# Marist SV Neg - Kentucky v1

## New Cards

Justin Leroux & Daniel Spiro, August 2017, “Leading the Unwilling: Unilateral Strategies to Prevent Arctic Oil Exploration”, CESifo Working Paper No. 6629, , https://www.cesifo-group.de/DocDL/cesifo1\_wp6629.pdf, Date Accessed 8-28-2018 // JM

McDonald and Schrattenholzer (2001) estimate the learning spillovers in terms of reducing production costs in the energy sector. For North-Sea oil (the closest equivalent to Arctic off-shore oil) a doubling of the number of rigs lowers the average cost per rig by 25%. That is, for a current cost of production 𝑘0, average production costs will be 𝑘(𝑠) = 𝑘00.75𝑠 where 𝑠 = ln(𝑚) /ln(2) and m is the number of multiplications of current market size.

### Our Sole Contention is Arctic Drilling

#### Despite Trump’s offshore drilling expansion in the Atlantic Ocean this summer, corporations are being met with opposition hindering the process– Madeleine Carlisle indicated in August that this opposition:

Madeleine Carlisle, 8-5-2018, "Trump’s Offshore-Drilling Plan Is Roiling Coastal Elections," Atlantic, https://www.theatlantic.com/politics/archive/2018/08/trumps-offshore-drilling-plan-is-roiling-coastal-elections/566726/, Date Accessed 8-27-2018 // JM

