>.

86 'Cairn Energy Turns Up Another Dry Well in Greenland,' *BBC*, 28 September 2011, <<http://www.bbc.co.uk/news/uk-scotland-scotland-business-15087783>>. Although Greenland is part of Denmark, through the Self-Rule Act of 2009 it has full autonomy over offshore resource decision-making.

87 United Nations Convention on Law of the Sea (10 December 1982, in force 16 November 1994) 1833 UNTS 3 (hereinafter *UNCLOS*), articles 56–57, 76–77.

88 *UNCLOS*, *ibid.*, article 193; on customary rules as applied in the Arctic offshore development, see Rachael L. Johnstone, *Offshore Oil and Gas Development in the Arctic under International Law: Risk and Responsibility* (Leiden: Brill Nijhoff, 2015).

89 See, e.g., Viatcheslav V. Gavrilov, 'The LOSC and the Delimitation of the Continental Shelf in the Arctic Ocean,' 31 *The International Journal of Marine and Coastal Law* 315 (2016).

90 See eg Jesper Jarl Fanø, *Enforcing International Maritime Legislation on Air Pollution through UNCLOS* (Oxford: Hart Publishing 2019).

91 Johnstone, *supra* note 88; Timo Koivurova and Erik J. Molenaar, *International Governance and Regulation of the Marine Arctic* (WWF International Arctic Programme, 2010); Daria Shapovalova, 'International Governance of Oil Spills from Upstream Petroleum Activities in the Arctic: Response over Prevention?,' 34 *International Journal of Marine and Coastal Law* 668 (2019).

92 Johnstone *supra* note 88, chapter 5; Rachael L. Johnstone, 'The Impact of International Law on Natural Resource Governance in Greenland,' *Polar Record* 1 (2020).

climate treaties and potentially by national legislation. I discuss two complementary options for achieving this, involving both states and private actors: inclusion of entailed climatic effects in the EIA process; and inclusion of data on fossil-fuel production in the Paris Agreement's reporting framework. Each is discussed below, with reference to the Arctic context.

4.1 *EIA for Implied Climatic Effects of Petroleum Production*

The consideration of GHG emissions from proposed activities is not a new development; it has even been argued to be an emerging rule of customary law.⁹³ With fossil-fuel development, the problematic issue is the scope of assessment of projects. Current common practice is that only upstream emissions, arising from E&P, are being considered.⁹⁴ Emissions from the downstream use of the fossil fuels are not included in the Arctic petroleum EIAs. While the E&P activities do contribute significantly to global emissions, as well as to local warming, they constitute a small share compared to emissions from the combustion of the extracted resources.⁹⁵

The rationale for providing information on entailed climatic effects lies not just in making available data on potential impacts, but in the inclusion of entailed climatic impacts in the body of the EIA, which would make such effects subject to all of the ancillary obligations that come with it: public scrutiny, obligation to consider the no-action alternative, and the possibility of litigation.⁹⁶ Granted that the calculation and accuracy of the entailed climatic

93 Benoit Mayer, 'Climate Assessment as an Emerging Obligation under Customary International Law' 68 (2) *International and Comparative Law Quarterly* 271 (2019).

94 This is a general trend, with some exceptions; see Mayer, *ibid.*, at 297–8; Michael Burger and Jessica Wentz 'Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review', 41 *Harvard Environmental Law Review* 109 (2017).

95 Upstream emissions contribute to between 5 and 37 per cent of overall lifecycle emissions. 'Upstream Emissions as a Percentage of Overall Lifecycle Emissions,' *World Resources Institute*, 14 December 2016), <www.wri.org/resources/data-visualizations/upstream-emissions-percentage-overall-lifecycle-emissions>. Short-lived climate forcers associated with E&P activities, such as black carbon arising from gas flaring, contribute to local warming in the Arctic by reducing the reflectivity of snow and ice; see Andreas Stohl et al., 'Black Carbon in the Arctic: The Underestimated Role of Gas flaring and Residential Combustion Emissions', 13(17) *Atmospheric Chemistry and Physics* 8833 (2013).

