

# Effect of Corporate Sustainability Policies and Investment Risks for Future Arctic Oil and Gas Development in Alaska

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*The feasibility of new Arctic oil and gas development activity is strongly tied to global supply and demand. The evolution of oil development in Alaska represents responses to external pressures such as economic viability, and changes in domestic and foreign oil production. Climate change is another external pressure that affects the cost of developing Arctic oil and gas. Direct impacts can occur from improved access routes for ships in ice-free waters, or increased costs from infrastructure damage due to permafrost thaw or coastal inundation. An emerging globally-driven factor that may limit future oil and gas activity in the Arctic is the recent trend in corporate sustainability goals driven by social responsibility to mitigate climate change. In 2020 several major US banks expressed policies that would prohibit financing of Arctic oil and gas exploration or development. The extent that such corporate policies could impact future oil development in Alaska is explored in the context of changing regulatory environments, and the diversity of oil companies invested in Alaska. Indicators on company interests are used to assess threats for future Alaska oil and gas development. The results emphasize that financing challenges would make it difficult for smaller companies to share the investment risk in Arctic oil exploration and development. Comparisons of oil and gas investments in other Arctic states show that the strength of state-backed oil and gas companies, investments from Asia, and access to technology innovations are important factors that may offset the effects of more limited Arctic oil and gas financing by major US and European banks.*

## Introduction

Increasing access to the Arctic and its resources could draw potentially significant investments to the region from non-Arctic states. While physical models provide scenarios of Arctic sea ice loss (Wang & Overland, 2009; 2012) and facilitate the development of models on increasing ship traffic (Smith & Stephenson, 2013), or improved access to marine and coastal resources, predicting the effects of global economic drivers on Arctic development remain a challenge. New developments in the oil and gas sector is of particular interest in the Arctic because of large estimates of oil and gas reserves north of the Arctic Circle (Gautier et al., 2009). However, the high cost of operations and limited infrastructure in the region make Arctic oil and gas development a potentially risky

investment. This article explores indicators to track non-environmental factors that could limit future Arctic oil and gas development in Alaska. While the price of oil plays a key role in the profitability of Arctic oil development, access to capital is an important factor in new development projects. The indicators explored here look at trends in corporate sustainability policies that affect future Arctic investment, consistency in policy incentives to support development, and the diversity of corporations involved in oil and gas exploration. Since the United States does not have a state-owned oil and gas company, there is no guarantee of a stable oil or gas company presence in Alaska's oil development. Comparing some of these indicators of corporate interests in Alaska oil and gas development to the conditions in other Arctic states provides insights on how global pressure for more corporate responsibility to address climate change could influence future scenarios for Arctic oil and gas activity.

### **Policies and incentives affecting Alaska oil development**

Commercial interest in Alaska Arctic oil development over the last century is briefly summarized with a focus on policies that influenced access to resources, and financial investments for oil development in Alaska.

#### ***1920-1967: Early commercial exploration***

1922 marked the beginning of industry exploration of the North Slope, and in 1923 the U.S. government designated the National Petroleum Reserve-Alaska (NPR-A) in anticipation of future oil development in the Alaska Arctic. Domestic oil development in Alaska was not yet a major industry by 1959 when President Eisenhower put in place the Mandatory Oil Import Program. This program acted to limit oil imports so that it could not exceed 9% of domestic consumption.

#### ***1968-1988: Infrastructure development and economic boom***

The development of oil reserves in the North Slope of Alaska began with the discovery of Prudhoe Bay in 1968. Despite a lack of infrastructure in the region and challenging environmental conditions, the development of Prudhoe Bay was carried through based on large estimates of recoverable oil. The development of the 800 mile Trans Alaska Pipeline (TAPS) provided a necessary transportation corridor for oil produced in the North Slope to reach ice-free port facilities in Valdez. Although Alaska is still ranked as the 6<sup>th</sup> largest state producer of oil in the United States (EIA, 2020), production has been declining since 1988. TAPS was developed by a consortium of eight separate private companies that jointly formed the Alyeska Pipeline Service Company to design and construct the pipeline. The pipeline was completed in 1977. During this period, President Nixon also ended the Mandatory Oil Import Program, at which time US oil imports increased from approximately 30% of domestic consumption in 1973 to almost 50% of consumption by 1977 (Council on Foreign Relations, n.d.). U.S. domestic oil production was clearly not meeting national needs.

The economic boom from the peak in oil development and pipeline construction resulted in an influx of migration into Alaska and sharp increases in per capita income, but these effects were relatively short-lived (James, 2016). Today much of the existing infrastructure in the North Slope is associated with the greater Prudhoe Bay field complex with continued use of seasonal ice roads in winter, and the Dalton Highway that connects Prudhoe to the greater road system.