Until recently, many East Coast politicians supported offshore drilling. In 2011, three Gulf Coast Republican governors and Alaska Governor Sean Parnell formed the Outer Continental Shelf Governors Coalition, which is [aimed at promoting the expansion of offshore drilling](http://time.com/3601760/governors-offshore-drilling-oil/). By 2013, three more Republican governors had joined in: South Carolina’s Nikki Haley, Virginia’s Bob McDonnell, and North Carolina’s Pat McCrory. In 2014, the coalition met with Interior Secretary Sally Jewell to urge drilling expansion. Each of these moves received little opposition from the public. “Nobody really knew. Nobody was paying attention,” said Frank Knapp, a former president of the Business Alliance for Protecting the Atlantic Coast. But in 2015, when Jewell’s department released its draft of the Oil and Gas Leasing Program, people did notice. If enacted, the five-year plan would have opened up huge portions of the South Atlantic to drilling for the first time, and outrage quickly spread along the East Coast. In Republican and Democratic areas alike, residents, legislators, and advesocacy organizations held town halls, protested on beaches, and lobbied Washington. The military [expressed concern that drilling would impact their operations](https://www.washingtonpost.com/news/energy-environment/wp/2016/03/14/the-governments-atlantic-drilling-plan-takes-friendly-fire-from-the-pentagon/?utm_term=.4274f24e333c) off [the coast] of Florida and Virginia. By the end of 2016, the Obama administration had revised its plan, removing the Atlantic from the leasing program, and had invoked an obscure law [to ban drilling in much of the Atlantic and the Arctic](https://www.theatlantic.com/science/archive/2017/01/obama-the-ocean-president/512135/). “It really was like a bipartisan thing,” said Alex Taurel, the conservation program director for the League of Conservation Voters. “It really translated into kind of changing the politics of offshore drilling in the Atlantic, over the course of the Obama era into this Trump era.” That change has only been exacerbated since Trump took office. Coastal communities worry about offshore drilling for a number of reasons. The threat of an oil spill looms large; few have forgotten the damage the 2010 Deepwater Horizon disaster [inflicted on the Gulf of Mexico.](https://www.nola.com/environment/index.ssf/2016/06/bp_spill_cost_gulf_fishing_ind.html) Since then, there have been [4,105 reported offshore explosions, fires, collisions, and spills, resulting in 13 deaths](https://www.bsee.gov/stats-facts/offshore-incident-statistics), according to the Bureau of Safety and Environmental Enforcement. In 2017 alone, there were 10 offshore spills. “We could not recover from an oil spill in North Carolina,” said Bob Woodard, the chairman of the Board of Commissioners in Dare County. Woodard, who supports Trump, strongly opposes offshore drilling and says opposition in the county is “overwhelming.” Drilling also requires large amounts of onshore infrastructure, and some communities dependent on tourism worry that industrial development would affect their appeal as vacation destinations. “Charleston has been named the No. 1 [small U.S.] city by Condé Nast six years in a row,” said Jimmy Carroll, the mayor of Isle of Palms, South Carolina, which is about 16 miles from Charleston. “Why would we risk that kind of potential damage both visibly and environmentally?” Seismic testing, or seismic airgun blasting, worries many coastal communities, too. The loud blasts used to detect oil and gas reserves [can damage marine life](https://www.npr.org/sections/thetwo-way/2018/02/19/586061334/seismic-surveys-planned-off-u-s-coast-pose-risk-to-marine-life). In Dare County, Woodard said, drilling and seismic testing are “one and the same as far aes our constituents are concerned.” Knapp told me the “celebration” over the Obama-era policy victory “was short-lived”: “We realized that the Trump administration was going to do a new five-year plan, and they are going to put the entire Atlantic coast in, not just the mid-Atlantic or South Atlantic.” Indeed, Trump issued [an executive order revoking the Obama-era ban](https://www.federalregister.gov/documents/2017/05/03/2017-09087/implementing-an-america-first-offshore-energy-strategy) on Arctic and Atlantic drilling in April 2017, and in January of this year the Interior Department proposed a new five-year plan that included almost all American coastal waters. “The program proposed [the largest number of offshore lease sales in United States history](https://www.doi.gov/pressreleases/secretary-zinke-announces-plan-unleashing-americas-offshore-oil-and-gas-potential),” according to the department’s press release. Interior Secretary Ryan Zinke also began reprocessing five seismic-testing permits, and the Bureau of Safety and Environmental Enforcement proposed rolling back [drilling regulations created in the wake of Deepwater Horizon](https://www.washingtonpost.com/national/health-science/trump-administration-to-overhaul-safety-monitoring-rules-for-offshore-drilling/2017/12/28/37cb40bc-ec20-11e7-9f92-10a2203f6c8d_story.html?utm_term=.44d8449cdeeb). Following