96 Alan Gilpin, *Environmental Impact Assessment (EIA): Cutting Edge for the Twenty-First Century* (Cambridge: Cambridge University Press, 1994), at 63–73; Timo Koivurova and Pamela Lesser, *Environmental Impact Assessment in the Arctic: A Guide to Best Practice* (Cheltenham: Edward Elgar, 2016) at 2–7.

effects would come with methodological challenges, these are not insurmountable, and proposals exist on how to mitigate them.⁹⁷

In the Arctic offshore petroleum context, EIA is a public process in all countries, except in Russia.⁹⁸ The Arctic Offshore Oil and Gas Guidelines adopted by all Arctic states within the framework of the Arctic Council provide that an EIA should consider the proposed activity's effects on the climate, but they appear to limit these to E&P activities.⁹⁹ This is reflected in domestic practices, for example in Norway and the United States, where the climatic effects of petroleum production are included in the scope of the EIA but limited to E&P activities.¹⁰⁰

The US offshore oil-and-gas regulator is under increasing scrutiny to include entailed climatic effects in Environmental Impact Statements. Burger and Wentz note that the regulator did consider the entailed climatic effects of the 2017–2022 Lease Plan.¹⁰¹ The EIA report on the plan considers 'lifecycle contribution,' acknowledging the research on the need to leave Arctic resources in the ground to meet climate goals.¹⁰² The report concludes, without going into detail about the methodology used, that the 'No Action Alternative' would not result in sufficient reductions, due to 'the economic substitution effects from onshore and overseas sources.'¹⁰³ The US Council on Environmental Quality, which decides what an EIA should contain, has published a draft guidance on

97 See, e.g., Stephen Russel, 'A Recommended Methodology for Estimating and Reporting the Potential Greenhouse Gas Emissions from Fossil Fuel Reserves' (World Resources Institute, 2016), <https://ghgprotocol.org/sites/default/files/standards/WRI16_WorkingPaper_FF.pdf>.

98 Koivurova and Lesser, *supra* note 96, at 194–5. There is a two-stage environmental assessment process in Russia, whereby the project proponent prepares the initial EIA and has to consult the local public: Order of the State Committee for Ecology of the Russian Federation no. 372 'On Approving the Regulation on the Assessment of the Impact of the Planned Economic and Other Activities on the Environment in the Russian Federation' (16 May 2000), section 4. The information provided, however, is not usually available to the wider public and may not contain sufficient information. See critique of Prirazlomnaya EIA by WWF at <https://wwf.ru/upload/iblock/02d/zameqaniy_na_ovos.pdf> (in Russian). In the second stage, the state ecological expertise provides for the possibility of offshore petroleum projects due to them including commercial or state secrets: Federal Law on Ecological Expertise no. 174-FZ (23 November 1995), article 21.

99 Arctic Council, 'Arctic Offshore Oil and Gas Guidelines' (2009) at 8, 13.

100 See, e.g., Norwegian Regulations on Impact Assessments, *supra* note 29, at sections 10 and 21.

101 Burger and Wentz, *supra* note 94, at 138–9.

102 US Bureau of Ocean Energy Management, '2017–2022 OCS Oil and Gas Leasing Program Final Programmatic EIS' (2016), at 4–8, <www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2012-2017/BOEMOceanInfo/fpeis_volume1.pdf>.

103 *Ibid.*

accounting for greenhouse gas emissions in the EIA process.¹⁰⁴ The guidance calls for consideration of both the direct and indirect effects of the action 'later in time or farther removed in distance, but still reasonably foreseeable.'¹⁰⁵ However, it confirms that there is a discretion as to the quantification and consideration of the proposed action's greenhouse gas emissions, which allows agencies to not address emissions where it would be 'overly speculative.'¹⁰⁶ In relation to the EIA for the Liberty project off Alaska, the US regulator was asked whether approval of the project was in line with climatic goals. It replied using the singular-project-threshold argument, stating that

[it] disagrees with the notion that producing oil from the Liberty prospect would preclude the world from meeting GHG reduction goals and would "lock in" specific negative effects associated with climate change. There is a finite amount of oil in the Liberty prospect and it is not enough to demonstrably influence climate change (in the action area or anywhere else) on its own.¹⁰⁷

Regarding the effects of the Liberty project on climate change, the regulator 'decline[d] to engage in baseless speculation about which climate change-related impacts would be attributable to GHG associated with the Liberty project.'¹⁰⁸

The earlier Shell Chukchi Sea environmental report reads:

the incremental increase of effects caused by the Proposed Action to existing and future impacts of climate change *would be negligible* and would not change the overall level of cumulative impacts to marine mammals from other past, present, and reasonably foreseeable future actions.¹⁰⁹

The US practice on EIA for proposed Arctic developments is the most informative amongst the Arctic jurisdictions. It contains a clear indication that the US regulator has come under increased pressure to consider the entailed climatic effects of proposed developments.