### ***1989-2005: Oil development plans after peak production***

The Clinton Administration (1993-2001) supported continued protection of the Arctic National Wildlife Refuge (ANWR), although President Clinton stopped short of declaring the ANWR a national monument, believing that current protections against oil development in the ANWR were sufficient. The subsequent administration under President Bush proposed oil development for part of the ANWR, but this did not result in policy to begin leasing on the coastal plain of the ANWR. During the Bush Administration, total US domestic crude oil production fell from 5.8 million barrels per day in 2001 to 5 million barrels per day in 2008 (US Energy Information Administration, 2019) and in the Alaska North Slope production continues to decline. Offshore oil production in the US Beaufort Sea began in 2001 with the Northstar facility, but offshore oil in the Chukchi Sea did not get much development activity. Revenue from the oil industry remained the primary source of income for the state of Alaska. Interest remained in developing a gas pipeline, along with interests in transporting LNG by ship to markets in Asia. However, the emphasis on oil development in Alaska made the region vulnerable to the volatile nature of the global oil market. This issue had been particularly challenging for the revenues for the State of Alaska, which had seen drastic declines in income from oil production in previous years.

### ***2006-2020: Changing U.S. policies on Arctic oil development***

Over the past decade, different levels of political support for Arctic oil and gas development has been expressed at the national level. The oil and gas fiscal system in Alaska also began introducing more frequent changes in 2006, adding to greater investor uncertainty (Agalliu, 2020; Goldsmith, 2014). Despite the more frequent changes in oil and gas fiscal policies, the State of Alaska continues to promote Alaska oil and gas development. Between 2005 and 2014, oil revenue made up approximately 90% of Alaska's unrestricted revenues, but such high dependence on resource revenues may be a source of concern for investment by companies that fear the potential for sudden, large increases in taxes (Knapp, 2015). Beyond the impact of tax policies on the profitability of Alaska oil development, there is little evidence that tax policies greatly affected the optimal timeline for industry oil development (Leighty & Lin, 2012). This suggests that tax policies alone have not greatly influenced the rate of oil development in Alaska. The current and proposed fiscal policy on oil development in Alaska makes it one of the least competitive locations for new oil development (Agalliu, 2020).

Offshore oil development gained attention in Alaska in 2009 when Royal Dutch Shell obtained leases for exploring the development of offshore oil in the Chukchi Sea. The process to obtain approval for offshore drilling in the Chukchi Sea was fraught with controversy including objections from some Indigenous and environmental groups, but nevertheless drilling proceeded in 2012. Royal Dutch Shell exploration activities did not occur without mishaps, including two marine incidents in 2012: the near-grounding of the drilling vessel Noble Discoverer near Dutch Harbor, and the grounding of the drilling rig, Kulluk near Kodiak. After disappointing assessments of the offshore oil reserves in the Burger Prospect in 2015, Royal Dutch Shell decided to stop their operations and surrender their leases in the Chukchi Sea at an estimated cost of \$7 billion. Following the departure of Royal Dutch Shell there was no major oil exploration activity. Continued declining North Slope oil production meant that there was little effect from the change in US policy to end the ban on crude oil exports that occurred at the end of 2015. In December 2016, President Obama used his authority under the Outer Continental Shelf Lands Act to

permanently exclude all of the Chukchi Sea planning area and the majority of the Beaufort Sea planning area from future leasing. President Trump attempted to reverse this act and reopen Arctic offshore development using an Executive Order, but the District Court for the District of Alaska ruled that an Executive Order did not give the President authority to revoke prior presidential withdrawals. Only a small portion of the US Arctic offshore is currently open to leasing. The number of leases in the Beaufort Sea has dropped from 147 in the Beaufort Sea planning area in January of 2015, to 40 leases in January 2020 (BOEM, 2020).

In contrast to the lack of offshore activity, onshore oil developments are still being explored. The Bureau of Land Management (BLM) is responsible for leasing land in the National Petroleum Reserve-Alaska (NPR-A) which began in 1999. BLM is now moving forward with the process to open up the controversial 1002 coastal area of the ANWR. Developing the ANWR has been a controversial issue for four decades since the 1980 Alaska National Interests Land Conservation Act (ANILCA). Section 1003 of the act prohibited the leasing or other development activities that would lead to oil and gas production until authorized by an Act of Congress. This authority was finally granted in the 2017 Tax Cuts and Jobs Act, when Congress granted the authority to open the 1002 area of the ANWR for leasing as part of a budget resolution to generate income and offset the proposed tax cuts. The legal authority to open ANWR for leasing has been welcomed by the State of Alaska, but it is not without strong opposition from some Indigenous organizations and environmental groups. Obtaining the social license to operate in sensitive areas of Arctic Alaska remains a challenge moving forward.