these policy changes, offshore-drilling opposition has only grown in the Southeast, and it’s front and center in some congressional campaigns this year. Candidates who’d previously expressed support for drilling now find themselves on the defensive—and have, in some cases, switched their positions. One example can be found in Virginia’s Second Congressional District, where the Navy veteran and Democrat Elaine Luria is running to unseat the Republican incumbent, Scott Taylor. Her campaign has significantly featured her resistance to offshore drilling. During Taylor’s first run for Congress, in 2010, he supported drilling, before reversing that stance earlier this year. “I’m a representative,” Taylor explained to me. “In my district, all the localities passed resolutions [against drilling]. The tourism industry, the military has an issue, obviously various environmental groups, fishing industry, shellfish industry, are just about unanimously opposed to it.” In South Carolina, offshore drilling and seismic testing have taken center stage in the First Congressional District, which runs from the North Carolina border to Seabrook Island along the coast. It has one of the state’s most watched elections: Republican Representative Mark Sanford, who has long opposed offshore drilling, was defeated by his primary challenger, Katie Arrington, who framed herself as the Trumpian candidate. At the start of her campaign, [Arrington supported Trump’s drilling policies](https://www.mcclatchydc.com/news/nation-world/national/article193061494.html). But in June, she [flipped her position](https://www.facebook.com/VoteKatieArrington/posts/i-support-the-repeal-of-barack-obamas-arbitrary-restrictions-on-domestic-energy-/1298320803631729/) (though she recently suggested she has [always held that stance](https://www.mcclatchydc.com/news/politics-government/congress/article215044355.html)). The change was a conspicuous one. Since June, five district mayors—all Republicans or independents—have [endorsed her Democratic opponent in the general election, Joe Cunningham, due to his opposition to offshore drilling](https://www.postandcourier.com/politics/more-coastal-mayors-endorsing-joe-cunningham-over-offshore-drilling/article_bdafb6cc-8383-11e8-800f-b7f1fa703d78.html). Cunningham works as an ocean engineer and has stressed the dangers of drilling throughout his campaign. “I can’t tell you the last time that people were coming across the aisle to endorse someone of the opposite party,” Cunningham told me. “But that’s how critical and important of an issue this is for folks in this district.” Even South Carolina Governor Henry McMaster, who was [the first and highest-ranking state official](https://www.thestate.com/news/politics-government/politics-columns-blogs/the-buzz/article56902613.html) in the country to back Trump’s campaign in 2016, [opposes drilling and seismic testing](https://www.cnn.com/2018/01/11/politics/governors-ocean-coastline-offshore-drilling-trump/index.html). “Opposition to offshore drilling is just about a political necessity these days,” said John Tynan, the executive director of Conservation Voters of South Carolina. Offshore drilling is also a prominent issue in the Senate race in Florida between Republican Governor Rick Scott and Democratic Senator Bill Nelson. Both candidates have emphasized their opposition, though Scott, like Arrington, has been accused of [flip-flopping](https://www.huffingtonpost.com/entry/rick-scott-offshore-oil-drilling-senate_us_5a54fb3ae4b0efe47ebd665a). After a January meeting between Zinke and Scott, the secretary announced that [Florida waters would be taken “off the table” for drilling](https://www.politico.com/states/florida/story/2018/01/09/interior-secretary-says-new-drilling-off-the-table-for-florida-180611). Zinke cited Florida’s tourist economy when explaining the policy change, though leaked internal documents suggest it [may have also been to give Scott a boost against Nelson](https://www.politico.com/states/florida/story/2018/03/26/records-zinkes-office-refute-scott-framing-of-impromptu-oil-drilling-reversal-330060). In response, other coastal governors—like McMaster—have demanded similar exceptions, pointing to their sizable tourist economies. Though Zinke has [signaled that the Trump administration’s revised plan will likely be scaled back](https://www.washingtonexaminer.com/policy/energy/ryan-zinke-suggests-riskier-offshore-drilling-plan-likely-to-be-scaled-back), a second wave of backlash is anticipated if Atlantic drilling remains on the table. And depending on when the report is released, it could have even more consequences for the midterm elections. “I don’t think we had this level of bipartisan support, certainly not in the fall of 2016 and not in the beginning of 2017,” Knapp reflected. “I mean, the proof is in the pudding. We have bipartisan opposition now in Congress.” “The issue of offshore drilling has created strange bedfellows,” echoed Matt Moore, the former chair of the South Carolina GOP. “You have Republicans teaming up with conservation groups and local chambers of commerce. It’s a strange, but beautiful, thing to see.”