104 National Environmental Policy Act, Guidance on GHG Accounting (2019), <https://ceq.doe.gov/guidance/ceq_guidance_nepa-ghg.html>.

105 Ibid.

106 Ibid.

107 Liberty Development and Production Plan, *supra* note 57, at B-17 to B-19.

108 Ibid., at B-21.

109 US Bureau of Ocean Energy Management, 'Shell Gulf of Mexico Inc Revised Outer Continental Shelf Lease Exploration Plan, Chukchi Sea, Alaska' (2015), at 149–50, <www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Leasing_and_Plans/Plans/2015-05-11-Shell-Chukchi-EA.pdf>. Emphasis added.

In Russia, one of the rare relevant publicly available EIA reports on Arctic development comes for the Yamal LNG project. In that case, the EIA process had to comply, in addition, with the requirements of external funders.¹¹⁰ With regard to climate impacts, the report mentions greenhouse gas emissions, but only those directly arising from the project.¹¹¹

The environmental risk assessment reports for the Norwegian Johan Castberg and Snøhvit projects consider the CO₂ emissions of E&P activities, but not of the exports and combustion of the extracted resources.¹¹² Norwegian and applicable European Union law require the consideration of the climatic effects of an activity as part of an EIA, but do not specify the scope.¹¹³

Based on the practice above, there is little support among regulators in Arctic petroleum-producing states for climatic assessment that includes entailed emissions. However, the increased scrutiny of the US EIA reports and the conclusions of the Court of Appeal in *Greenpeace v. Norway* demonstrate a growing support for extending the scope of the assessment to entailed climatic effects.

The initiative to begin including entailed impacts could also come from industry or financial institutions. Some industry actors are adopting strategies aimed at sustainability and at acknowledging the climatic effects of their activities. Among the big Arctic oil players, Italy's Eni claims to be 'inspired' by the UN Sustainable Development Goals,¹¹⁴ and the same holds for Norway's Equinor (formerly Statoil).¹¹⁵ Financial institutions providing support for extractive projects often impose additional transparency requirements compared to national legislation, as in the case of the Yamal project.

110 In this case, performance standards of the World Bank, the International Finance Corporation, and the OECD. Environ, 'Environmental and Social Impact Assessment,' at 1–2 and 1–3 <<http://yamallng.ru/403/docs/ESIA%20ENG%20.pdf>>.

111 Ibid., at 9–5 and 9–24.

112 Equinor, 'Snøhvit and Hammerfest' (2001) [In Norwegian], <www.equinor.com/en/how-and-why/impact-assessments.html>. Thema, Johan Castberg: Konsekvenser av Elektrifisering (Executive Summary in English) at 6–7, <www.equinor.com/content/dam/statoil/documents/impact-assessment/johan-castberg/statoil-johan-castberg-konsekvenser-av-elektrifisering.pdf>. The GHG emissions from E&P activities in Norway are further subject to the CO₂ tax and the European Union Emission Trading Scheme, see Catherine Banet, 'Effectiveness in Climate Regulation: Simultaneous Application of a Carbon Tax and an Emissions Trading Scheme to the Offshore Petroleum Sector in Norway,' 11 *Carbon and Climate Law Review* 25 (2017).

113 Norway Regulations on Impact Assessments, *supra* note 28, at sections 10 and 21; EU Directive 2014/52/EU of 16 April 2014 on the Assessment of the Effects of Certain Public and Private Projects on the Environment, article 3(1)(c); Annex IV section 5(f).

114 Eni, 'Sustainability for Eni,' <www.eni.com/en-IT/just-transition/sustainability-goals.html>.

115 Equinor, 'Equinor Sets Ambition to Reduce Net Carbon Intensity by at Least 50% by 2050' (6 February 2020), <www.equinor.com/en/news/2020-02-06-climate-roadmap.html>.