Impacts to Alaska revenues continued through 2020 with unprecedented drops in the price of oil in 2020. Arctic North Slope oil is forecasted to remain below \$30 a barrel for the remainder of 2020, with estimates that it may remain below \$60 a barrel through 2029 (Alaska Department of Revenue, 2020). These projected oil prices make Alaska oil development far less attractive than it has been in the past, and it reduces the likelihood of significant new Arctic oil development over the next decade. While the profitability of Arctic oil development in Alaska may be the strongest predictor of future activity, other considerations which can limit or encourage Arctic oil and gas development in the future are also briefly explored. Based on the changing policies affecting access to undeveloped areas for Arctic oil and gas development, it is evident that the U.S. does not have stable, long-term support for new Arctic oil and gas development throughout the US Arctic.

### **Shared risk through diversity in corporate entities**

Investment risk for large new infrastructure has always been a major factor in Arctic development. The absence of a gas transportation pipeline in Alaska is a striking example of how national support for infrastructure is often inadequate to push major infrastructure development forward without industry support. In 1978, the Natural Gas Policy Act was put in place, but it included no subsidies for the two corporations working to develop pipeline construction. Policy-makers at the time assumed that private financing would materialize (Thomas & Thomas, 1982), but none ever did. General takeaway lessons emphasized that major infrastructure investments such as financing for the gas pipeline in Alaska requires a balance of shared risk in investment between the government and private entities (Tussing & Barlow, 1979).

Renewed political support for a gas pipeline came in 2013 when the State of Alaska formed the Alaska Gasline Development Corporation with financial contributions from ExxonMobil and BP.

The focus on development was for a pipeline, and additional infrastructure to bring natural gas from Prudhoe Bay and Point Thompson to market. Progress in this major infrastructure project has been slow since state funding appropriations have not been consistent over the last few years, especially given the enormous budget constraints recently faced by the State of Alaska. Obtaining capital for infrastructure development remains challenging in the near term, and leaves open opportunities for more diverse funding sources, such as foreign investment. Unlike other Arctic states, the U.S. does not specify a minimum percent of lease ownership by a domestic U.S. entity. The ability to independently explore and develop new lease areas might make foreign corporations more willing to consider the costs of developing new supporting infrastructure in Alaska, but so far this has not been the case. In reality, the foreign corporations with interests in developing oil on the North Slope (Eni, Pantheon Resources and Oil Search) are currently concentrated in areas close to existing infrastructure, which would reduce the need for new major infrastructure development.

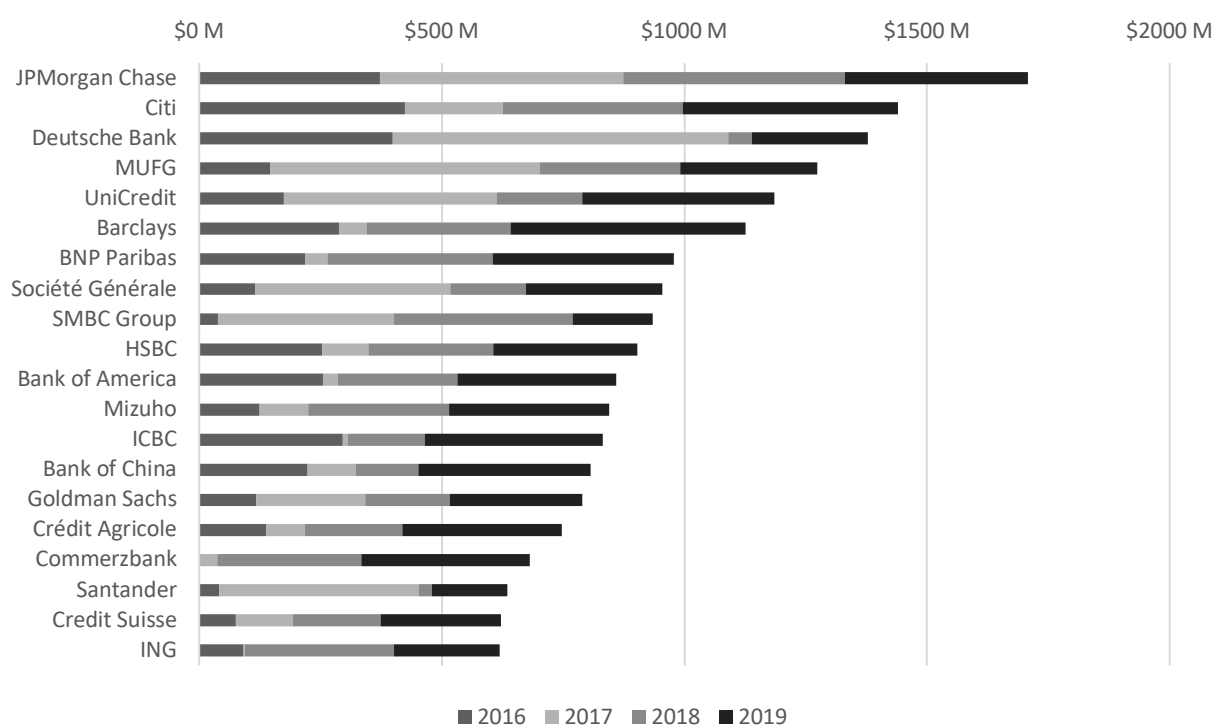
Corporate entities with interest in Arctic oil development are rarely focused in the Arctic alone. Hence, corporations may fall along a range of willingness to accept risk in Arctic oil development relative to investing in oil development elsewhere. This analysis falls short of assessing specific risk-sharing profiles for investing in Arctic oil development, and focuses instead on characterizing indicators that could be used to identify general risk-sharing strategies for Arctic oil development.