#### This has made oil corporations hungrier than ever in their pursuit for oil – Sarah Kent explains in 2018:

Sarah Kent, 5-6-2018, "Oil Companies Look to Profit at the Pump," WSJ, https://www.wsj.com/articles/oil-companies-look-to-profit-at-the-pump-1526472000, Date Accessed 8-27-2018 // WS

Main oil corporations are doubling down on gasoline stations, refineries and processing vegetation, betting on a once-unloved a part of the power enterprise to shore up earnings and broaden their buyer bases. BP PLC plans to open 1000’s of gasoline stations in new markets equivalent to Mexico and India over the following three years. Exxon Mobil Corp. is investing closely to broaden its petrochemical operations, which make merchandise like plastics and the fundamental substances for all kinds of family items. In November, Royal Dutch Shell PLC began work on a large petrochemical complicated in Pennsylvania—its first large new plant within the U.S. because the 1960s. Corporations are anticipated so as to add 7.7 million barrels a day of recent refining capability by 2023, in line with the Worldwide Vitality Company. In petrochemicals, it estimates funding within the U.S. alone over the following 5 years will add 13 million tons a yr of recent capability to provide ethylene, the primary element of plastic. American refining, specifically, is booming. Surging shale manufacturing has supplied plentiful, low cost oil near the nation’s petrochemical heartland across the Gulf Coast. Gas demand is anticipated to rise. All these dynamics helped drive Marathon Petroleum Corp.’s settlement to purchase rival Andeavor final month for $23 billion, a deal that might create the nation’s largest refiner. As smaller refiners consolidate, the world’s main oil corporations are promising that funding of their so-called downstream companies—and restructuring efforts they’re concurrently pursuing to enhance effectivity—will add billions of to earnings. The give attention to downstream grew amid a interval of decrease oil costs and issues over long-term oil demand. Cheaper crude—the first feedstock for refining—boosted margins and earnings. Oil corporations’ “upstream,” or oil exploration and improvement, in the meantime, was affected by decrease costs. “Upstream sooner or later was not earning profits,” mentioned Tufan Erginbilgic, head of BP’s refining and retail arm. That gave his unit a recent crucial to “actually considerably contribute to group efficiency, as a result of we have now to.” At the moment, greater crude costs pose a danger that margins from refining gained’t be as robust as they’ve lately. And all the brand new funding in capability may find yourself swamping the market, analysts warned. “It stays to be seen the best way demand goes to form up,” mentioned Jonathan Leitch, analysis director at Edinburgh-based consultancy Wooden Mackenzie. Huge corporations say the downstream funding is price it—irrespective of the place crude costs head. Executives say that integrating the oil they produce with refining and retail companies can maximize earnings, and assist regular funds amid the sometimes-wild swings in crude. Investor strain additionally has mounted on the most important oil corporations to begin positioning for an age when fossil fuels might not energy the world’s fleet of passenger automobiles. Executives are betting their large petrochemical vegetation can supply diversification. In keeping with the IEA, petrochemical manufacturing is anticipated to be the most important driver of oil demand progress within the coming many years. Fuel stations, too, are promising new progress. They provide entry to rising markets, the place demand for gas is anticipated to be particularly strong. A geographically extensive community of branded, shops additionally may create new alternatives the place the business now sees threats—equivalent to electrical charging stations. Final yr, Shell purchased one in every of Europe’s greatest electric-vehicle charging corporations, New Movement. It has teamed up with a bunch of automobile producers to put in greater than 500 fast-charging factors at present Shell stations, throughout 10 international locations in Europe over the following two years. The rise of electrical automobiles is “a actuality, and a chance,” Shell’s downstream director, John Abbott, advised analysts in March. “We’re adjusting our supply to satisfy this new demand.” BP began its push earlier than oil costs collapsed in 2014. The corporate was in search of stability after promoting off billions of in belongings to pay for cleanup charges and authorized prices related to its catastrophic blowout within the Gulf of Mexico in 2010. It offered off a few of its refining companies however resisted investor strain to eliminate its downstream unit altogether. That was regardless of it being an business laggard. Mr. Erginbilgic, the downstream boss, eradicated a layer of administration and ordered up focused enchancment plans at every plant. “At the moment, we had been the worst within the business. Actually the worst,” he mentioned. BP says now it’s on monitor to extend earnings from Mr. Erginbilgic’s division by $three billion between 2017 and 2021, doubling the advance made within the two years from 2014. Over the following three years, BP sees the most important alternative to spice up earnings in gasoline stations. It’s doubling down on partnerships with comfort shops, which has boosted profitability at gasoline stations in mature markets, and is pushing exhausting into new international locations the place demand is anticipated to develop. BP says it’s on monitor to open 500 retail websites in Mexico by the tip of the yr, up from zero at the beginning of 2017. Elsewhere, it’s trying to construct gasoline stations in India, China and Indonesia.

#### Given this profit driven desire, the Arctic becomes a valuable area as Hobson explains in 2013:

Margaret Kriz Hobson, 7/18/13, E&E reporter, “Is Arctic oil exploration dead in the U.S.?”, <http://www.eenews.net/stories/1059984582>, Date Accessed 9-6-2018 // AS

The report estimated that the territory north of the Arctic Circle holds 90 billion barrels of oil and 1,669 trillion cubic feet of natural gas, with a staggering 84 percent of those hydrocarbons located offshore. The vast majority of the oil and gas is located in the West Siberian Basin, Alaska's Arctic and the East Barents Basin. The Bureau of Ocean Energy Management has estimated that Alaska's offshore region contains 23 billion barrels of oil. At the time the USGS assessment was released, the Interior Department had already held several lease sales in the American Arctic, including a record-breaking 2008 sale in the Chukchi Sea that brought in $2.7 billion.

#### Marta Kolcz-Ryan of the University of Dayton furthers the importance of accession in 2009 that,

Marta Kolcz-Ryan, University of Dayton, "An Arctic Race: How the United States' Failure to Ratify the Law of the Sea Convention Could Adversely Affect its Interests in the Arctic", 2009, accessed 8 July 2018, <https://www.udayton.edu/law/_resources/documents/law_review/anarctic_race.pdf>, Date Accessed 8-27-2018 // WS