A potential significant shift in the interpretation of the law could come from a relevant national court. In addition to the Norwegian court's decision, recent judgments of US and Australian courts acknowledge entailed climatic effects in judgments suspending extractive activities based on environmental and procedural grounds. In May 2020, Montana's District Court reversed oil-and-gas lease sales, largely on the grounds of a failure to include in the EIA an analysis of the impact of the developments on groundwater.¹¹⁶ The judgment further rejected the US Bureau of Land Management's arguments on the insignificance of the individual developments' climatic effects, stating that while the regulator 'cannot ascertain exactly how all of these projects contribute to climate change impacts felt in the project area, [the Court] knows that less greenhouse-gas emissions equals less climate change.'¹¹⁷

This 'drop in the ocean'¹¹⁸ argument was used by both the Norwegian and US regulators, as discussed above. There are two main responses to it: appropriate scale comparison; and consideration of cumulative effects. Regulators and judges need to compare the impacts of proposed activities to similar projects at the relevant scale,¹¹⁹ as was done in *Rocky Hill* case from New South Wales.¹²⁰ In rejecting the coal-mining company's appeal against the refusal of planning permission, the court stated:

It matters not that this aggregate of the Project's GHG emissions may represent a small fraction of the global total of GHG emissions. The global problem of climate change needs to be addressed by multiple local actions to mitigate emissions by sources and remove GHGs by sinks.¹²¹

In that case, the poor performance of the proposed development in environmental and social impact assessment played the central role in the decision.¹²² Nevertheless, judgments acknowledging the entailed climatic effects of fossil-fuel projects could assist in alleviating concerns that climate change is too polycentric an issue to be dealt with by the courts.¹²³

116 *Wildearth Guardians v. US Bureau of Land Management* no: 4:18-cv-00073-BMM (D. Mont. 2020).

117 *Ibid.*, at 28.

118 Jacqueline Peel, 'Issues in Climate Change Litigation,' 5(1) *Carbon and Climate Law Review* 15 (2011), at 16–17; Mayer, *supra* note 90, at 295–8.

119 Mayer, *supra* note 93, at 298.

120 *Gloucester Resources Limited v. Minister for Planning*, [2019] NSWLEC 7, at paragraphs 555–6.

121 *Ibid.*, at paragraph 515.

122 *Ibid.*, at paragraph 556.

123 Elizabeth Fisher, Eloise Scotford, and Emily Barritt, 'The Legally Disruptive Nature of Climate Change,' 80 *The Modern Law Review* 173 (2017).

Further, it is important to look at the cumulative effects of production from the regional or national scale.¹²⁴ Given the significant potential impact of Arctic petroleum development and use on the global climate system, such cumulative assessment is especially relevant.

It needs to be acknowledged that even if an assessment of entailed climatic effects is conducted, it might not significantly influence decision-making. Indeed, the EIA is a procedural requirement, and a finding of negative environmental effects in itself will not necessarily halt a project. Thus, in deciding to block Heathrow Airport's expansion, a UK court clarified that it did not rule on the compatibility of the project with the United Kingdom's climatic obligations, but rather was giving the government 'the opportunity to reconsider'¹²⁵ its planning policy in order to take account of climatic effects.

The next subsection explores the possibility of using the Paris Agreement's reporting mechanisms to increase accountability for fossil-fuel development.

4.2 *Fossil-Fuel Supply and the Paris Agreement*

Mitigating climate change by way of international agreements has many challenges, including scientific uncertainties, political doubts, and tensions between promoting ambitious emission cuts and providing cost-effective solutions for states.¹²⁶

The lack of fossil-fuel production regulation in climate treaties conforms to a broader trend of states to come up short on political will to cede regulation of energy production to international law.¹²⁷ The fact that emission-reduction targets are not universal gives rise to the problem of carbon leakage, whereby the extracted oil and gas would 'find their way to a country where they can be converted into CO₂ without any constraint imposed by international and domestic law.'¹²⁸

There is scope for introducing information on fossil-fuel supply in reporting and assessment under the Paris Agreement to facilitate transparency and

124 Peel, supra note 118, at 17–18.

125 *R (Friends of the Earth) v. Secretary of State for Transport and others* [2020] EWCA Civ 213, at paragraph 285.

126 See Ole Røgeberg, Steinar Andresen, and Bjart Holtsmark, 'International Climate Treaties: The Case for Pessimism,' 1 *Climate Law* 177 (2010).

127 In relation to climate, see Van Asselt, Merrill and Kulovesi, supra note 40, at 144. See also, Shapovalova, supra note 91. The international treaty establishing liability for oil spills from upstream activities is still not in force: Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources (signed 1 May 1977, not in force), despite the equivalent treaty for shipping having been in force since 1975: International Convention on Civil Liability for Oil Pollution Damage (signed 29 November 1969, in force 19 June 1975) 973 UNTS 3.