One indicator to look at the risk-sharing environment for future oil and gas development is the diversity of corporations that share ownership in leases. The interests in sharing the risks in Arctic oil development was recently illustrated by Conoco-Philips which is selling some of its assets in Alaska to share its future investment risk (Herz, 2019). The diversity in lease ownership is reported in different ways since the various agencies managing oil and gas leases in Alaska aggregate lease ownership information in different ways. The Bureau of Land Management (BLM) manages leases held at the National Petroleum Reserve Alaska. At present there are 307 leases awarded to 9 companies (BLM status report for April 2020). Joint ownership occurs in only 14 leases (4.5% of leases), amounting to only 3.5% of the total leased area of 2,609,632 acres. The Bureau of Ocean Energy Management reports that the Beaufort Outer Continental Shelf had 40 leases owned by 5 companies (as of October 2018), but Hilcorp and ASRC had sole ownership of more than half of those leases. Earlier this year ASRC relinquished all 21 of their leases in the region, leaving most of the remaining leases as jointly-owned. In State of Alaska lands on the North Slope, leased areas are more broadly grouped into one of 12 units with 1725 leases in the North Slope and Beaufort Sea region. Currently only three units (Nikaitchuq, Northstar, and Colville River) have a single owner interest, emphasizing the prevalence of corporate diversity and shared investment risks - even in areas with well-developed infrastructure.

While the full diversity in number of companies involved in Arctic oil development is not reported here, the trends in bidding activity for leases have shown that a greater number of independent oil companies are becoming involved in Alaska oil leases (Nebesky, 2007). Based on the limited capital available to smaller independent companies, the access to funding for oil and gas development activities could be strongly influenced by financial institutions.

## Trends in corporate sustainability policies

Corporate responsibility reporting has been increasing in the oil and gas sector, and the reporting rates on corporate responsibility in the financial services sector are generally high, with over 70% of institutions surveyed providing reports (KPMG, 2017). More pertinent to Arctic investment is how corporate sustainability policies relate to Arctic oil and gas development. In 2019 and 2020 some of the largest US banks, including JPMorgan Chase, Citigroup, Wells Fargo and Morgan Stanley released statements specific to ending financial support for Arctic oil and gas development. While 19 banks have released statements prohibiting financing for Arctic oil and gas projects, many of these banks still provide other financial services for companies that are heavily involved in Arctic oil and gas development (Figure 1). Only a small number of banks (including BNP Paribas, Crédit Agricole, Société Générale, UniCredit, ING, UBS, and RBS) have taken a more stringent approach to end all financial support and services for companies that are involved in Arctic drilling, and not just financing for specific Arctic projects (Rainforest Action Network, 2020).



**Figure 1.** Top twenty banks with cumulative and annual financing amounts for companies involved in Arctic oil and gas development. (Source: Rainforest Action Network, 2020)

Example policy statements released by banks is provided in Table 1, and updated information on bank policies related to financing for Arctic oil and gas activities is monitored (Banktrack.org). The definition of the Arctic also varies with some policies explicitly delineating areas above the Arctic circle, and other policies providing no specific definition of the Arctic. One corporate policy specified the boundaries of sea ice coverage at its peak ice extent between February and March to define the Arctic region. This definition includes sea ice that extends far below the Arctic circle in some places. Considering the trends in corporate responsibility statements from a geographical perspective, it is apparent that the earliest efforts were made by European banks. At least one bank

prohibited Arctic oil and gas financial support as early as 2012. US-based banks have primarily focused on financing for Arctic oil and gas development projects, and in some cases have emphasized the commitment not to finance developments in the newly opened Arctic National Wildlife Refuge.

The repercussions in Alaska may not be negligible, and policy makers have made statements related to the political influences and repercussions to banks. For instance, Alaska Governor Dunleavy announced that he was reconsidering relationships between State of Alaska investments with JP Morgan Chase, as well as Goldman Sachs in response to their corporate position on financing Arctic oil development (Rosen, 2020). President Trump also expressed concern about the political influence made on banks to discourage Arctic oil development (Dluohy, 2020). The practicalities of these policies could also jeopardize the future sale of Arctic oil and gas assets to smaller companies. For example, the sale of BP assets in Alaska to independent company Hilcorp recently received publicity as unnamed financial institutions expressed doubts about financing this sale. Although the issue of financing the Hilcorp purchase of BP assets was not specifically tied to corporate sustainability policies, the number of large banks willing to finance such a purchase has declined. This issue may become more prevalent as smaller companies seek financial support to acquire new Arctic oil and gas assets.