The Convention would codify the United States’ sovereignty rights over all the resources in the ocean, and on and under the ocean floor, in a 200-nautical mile EEZ off its coastline.138 Because the United States has one of the longest coastlines and the largest EEZ of all the countries in the world, it could gain significantly from these provisions.139 The Convention also gives the United States an opportunity to expand its sovereignty rights over resources on and under the ocean floor beyond 200 nautical miles to the end of its continental shelf, up to 350 nautical miles.140 This mechanism is especially valuable to the United States as it would maximize legal certainty regarding the United States’ rights to energy resources in large offshore areas, including the areas of the Arctic Ocean. However, the United States must ratify the Convention for its claims to be internationally recognized.141 Not surprisingly, the American oil companies favor ratification, as it will allow them to explore oceans beyond 200 miles off the coast, where evolving technologies now make oil and natural gas recoverable. Not surprisingly, the American oil companies favor **ratification**, as it will allow them to explore oceans beyond 200 miles off the coast, where evolving technologies now make oil and natural gas recoverable.142 If the United States ratifies the Convention it **could expand its areas for mineral exploration and production by more than 291,383 square miles.**143 The United States’ claim under article 76 would add an area in the Arctic (Chukchi Cap) roughly equal to the area of West Virginia.144 With a successful claim the United States would have the sole right to the exploitation of all the resources on and under the Arctic Ocean bottom. These potential energy resources could make significant contributions to United States energy independence. Because the Convention is the only means of assuring access to the mineral resources beneath the Arctic Ocean, American companies “wishing to engage in deep seabed mining operations will have no choice but to proceed under the flag of a country that has adhered to the treaty.”

#### And, Daniel Spiro indicates in 2017 that as:

Justin Leroux & Daniel Spiro, August 2017, “Leading the Unwilling: Unilateral Strategies to Prevent Arctic Oil Exploration”, CESifo Working Paper No. 6629, , https://www.cesifo-group.de/DocDL/cesifo1\_wp6629.pdf, Date Accessed 8-28-2018 // JM

Extraction of oil in the Arctic requires tailored technologies due to the harsh weather and sea conditions (Wilson Center, 2014). These technologies do not exist today and developing them sufficiently to ensure that extraction costs are lower than the oil price requires large investments (Moe and Vigeland, 2015; Lindholdt and Glomsrud, 2011; Harsem et al., 2011). Thus, as for the development of any technology, market size is important in the Arctic. 2 More buyers of Arctic technologies implies that extraction per barrel will be cheaper (e.g., McDonald and Schrattenholzer, 2001) and the oil industry has expressed that bigger volumes of Arctic extraction will make extraction profitable under a lower oil price (see, e.g., Aftenposten, 2015). What makes this interesting from a perspective of unilateral action is the fact that there is a limited number of countries than can extract in the Arctic. Russia, the U.S., Canada, Greenland and Norway each have jurisdiction over a certain area (see Figure 1).3 Hence, if any one of these countries chooses to stay out of the Arctic, it will imply a smaller market for Arctic exploration and drilling technologies, and higher costs of extraction for the remaining four. These higher costs may then imply that another one of the countries prefers to stay out, thus increasing the costs for the remaining three. 4 This way, there is potential for a chain reaction whereby all countries end up staying out. This is particularly true under conditions – which preside today and are expected to remain for the next decade or two – where the oil price is low.5

#### **And their profits are protected under UNCLOS due to legal certainty as Iosif Sorokin of Berkeley Law writes in 2015,**

Iosif Sorokin, 3-30-2015, "The UN Convention on the Law of the Sea: Why the U.S. Hasn’t Ratified It and Where It Stands Today," No Publication, http://berkeleytravaux.com/un-convention-law-sea-u-s-hasnt-ratified-stands-today/, Date Accessed 7-10-2018 // WS

UNCLOS is also vital to expanding [conservation efforts](http://www.maritime-executive.com/article/governments-to-expand-unclos-for-conservation) in the oceans and allowing nations with Arctic coastlines to make [legal claims](http://www.military.com/daily-news/2015/03/17/papp-says-us-must-better-prepare-for-melting-arctic.html) to the oil and gas reserves that lie beneath the Arctic waters. Denmark, Norway, Canada, and Russia have already used UNCLOS to make legal claims to the [Arctic Ocean and seabed](http://www.newsweek.com/putins-arctic-ambitions-send-chill-through-neighbors-315089). By abstaining from the treaty, the U.S. lacks official standing in these important initiatives, which are being taken advantage of by other nations.

#### This oil drilling destroys the environment in two ways. The first is infrastructure as Laura Comay added just last month that:

Laura Comay, 8-1-2018, “Changes in the Arctic: Background and Issues for Congress,” Congressional Research Service, <https://fas.org/sgp/crs/misc/R41153.pdf>, Date Accessed 8-30-2018 // JM

Despite the warming trend in the Arctic, severe weather and sea ice continue to pose challenges to exploration. In addition, any discovery of new oil and gas deposits [in the Arctic] far from existing storage, pipelines, and shipping facilities could not be developed until infrastructure is built to extract and transport the petroleum.