128 Sidortsov, supra note 8, at 5.

accountability. The Agreement establishes a system of reporting and transparency, including through NDCs and the Enhanced Transparency Framework, which provides for a reporting system, technical review, and the process known as Multilateral Consideration of Progress.¹²⁹

The idea of including information on petroleum production in the NDCs has been discussed in the context of reform of fossil-fuel subsidies,¹³⁰ as well as fossil-fuel supply more broadly.¹³¹ While the precise content of NDCs was not defined in the Agreement itself,¹³² the Conference of the Parties to the Paris Agreement was mandated to take decisions on the information needed for inclusion in the NDCs, to ensure ‘clarity, transparency and understanding.’¹³³ Although NDC guidance applies to mitigation,¹³⁴ it has been agreed that NDCs can voluntarily include other components, such as ‘adaptation, finance, technology, capacity-building, education, or loss-and-damage commitments.’¹³⁵ Adaptation plans are to include information on ‘economic diversification and sustainable management of natural resources.’¹³⁶ Some states are already including references to fossil-fuel subsidies in their NDCs.¹³⁷ As new NDCs are to be submitted in 2020¹³⁸ and 2025, and are required to represent a progression in ambition, extending their scope to data on fossil-fuel supply would be instrumental in providing full information. Further guidance on NDCs is due to be considered in 2024, providing an opportunity to make the reporting of information on fossil-fuel supply a mandatory component.¹³⁹

129 Paris Agreement, article 13.

130 Harro van Asselt and Kati Kulovesi, ‘Seizing the Opportunity: Tackling Fossil Fuel Subsidies under the UNFCCC,’ 17 *International Environmental Agreements: Politics, Law and Economics* 357 (2017), at 365–6; Van Asselt, Merrill, and Kulovesi, supra note 40.

131 Verkuil et al., supra note 8; Piggot et al., supra note 8.

132 There are, however, requirements for NDCs to be progressive in relation to current NDCs and reflect states’ ‘highest possible ambition’: Paris Agreement articles 4(3) and 4(9).

133 Ibid., article 4(8). Decision 4/CMA Annex I, Further Guidance in Relation to the Mitigation Section of Decision 1/CP.2, 19 March 2019, FCCC/PA/CMA/2018/3/Add.1.

134 Decision 4/CMA, *ibid.*, at paragraph 8.

135 Doelle, supra note 15, at 11.

136 Paris Agreement, article 7(9)(e).

137 There are mostly countries with small levels of production/export. See, e.g., ‘INDC in Burkina Faso’ (September 2015) at 38; ‘Ghana’s INDC and Accompanying Explanatory Note’ (September 2015), at 11; ‘India’s INDC: Working Towards Climate Justice’ (October 2016), at 28, <www4.unfccc.int/sites/NDCStaging/Pages/All.aspx>. See also Anika Terton et al., *Fiscal Instruments in INDCs: How Countries Are Looking to Fiscal Policies to Support INDC Implementation* (IISD, 2015), <www.iisd.org/sites/default/files/publications/fiscal-instruments-indcs.pdf>.

138 As of 20 June 2020, only five states had submitted their second NDCs (Andorra, Marshall Islands, Moldova, Norway, and Suriname); none of them address fossil-fuel supply.

139 Decision 4/CMA, supra note 133, at paragraph 20.

Another appropriate reporting instrument for fossil-fuel supply would be the Paris Agreement's Biennial Transparency Reports (BTRs), the first round of which is due for submission by the end of 2024.¹⁴⁰ This would be in line with the purpose of the Agreement's framework for the transparency of action and support, which is 'to provide a clear understanding of climate change action in the light of the objective of the [UNFCCC].'¹⁴¹ The treaty's Enhanced Transparency Framework is the main mechanism by which to hold states accountable for implementing their NDCs.¹⁴² A compulsory element of a BTR is information on 'actions, policies and measures that support the implementation and achievement of its NDC.'¹⁴³

In this context, BTRs could provide information on a state's plans for fossil-fuel production with reference to historical levels of production, compatibility of production, and further use of these resources with the global climate goals, and any governmental support provided for extraction activities. BTRs could further discuss the necessity of extraction in the context of energy security and national economy, e.g. whether the resources are extracted to satisfy domestic demand and avoid imports, or for export, and, if so, what the destination is of such resources.¹⁴⁴ Finally, states could include the measures taken or planned for the managed decline in production, with a view to just transition for the national economy and sector workforce.