It is important to note that the feasibility of future oil and gas development in the Arctic is also linked to access and availability of technological innovations, and limitations on government financing of Arctic oil and gas development. The relative impact of these factors compared to access to capital in an environment of corporate sustainability policies are difficult to address, particularly as smaller, privately-owned corporations that do not disclose sources of their financing become key players in Arctic hydrocarbon development.

**Table 1.** Financial institution policies related to Arctic oil and gas development.

	Arctic oil and gas policy	Date and source
Morgan Stanley	We will not directly finance new oil and gas exploration and development in the Arctic, including the Arctic National Wildlife Refuge (ANWR)	April 2020 <a href="https://www.morganstanley.com/about-us-governance/pdf/Environmental_Policy.pdf">https://www.morganstanley.com/about-us-governance/pdf/Environmental_Policy.pdf</a>
Citigroup	Citi has not previously provided and will not provide project-related financing for oil and gas exploration and production in the Arctic Circle.	April 2020 <a href="http://www.citigroup.com/citi/sustainability/data/Environmental-and-Social-Policy-Framework.pdf">www.citigroup.com/citi/sustainability/data/Environmental-and-Social-Policy-Framework.pdf</a>
Barclays	No financing for energy projects in the Arctic Circle	April 2020 <a href="https://home.barclays/content/dam/home-barclays/documents/citizenship/ESG/Barclays-PLC-Climate-Change-2020.pdf">https://home.barclays/content/dam/home-barclays/documents/citizenship/ESG/Barclays-PLC-Climate-Change-2020.pdf</a>
JP Morgan Chase	Not providing project financing or other forms of asset-specific financing where the proceeds will be used for new oil and gas development in the Arctic.	25 February 2020 <a href="https://www.jpmorganchase.com/corporate/news/pr/jpmorgan-chase-">https://www.jpmorganchase.com/corporate/news/pr/jpmorgan-chase-</a>

		<a href="#">expands-commitment-to-low-carbon-economy-and-clean-energy.htm</a>
Wells Fargo	Wells Fargo does not directly finance oil and gas projects in the Arctic region, including the Arctic National Wildlife Refuge (ANWR) – part of a larger 2018 risk-based decision to forego participation in any project-specific transaction in the region.	February 2020  <a href="https://www08.wellsfargomedia.com/assets/pdf/about/corporate-responsibility/sensitive-industries.pdf">https://www08.wellsfargomedia.com/assets/pdf/about/corporate-responsibility/sensitive-industries.pdf</a>
Goldman Sachs	We will decline any financing transaction that directly supports new upstream Arctic oil exploration or development. This includes but is not limited to the Arctic National Wildlife Refuge	December 2019  <a href="https://www.goldmansachs.com/s/environmental-policy-framework/#guidelines">https://www.goldmansachs.com/s/environmental-policy-framework/#guidelines</a>
Unicredit	A new Oil and Gas (O&G) policy covers the Arctic area and other non-conventional O&G, prohibiting the financing of new projects in Arctic oil and offshore Arctic gas as well as in shale O&G and related fracking, tar sands oil and deep sea mining O&G. Corporate financing for clients active in these areas will only be allowed if their share of revenues from non-supported activities is under 25%.	November 2019  <a href="https://www.unicreditgroup.eu/en/press-media/press-releases/2019/unicredit-announces-new-esg-targets-as-part-of-a-long-term-commi.html">https://www.unicreditgroup.eu/en/press-media/press-releases/2019/unicredit-announces-new-esg-targets-as-part-of-a-long-term-commi.html</a>
Société Generale	In addition, Société Generale refrains from providing banking and financial services to companies which primarily derive their revenues from the exploration or production of Arctic oil, or have a majority share of their reserves in the Arctic region. In addition, Société Generale refrains from being involved in dedicated transactions: For the exploration and production of Arctic oil; For infrastructures exclusively dedicated to the transport or storage of oil from oil sands or Arctic oil	May 2018  <a href="http://www.societegenerale.com/sites/default/files/2018/oil_gas_sector_policy.pdf">www.societegenerale.com/sites/default/files/2018/oil_gas_sector_policy.pdf</a>
HSBC	HSBC will not provide project financing for new offshore oil and gas projects in the Arctic.  *The Arctic is the area within the Arctic Circle which is subject to sea ice (that is, within the 1981-2010 March median sea ice extent edge as reported by the US National Snow & Ice Data Center)	April 2018  <a href="https://www.hsbc.com/-/files/hsbc/our-approach/risk-and-responsibility/pdfs/200423-hsbc-energy-policy.pdf?download=1">https://www.hsbc.com/-/files/hsbc/our-approach/risk-and-responsibility/pdfs/200423-hsbc-energy-policy.pdf?download=1</a>
Crédit Agricole	The Bank will not participate in financings or investments directly related to the development, construction or expansion of any oil & gas installation if aware of the following characteristics: project located in the Arctic; infrastructure projects mainly dedicated to projects listed above, e.g. pipeline projects mainly dedicated to the transportation of oil produced from oil sands projects.	December 2017  <a href="http://www.credit-agricole.com/assets/cacom-front/temp/PDF/CSR-Sector-Policy_energy_oil-and-gas_2017-12_EN.pdf">www.credit-agricole.com/assets/cacom-front/temp/PDF/CSR-Sector-Policy_energy_oil-and-gas_2017-12_EN.pdf</a>  2012 Refused all financing of Arctic offshore development