#### This is inevitable with new drilling because Zachary Sadow indicates in 2015 that:

Zachary Sadow, Spring 2015, “Challenges and Opportunities of Oil & Gas Investment in the Arctic,” Columbia University, Date Accessed 8-30-2018 // JM

Research has shown that only 1% of the U.S. Arctic navigable waters have been surveyed and charted with modern technologies,148 and this figure is similar for the Canadian and Russian Arctic. Despite this, we found that all Arctic nations have plans to modernize the charting and surveying of their waters in the future, particularly given the increased maritime traffic expected as the ice recedes. Increased activity will also require effective icebreakers and/or a fleet of icecapable vessels. Although ice-breaking is not required in much of the milder Barents Sea and some parts of the U.S. Arctic, exploration and production around Canada, Greenland, and Russia will need this capability to ensure safe and successful exploration and production activity. Russia has an extensive ice-breaking fleet, with more ice-breakers than all other Arctic nations combined, and is expected to remain a leader in this aspect. The U.S., on the other hand, only has one operating icebreaker and no concrete plans to add to its small fleet due to government budget constraints.149,150

#### In fact, Achim Steiner indicates in 2010 that:

Achim Steiner et al 2010, UNEP Executive Director and Under-Secretary-General of the United Nations, “PROTECTING ARCTIC BIODIVERSITY: LIMITATIONS AND STRENGTHS OF ENVIRONMENTAL AGREEMENTS”, <http://www.grida.no/files/publications/arctic-biodiv/arcticMEAreport_screen.pdf>, Date Accessed 8-30-2018 // JM

The biggest environmental challenges that affect Arctic biodiversity, ecosystem services, and economically important biological resources include climate change, industrial and associated infrastructure development both on land and at sea, resource depletion (e.g., fisheries and forestry), pollution, and increased human activity (e.g., shipping, tourism, military activities, overharvesting). Climate change is emerging as the most significant stressor on Arctic biodiversity. There are many uncertainties surrounding the rate and direction of climate change and the impact this will have on Arctic biodiversity. The consequences of global warming are likely to increase the pressure on biodiversity from other sources like contamination (e.g. the secondary release of POPs from melting snow, ice and permafrost), invasive species, and the development and extraction of oil and gas and other resources (see Part II for examples). The increased stress could threaten the resilience and sustainability of the Arctic’s biodiversity and the overall balance of its ecosystems, and thereby the Arctic ecosystem services and Arctic peoples’ livelihoods.

#### Second is through accelerating climate change as

#### Cathleen Kelly explains in 2014:

Cathleen Kelly, 3-19-2014, "Why a Melting Arctic Could Sink the Global Economy," Center for American Progress, https://www.americanprogress.org/issues/green/reports/2014/03/19/85967/why-a-melting-arctic-could-sink-the-global-economy/, Date Accessed 8-30-2018 // JM

As Arctic sea ice vanishes, companies and countries are scurrying to set in motion plans to exploit natural resources in the region, including through oil and gas development, commercial fishing, and trade via new shipping routes. Of the Arctic’s emerging industrial uses, oil and gas development is the most troubling. The rush to push fossil-fuel production offshore—despite a worrying dearth of oil spill cleanup knowledge, infrastructure, and response capacity in this harsh and remote area—may spell disaster for the region’s sensitive environment and the indigenous communities and others who depend on it for their livelihoods. Widespread fossil-fuel extraction in the Arctic and elsewhere will also exacerbate disruptive climate changes already underway in the region and globally—which have contributed to an increase in destructive storms, flooding, and heat waves—adding fuel to the fire of an already warming planet. Arctic warming is caused by carbon pollution from fossil-fuel-burning power plants, cars, and other sources all over the world. And super pollutants, or short-lived climate forcers—such as black carbon and methane—are driving up Arctic and global temperatures and eroding public health and agricultural productivity. Black carbon from inefficient diesel cars and trucks, shipping, wood-fired stoves, burning agricultural waste, and forest fires is a dangerous air pollutant that coats Arctic snow like a heat-absorbing quilt, accelerating local warming and snow and ice melt. Methane from oil and gas production, agriculture, and landfills is also a major driver of Arctic and global warming.