While such inclusion would still not require states to reduce supply, reputational costs are important, and so is information that empowers domestic stakeholders to take further action.¹⁴⁵ All of the Arctic States are parties to the Paris Agreement, although the United States has announced its withdrawal.¹⁴⁶ The future participation of the United States is dependent on the outcome

¹⁴⁰ Decision 18/CMA.1, Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, FCCC/PA/CMA/2018/3/Add.2, at paragraph 3.

¹⁴¹ Paris Agreement, article 13(5).

¹⁴² Daniel Bodansky, 'The Paris Climate Change Agreement: A New Hope?', 110(2) *American Journal of International Law* 288 (2016), at 311. See also Benoit Mayer, 'Transparency Under the Paris Rulebook: Is the Transparency Framework Truly Enhanced?', 9(1-2) *Climate Law* 40 (2019).

¹⁴³ Decision 18/CMA.1, supra note 140, at paragraph 80.

¹⁴⁴ This is in line with paragraph 106 of Decision 18/CMA.1, supra note 140.

¹⁴⁵ Van Asselt, Merrill, and Kulovesi, supra note 40.

¹⁴⁶ Statement by President Trump on the Paris Climate Accord (1 June 2017), <www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/>. The formal notification was provided in November 2019 and will take effect in November 2020. Michael R. Pompeo, 'On the U.S Withdrawal from the Paris Agreement,' <www.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement/>.

of the 2020 election (which at the time of writing was unknown).¹⁴⁷ Russia ratified the Agreement later than the majority of states, but is developing a climate change mitigation and adaptation framework.¹⁴⁸ A requirement that fossil-fuel supply is to be included in the NDCs would be valuable, especially in the context of Russia, where public access to environmental information on the upstream sector is not guaranteed by national legislation.¹⁴⁹

5 Conclusion

The climatic effects of oil-and-gas development in the Arctic are inconsistent with global climate goals.¹⁵⁰ In the absence of universal and binding reduction targets, such a gap in the regulation limits the effectiveness of these treaties, whereby developed and 'committed' states, including the Arctic States, although reducing their emissions, continue to produce oil and gas for consumption elsewhere. The Paris Agreement approach replaces the top-down quantified targets with a framework for cooperative action, transparency, and accountability. The effectiveness of this approach is only possible with the provision of full information, not only on national emission levels but also on the planned and approved production of fossil fuels.

In this article, I examined the rationale for establishing procedural obligations on authorizing new petroleum development in the Arctic with a reference to international law and domestic practices. While climate change treaties do not create direct obligations on fossil-fuel supply, the shift from top-down obligations for selected states to the more universal framework based on enhanced reporting and transparency may provide an effective platform for consideration of the entailed climatic effects of fossil-fuel production. I also examined two ways of establishing accountability for fossil-fuel supply, with specific reference to the Arctic petroleum-producing states: inclusion of entailed climatic effects in both the EIA process and the reporting processes under the Paris Agreement. While current state practice does not consistently

147 The Democratic Party nominee Joe Biden has committed to re-joining the Paris Agreement; see <<https://joebiden.com/climate/>>.

148 Russia's ratification came on 7 October 2019. In January 2020, the Russian Government adopted the 'National Action Plan for the First Phase of Adaptation to Climate Change for the Period up to 2022,' <<http://government.ru/docs/38739/>> (in Russian). See also Alena V. Kolodova and Alexander M. Solntsev, 'Application of the Polluter-Pays Principle in Russian Legislation on Climate Change: Problems and Prospects,' 10(2) *Climate Law* 197 (2020).

149 Koivurova and Lesser, *supra* note 96, at 194–5. For the relevant legislation, see *supra* note 101.

150 McGlade and Ekins, *supra* note 3.

reflect these obligations, there is scope for industry initiative, civil-society pressure, and judicial intervention. There is also an emergent judicial interpretation of the EIA process as inclusive of entailed climatic effects of fossil-fuel projects. Despite the rapidly growing scholarly and political attention to fossil-fuel-supply measures, the methodological and practical considerations for implementing them warrant further research.

Environmental law, especially as it relates to the regulation of extractive industries, has often been reactive rather than anticipatory. In the face of the dangerous risks of climate change, there is no room for hesitation, and the law needs to be progressive and aligned with the scientific findings and economic analysis. There is an urgent need to address the entailed climatic effects of Arctic petroleum resources, alongside their potential benefits to the economies of the Arctic States.