	Some transactions are not directly linked to the construction or expansion of a specific oil & gas installation but nonetheless fall within the scope of application of the Policy. In particular, the Policy governs general banking services which may be provided by the Bank to clients which have extensive activities in the oil & gas sector.	
BNP Paribas	<p>BNP Paribas will not provide financial products or services to a company that falls under one of the following activities: - Exploration and production companies for which unconventional oil and gas represent a significant part of their total reserves.</p> <p>*The Arctic region is defined as the offshore area featuring the widest ice coverage over a 12 months period. According to the National Snow and Ice Data Center, the February to March period is the peak period in terms of ice coverage. All the regions covered by ice during this peak period are included in the BNP Paribas's definition of the Arctic region.</p>	<p>2017</p> <p><a href="https://group.bnpparibas/uploads/file/csr_sector_policy_unconventional_oil_and_gas_19_12_2017_v_standardized.pdf">https://group.bnpparibas/uploads/file/csr_sector_policy_unconventional_oil_and_gas_19_12_2017_v_standardized.pdf</a></p>

### Alaska summary

Policies supportive of Arctic oil and gas development have not been consistent in Alaska over the last decade. Currently, most of the offshore region remains indefinitely closed to future development, and there remains strong opposition to development in the ANWR. The landscape of corporate ownership of oil leases and oil-related infrastructure is changing as major oil companies divert their focus to regions outside of Alaska. This leaves some opportunity for smaller companies to get involved in Alaska oil exploration and development. A lack of major infrastructure continues to hamper the future development of gas resources, and keeps the cost of oil development high, while favoring industry investment in areas that can be easily connected to existing infrastructure. Given the trend in reducing oil development activity in Alaska by large oil companies, the future of oil development activity led by smaller companies may be at risk from banks not willing to provide financing for Arctic oil and gas. Furthermore, the absence of a state-supported oil company with Arctic expertise and financial stability may also put future Arctic oil development at risk.

Table 2 briefly compares some of the events and policies that have affected the development of oil and gas across the Arctic, with an emphasis on more recent events from the year 2000 onwards. Table 2 is supported by the following brief discussion of relevant factors that may affect the outcome of corporate sustainability policies on oil and gas development in other Arctic countries.

**Table 2.** Key recent events and policies affecting oil and gas development across the Arctic, emphasizing events from 2000 onwards

Alaska, USA	Arctic Russia	Arctic Canada	Norway	Greenland
<b>1920-1999</b>				
<p>1922 - First industry-sponsored exploration of the North Slope</p> <p>1923 - Federal petroleum reserve (NPR) designated on Alaska's North Slope</p> <p>1959-1973 - Mandatory Oil Import Program in place that limits oil imports to 9% of domestic consumption.</p> <p>1980 – Alaska ends State income tax amidst high oil revenues</p> <p>1981 – Begin drilling of outer continental shelf exploration wells</p>	<p>1988 - Shtokman gas and condensate field is discovered</p> <p>1991 - Break-up of the Soviet Union.</p> <p>1992 - Private petroleum industry begins to develop</p>	<p>1982-1986 - Renewed oil and gas exploration in Arctic Canada.</p> <p>1989-1991 – Mackenzie delta exploration stops due to low prices</p>	<p>1966 – North Sea Exploration wellbores drilled</p> <p>1980s - exploration begins in the Norwegian Sea.</p> <p>1984 - Discovery of the Snøhvit gas field in the Barents Sea.</p> <p>1996 - First licenses for deep-sea drilling are issued</p>	<p>1984 – Nunoil is established to allow Greenland/Denmark participation in oil and gas exploration in Jameson land</p> <p>1994 - Open-door licensing policy begins</p> <p>1996 – first onshore exploration well drilled.</p> <p>1990-1996 - More than 7,000km<sup>2</sup> of seismic data collected by the KANUMAS Project</p>
<b>2000-2006</b>				
<p>2001 - Oil production begins from offshore well, Northstar in the Beaufort Sea</p> <p>2006 – Beginning of frequent changes to Alaska oil and gas fiscal policies.</p>	<p>2002 – Beginning of tanker transport from northern Russia to Europe</p>	<p>2000-2004 - Mackenzie Delta exploration resumes</p> <p>2005 – 2006 - Exploration drilling restarts in Beaufort Sea</p>	<p>2005 – Reimbursement policy introduced to reduce barrier to entry for new companies involved in exploration activity.<sup>1</sup></p> <p>2006 - New licenses issued in Barents Sea</p>	<p>2003 - New policy aims to spur interest in West Greenland</p> <p>2002-2006- Licensing rounds take place, includes open door procedure for Jameson Land in 2002. This allowed companies to apply for acreage on an ongoing basis, with applications</p>