#### Peter Wadhams quantifies in 2016 that:

Peter Wadhams, 9-26-2016, "The Global Impacts of Rapidly Disappearing Arctic Sea Ice," Yale E360, https://e360.yale.edu/features/as\_arctic\_ocean\_ice\_disappears\_global\_climate\_impacts\_intensify\_wadhams, Date Accessed 8-30-2018 // JM

By my calculations, the terrestrial warming in the Arctic is roughly equivalent to a 25 percent boost in global CO2 emissions. This, combined with the warming caused by the loss of Arctic sea ice, means that the overall ice/snow albedo effect in the Arctic could add as much as 50 percent to the direct global heating effect of CO2. Scientists can debate the potential magnitude of such increases. But there is no doubt that they will be significant — vividly illustrating how the Arctic can become a driver of, rather than just a responder to, global climate change.

#### In fact, Kelly furthers in 2014 that arctic warming would lead to:

Cathleen Kelly, 3-19-2014, "Why a Melting Arctic Could Sink the Global Economy," Center for American Progress, https://www.americanprogress.org/issues/green/reports/2014/03/19/85967/why-a-melting-arctic-could-sink-the-global-economy/, Date Accessed 8-30-2018 // JM

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#### Aristos Georgiou quantifies in July that

Aristos Georgiou, 7-3-2018, "Rising seas could the cost the global economy a staggering $14 trillion a Year by 2100," Newsweek, https://www.newsweek.com/rising-seas-could-cost-world-14-trillion-year-2100-1006823, Date Accessed 8-21-2018 // WS

For their study, the researchers examined different sea level rise projections and warming scenarios where the increase in temperatures was restricted to 1.5°C (2.7°F), 2°C (3.6°F) or not restricted at all. In these scenarios, 1.5°C of warming led to a sea level rise of 0.52 meters (1.7 ft) by 2100, 2°C resulted in a rise of 0.86 meters (2.8 ft), and unrestricted warming led to a 1.8m (5.9 ft) increase in sea levels. The scientists then used data from the [World Bank](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups), which groups nations into different income levels, to assess the impact of sea level rise on a global scale, as well as for individual countries. They found that in the worst-case scenario, global annual flood costs could increase to $14 trillion per year by 2100 if sea levels rise 0.86 meters. And this figure could jump to $27 trillion annually—which would be equivalent to 2.8 percent of global GDP by the end of the century—for a rise of 1.8 meters. Furthermore, the scientists found that higher income countries would suffer the least economic damage, thanks to their more developed flood defenses, while upper-middle income countries like China will incur the biggest costs. The researchers also suggest that sea level rises are likely to be more extreme in tropical areas. "These extreme sea levels will have a negative effect on the economies of developing coastal nations, and the habitability of low-lying coastlines," Jevrejeva said. "Small, low-lying island nations such as the Maldives will be very easily affected, and the pressures on their natural resources and environmental will become even greater.” "These results place further emphasis on putting even greater efforts into mitigating rising global temperatures,” she concluded.

#### Developing nations would be the hardest. David Wheeler finds that,

David Wheeler, et al, February 2007, “The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis,” World Bank Policy Research Working Paper, http://documents.worldbank.org/curated/en/156401468136816684/pdf/wps4136.pdf, Date Accessed 8-21-2018 // WS

In this conclusion, we would like to highlight two important implications of our findings. First, the overall magnitudes for the developing world are sobering: Within this century, hundreds of millions of people are likely to be displaced by SLR [sea level rise]; accompanying economic and ecological damage will be severe for many. The world has not previously faced a crisis on this scale, and planning for adaptation should begin immediately. Second, international resource allocation strategies should recognize the skewed impact distribution that we have documented in this paper. Some countries will be little-affected by SLR, while others will be so heavily impacted that their national integrity may be threatened. Given the scarcity of available resources, it would seem sensible to allocate aid according to degree of threat.

#### We have not yet past the tipping point on climate change as Arthur Nelson of the Huffington Post writes three days ago that

Arthur Neslen, 9-5-2018, "By 2030, We Will Pass The Point Where We Can Stop Runaway Climate Change," HuffPost, <span class="skimlinks-unlinked">https://www.huffingtonpost.com/entry/runaway-climate-change-2030-report\_us\_5b8ecba3e4b0162f4727a09f</span>, Date Accessed 9-7-2018 // WS

Asked to rate on a scale of 1 to 10 how confident he is that global warming could be contained below 2C ― with 10 the most confident ― Rockström responded: “From a scientific perspective, I am on a 7 or an 8. There is a 70-80 percent chance that we could steer ourselves back to a safe operating space on earth, based on the fact that the planet is still resilient and we haven’t touched the tipping point buttons yet. But on the ‘will we do it?’ ranking, I become much less optimistic and fall down to a 6.”