				considered, and areas awarded on a first come, first served basis.
<b>2007-2011</b>				
2009 - offshore oil development leases granted	2010 - Russian Government approves a Comprehensive Plan to develop LNG production on the Yamal Peninsula.		2008 – Eight exploration wells drilled in Barents sea (highest number recorded since 1966)	2009 -Danish Parliament establishes Greenland Self-Government (Act no. 473)  2011- Nunaoil has partnerships in 20 licenses.
<b>2012-2015</b>				
2012 – Arctic sea ice reaches a record low summer minimum extent.				
2012 – Arctic sea ice extent reaches a record low summer minimum.  2015 – US ends ban on crude oil exports.	2012 - Shtokman gas field project put on hold. Foreign partners (Statoil & Total) face State financial burdens that make investment unappealing. <sup>2</sup>  2013 – Yamal LNG receives full LNG project sanction, including environmental approval and construction permits for the liquefaction plant on the Yamal Peninsula.  2013- Prirazlomnoye begins production of offshore oil.  2014- US and EU introduce sanctions on Russia energy sector.			2014 - Oil and mineral Strategy changed to include 2.5% sales royalty in addition to surplus royalty but decreases the state participation via Nunaoil (from 12.5% to 6.25%).
<b>2016-2020</b>				
2016 - Obama Administration permanently excludes all of the Chukchi Sea planning area and the majority of the Beaufort	2017- Yamal LNG shipping begins  2020- Major tax incentives for developing Arctic oil and gas in areas with	2016- Start of five-year moratorium on Arctic oil development.	2017 – Total of 17 exploration wells in the Barents Sea (highest number on	2016 - all licenses offshore West Greenland are relinquished.  2018 - All offshore

<p>Sea planning area from future leasing.</p> <p>2020 – Trump Administration facilitates future leasing in the Arctic National Wildlife Reserve</p>	<p>little existing development.</p>		<p>record for the region)</p> <p>2020 – Norway sets northern limit for drilling at 15% ice concentration (within marginal ice zone) which allows activity on licenses already granted in the northern Barents Sea</p>	<p>licenses relinquished for Northeast Greenland. Nunoil begins a major resource assessment project.</p>
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<sup>1</sup> (Norwegian Petroleum, 2020)

<sup>2</sup> (Digges, 2012)

## Oil and gas development conditions in other Arctic states

### Russia

The focus in the Russian Arctic has been to develop its rich gas reserves. Russia has also been more consistent than the U.S. in promoting areas open for leasing, with large incentives for Arctic oil and gas development. In the eastern Arctic where no major Arctic offshore developments are currently pursued, the incentives include a zero percent tax on extraction for the first twelve years of new projects (Digges, 2020). The new legislation also provides large tax incentives for the development of infrastructure such as ports to support LNG transportation.

The inclusion of foreign partnerships for oil and gas development is tightly controlled and all lease owners for subsoil development on the continental shelf must have at least 50% ownership by the state of Russia (Shapovalova & Stephen, 2019). The Yamal LNG development is a significant project that attracted Chinese and French investment (Mitrova, 2016), but other foreign investments and partnerships with India and Vietnam are proving the importance of non-western partners for future developments of Arctic gas reserves in Russia. The financial strength of state-supported companies, Rosneft and Gazprom, is also critical for developing large infrastructure projects. For example, the two gas pipelines linking the Yamal Peninsula cost Gazprom more than US \$40 billion (Mitrova, 2019). Current conditions show that access to capital from China and Russian investments influence the short-term development for Russian LNG, and current sanctions limit the availability of investments from banks in the US and Europe (Mitrova, 2016).

Despite the emphasis on gas production, offshore Arctic oil production is also a reality in Russia with the Prirazlomnoye facility in the Pechora Sea. This site is in the southern Barents Sea region, in relatively shallow water. It took over 20 years from the time of discovery to the start of production in 2013. Prirazlomnoye faced large increases in the capital required to continue its development, and throughout the process Gazprom acquired and lost several international partners (Henderson & Loe, 2014). Future offshore oil development plans are currently hampered by US and EU sanctions that have severely restricted access to the technical expertise needed to

develop offshore oil resources. However, the potential to develop new technology domestically, or the lifting of sanctions in the future, have the potential to ramp up Arctic oil development, particularly if such scenarios were combined with higher oil prices.

### **Greenland**

Initial foreign investment for hydrocarbon development in Greenland have focused on exploration interests in western Greenland where waters generally remain ice-free in the summer and fall (National Petroleum Council, 2015). However, results indicating poor commercial feasibility and the trends in the price of oil have hampered decisions to begin commercial extraction of oil or gas. The Kanumas Group, a consortium of corporations working with state owned oil company Nunaoil were granted prospecting licenses in 1989. This consortium included corporations with proven experience in developing Arctic and sub-Arctic resources, such as: ExxonMobil, Shell, and Statoil. Additional foreign investment came from Japan in later years. In 2013, ExxonMobil did not renew their license, but the Kanumas Group moved on to explore sites in northeastern Greenland in 2014 (Casey, 2014). Exploration activity in this region indicated some optimism for operating in northeast Greenland despite the challenges of a short operating season due to the high ice cover. Realistically, the near-term access to lease sites is likely to be hampered by ice drift in the western Fram Strait especially in the summer (Zamani et al., 2019). The cost of exploration activities remains steep in Greenland, and large losses are known for exploration costs that did not result in follow up development activity. For instance, Cairn Energy spent over \$1 billion in exploration activities in 2010-2011 before deciding that future activity in the region could only be resumed with additional partnerships (Cairn Energy, 2011; 2012). All offshore leases in northeast Greenland were eventually withdrawn in 2018. At the moment Greenland has only 1 active hydrocarbon license in offshore southwest Greenland held by PanOceanic Energy with the mandated 6.7% lease ownership from state-owned company Nunaoil (Greenland Mineral Resources Authority). The absence of technical expertise domestically in Greenland emphasizes the importance of foreign partnerships as Greenland continues to pursue potential oil and gas development in the future.

### **Canada**

Canada has had a moratorium on Arctic oil and gas development since 2016 with plans to review the moratorium in 2021. However there has been very limited exploration in the region since the 1970s and 1980s when most of the offshore drilling activity occurred. Development of areas explored in the past remains a possibility, especially since companies have no time limit to develop a reserve after filing for a significant discovery finding. There are presently 69 significant discovery licenses in northern Canada on file but no drilling on record in the Beaufort Sea for 20 years. Given that Canada no longer has a Crown Corporation related to oil and gas development (former crown corporation Petro Canada became fully privatized in 2004), there is a lack of state pressure to obtain or keep a level of technical expertise in Arctic oil and gas development as a domestic resource.

### **Norway**

The Norwegian oil and gas industry experienced more stable production compared to the US Arctic, but most activity occurs in ice free waters of the Norwegian Sea and North Sea. Of the 13 production licenses awarded for the Barents Sea region in 2020, all licenses were awarded to joint

licensees, and no single-company licenses were granted. There were no exceptions to these leased areas in the North Sea and Norwegian Sea (Norwegian Petroleum Directorate). Similar to Russia, there is a dominant presence of state-backed companies (Equinor and Petoro) in oil and gas development activity, however, there is no requirement for a minimum co-ownership with a state entity for individual leases. Norway has applauded the diversity of industry participation in their oil and gas development which they describe as an important driver for innovation in new technology while also helping to promote competition and efficiency (Norwegian Petroleum, n.d.). The only oil production present in the Barents Sea comes from the Snøhvit and Goliat fields that began production in 2007 and 2016 respectively. The gas producing Snøhvit field has majority ownership by Equinor and Petoro, while the oil-producing Goliat field is currently operated by Var Energy (with majority ownership from Italy-based Eni) and Equinor. The underlying state support, diversity of lease ownership, and access to domestic technical expertise provides a more stable backdrop for future oil and gas development, where the corporations involved in developing oil and gas may not be particularly vulnerable to the changing bank policies on financing Arctic hydrocarbon development.

## **Conclusion**

As financial institutions set the stage for future funding for Arctic oil and gas development, the long-term commitments of major oil and gas companies may become increasingly important in the future outlook for Arctic oil and gas. Norway and Russia have established state-backed oil and gas companies which may help to better position them to pursue Arctic hydrocarbon development. However, the diversity in corporate lease ownership, as well as strong partnerships with foreign entities for capital, and technological expertise can still limit future Arctic oil and gas development. Greenland has invested in building capacity for state-backed Nunaoil but it has not yet achieved the financial capacity and technical expertise to pursue oil and gas development on its own. The complete absence of state-backed oil and gas companies in the U.S. and Canada puts them at risk of losing private investments for Arctic oil and gas development. Historical evidence demonstrates that political support and tax incentives for hydrocarbon development in Alaska have not been enough to overcome the impacts of market forces on Arctic oil development. The recent trend in U.S. bank policies that prohibit financing for Arctic oil and gas activities could also discourage smaller, private companies from getting involved in new Arctic oil and gas development. As opportunities for U.S. domestic financing for Arctic oil and gas shrink, the future of oil and gas development in Alaska may become an increasingly global-venture as new foreign partnerships and investments may become more a more attractive path to pursue moving forward.

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