#### And, Kassie Siegel corroborates this in 2012 when she finds that:

Kassie Siegel, 9-4-2012, "3 Ways Arctic Meltdown Threatens the Whole World," HuffPost, https://www.huffingtonpost.com/kassie-siegel/arctic-melt\_b\_1855204.html, Date Accessed 8-30-2018 // JM

This is how an ecosystem dies. The extent of summer sea ice across the Arctic recently reached the lowest point on record, according to satellite measurements from the National Snow and Ice Data Center. If the polar meltdown continues at this pace, some experts say, the Arctic sea could be ice-free for a day or more by 2020. For polar bears and many other amazing Arctic animals, this is the beginning of the end. They depend on sea ice for survival. If we allow the ice to vanish, they will go with it. But as devastating as those extinctions will be, the consequences won’t stop there. The death of the Arctic is likely to affect you personally — whoever you are and wherever you live. That’s because, while Arctic sea ice is a victim of global warming, it’s also one of the planet’s most important defenses against the climate change that results from pumping more than 30 gigatons of man-made carbon dioxide pollution into the atmosphere every year. And that defense is about to fail. The exact consequences are hard to predict. But here are three possible outcomes that could wreak havoc from Boston to Bangladesh: 1. More extreme weather. Call it the Earth’s air conditioning. Or the planet’s sun hat. Whatever metaphor you use, Arctic sea ice plays a critical role in regulating the world’s climate and ocean by reflecting most of the sun’s energy back into space and keeping the polar region cool. As the ice pack melts, more of the sun’s energy is absorbed by the underlying seawater, spurring the Arctic to heat up at an ever-faster pace. Recent studies (like this one and this one) have linked melting sea ice and accelerating Arctic warming to changes in the jet stream that increase the frequency of extreme weather events in the United States and other mid-latitude regions of the Northern Hemisphere. That means more droughts, more floods, more heat waves and more extreme snow events. The United States has already suffered an onslaught of recent weather weirdness - including a devastating drought that has destroyed thousands of acres of crops - attributed by prominent scientists to climate change. As the Arctic melts and the jet stream changes, we can expect more and worse. The harm to our economy, our infrastructure and even our personal safety will be severe. And because North America is a breadbasket to the world, our rising risk of crop failures will have global consequences. 2. Massive new oil and gas drilling. Until now, the Arctic Ocean has mostly been off limits to offshore drilling. But in a dire sign of what’s to come, the Obama administration just gave initial approval to Shell Oil’s plans to begin controversial and dangerous oil drilling in Arctic waters near Alaska. The Arctic contains massive oil and gas deposits. As the sea ice melts, more and more will become accessible to oil companies around the world. That’s especially disturbing because carbon dioxide levels over the Arctic recently reached 400 parts per million (or ppm). For perspective, consider that scientists say we need to reduce atmospheric carbon levels to 350 ppm to avoid catastrophic climate change. That requires transitioning quickly to clean energy sources - not rushing to extract every last drop of carbon-rich fossil fuel buried in the dying Arctic. 3. Unleash the clathrates! They lie deep beneath the surface of the Arctic Ocean — small, icy structures called “clathrates” that collectively contain a huge volume of methane, an incredibly potent greenhouse gas. That methane is safely caged — for now. But as the Arctic sea ice melts, the ocean warms. And eventually that warming will release the methane. A related danger: As the Arctic warms, we may see massive permafrost melt leading to releases of huge amounts of methane and carbon dioxide. How quickly these vicious “climate feedbacks” will develop is no easy thing to predict. But methane is already being emitted from thousands of sites in the Arctic, according to research published earlier this year in the journal Nature Geoscience. And a new study in Nature finds there may be far more carbon escaping from permafrost in Arctic Siberia than previously thought. Such methane releases have been linked to massive climate changes in the earth’s past. These “climate bombs” have the potential to trigger runaway climate change. Their fuses may be long or short. But by melting the Arctic sea ice, we are launching a high-stakes climate experiment. The results could be devastating. A Wake-up Call None of this is inevitable. This year’s unprecedented sea ice decline could be the wake-up call our society badly needs. Despite the posturing and inaction of politicians, Americans realize that climate change is a growing threat. But we need to help our leaders understand that it’s time to move from debating the climate crisis to doing something about it. We should demand, for example, that the Environmental Protection Agency move much more quickly to use the Clean Air Act to cut greenhouse gas pollution. We have to act fast. If we don’t, we’ll have even more to mourn than the death of the Arctic.