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May 2022

# America Runs on Oil,

# But Should It?

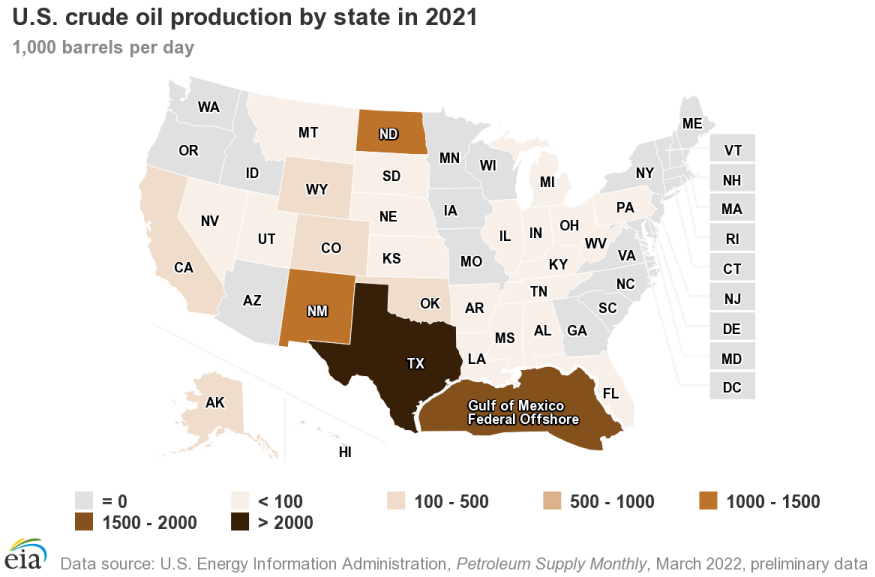
People have been positively or negatively affected by oil fields since the 1860s. Economically, oil fields have been booming, with governments ready to invest, and businesses ready to expand their market—all while making large profits. With the impact of global warming, researchers and activists are reconsidering the effect of oil fields. Recently, activists have been speaking up against oil fields and their companies, hoping to protect our planet from further harm. However, crude oil is used in almost everything around us, "we use [it to fuel] airplanes, cars, and trucks; to heat homes; and to make products such as medicines and plastics."[1] Oil plays a huge part in our lives, and affects our environment and biotic life.

Oil fields are regions of land or water where an abundance of petroleum extracting wells are established to extract the natural gases beneath its surface. Oil spills are a form of pollution where liquid petroleum hydrocarbons are released into an environment, usually during an accident of a truck or vehicle which was transporting crude oil. The first oil spill occured on December 15, 1976, near Nantucket Shoals in Massachusetts, where a tanker called the *Argo Merchant* spilled 7.7 million gallons of heavy fuel oil as it ran aground.[2] With more

[1] US Energy Information Administration. "Oil and petroleum products explained Oil and the environment." *EIA*, https://www.eia.gov/energyexplained/oil-and-petroleum-products/oil-and-the-environment.php.

[2] National Oceanic and Atmospheric Administration. "History of Oil Spill Response at NOAA." *History of Oil Spill Response at NOAA | National Oceanic and Atmospheric Administration*, 2020, https://www.noaa.gov/heritage/stories/history-of-oil-spill-response-at-noaa. p. 1.

cost-effective drilling technology, more than 65,000 oil fields of all different sizes have been established and approximately 1.3 million gallons of petroleum is being spilled annually. These oil fields and their spills impact the environment, humans, and climate change.




The Cambo Oil Field is a field north of the Shetland Islands in Scotland. Cambo was owned by an oil company, Royal Dutch Shell, and a private equity company, Siccar Point Energy. Siccar Point Energy is a company controlled by "two private equity backers, Bluewater and Blackstone. [Their] strategy is to accumulate stakes in low-cost, long-life oil and gas fields in the UK with a view to bringing them into production this decade."[3] One example of this is the Cambo oil field. The UK government had been set to authorize the construction of the Cambo oil field,[4] until European activists began protesting against its approval. Siccar Point and Royal Dutch Shell expected the Cambo field to operate until 2050, "the date by which our government has said the UK would reach 'net zero' (this is when the amount of greenhouse gas produced is equal to the amount removed from the atmosphere)."[5] Additionally, two previously approved oil and gas projects, Rosebank and Tolmount East, would produce "an additional 500 million barrels of oil.

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[3] Bridge, Gavin, et al. "Why Shell pulled out of the Cambo oilfield." *The Conversation*, 7 December 2021, https://theconversation.com/why-shell-pulled-out-of-the-cambo-oilfield-173183. par. 5

[4] #StopCambo. "Stop Cambo." *Stop the Cambo oil field*, https://www.stopcambo.org.uk/. Accessed 15 May 2022.

[5] #StopCambo par. 5

In total, the 18 new projects in the pipeline have the potential to extract more than 1.7 billion barrels of oil."[6] The United Kingdom government passed a law in June of 2019 saying, as a country, will "end its contribution to global warming by 2050."[7] The UK must reduce all their greenhouse gas emissions completely by 2050 and has already reduced their emissions by 42%. Despite having a net zero emissions law, an oil field was proposed to the UK government.

Activists started a petition urging the UK Prime Minister to reject the Cambo Oil field proposal. The Cambo oil field plans also "contradict the International Energy Agency's (IEA) advice that there should be no new fossil fuel development."[8] This petition was signed by 80,000 people and 77 organizations[9] and sent to the United Kingdom's Prime Minister Boris Johnson, who said in an interview that he was originally unaware of the Cambo Oil Field plans. Due to the uprising, Cambo's owner, Shell, pulled out of the project. In their annual company's report, Shell said they have concluded the "economic case for investment in Cambo, considering also the potential for delays, was not strong enough to proceed."[10]

Oil and gas operations cause the release of harmful pollutants into the air and the discharge of toxic chemicals into water bodies, "thereby degrading the clean air and water that polar bears, whales, walrus—and humans—depend on for survival."[11] Oil and gas companies use

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[6] #StopCambo

[7] GOV.UK. "UK becomes first major economy to pass net zero emissions law." *GOV.UK*, 27 June 2019, https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law. par. 1

[8] Friends of the Earth Scotland. "Boris Johnson 'not aware' of Cambo oil plans. He is now!" *Friends of the Earth Scotland*, 5 August 2021, https://foe.scot/press-release/boris-johnson-cambo-oil-field/. par. 5

[9] Friends of the Earth Scotland par. 7

[10] Mehta, Amar. "Shell reportedly reconsidering decision to pull out of controversial Cambo oilfield development." *Sky News*, 22 March 2022, https://news.sky.com/story/shell-reportedly-reconsidering-decision-to-pull-out-of-controversial-cambo-oilfield-development-12572492.

[11] World Wildlife Fund. "Oil and Gas Development." WWF, *World Wildlife Fund*, No Date https://www.worldwildlife.org/threats/oil-and-gas-development. p. 1.

machines, like an air gun, which create seismic sounds that can be deafening, and life threatening for marine species—whales and other animals use seismic sounds to find food, find mates and navigate in dark waters.[12] "Facilities built by oil companies as support infrastructure" are often built in animals' habitats and can "interfere with the movement of migratory animals."[13] Oil spills can also harm marine life by polluting the water with oil. Sea animals that regularly travel through a body of water, would be endangered while swimming through the oil polluted water. Some marine animals, like dolphins and whales might inhale the oil, affecting their "lungs, immune function and reproduction. Many birds and animals also ingest oil when they try to clean themselves, which can poison them."[14] Research has shown that fish eggs were wiped out completely during an oil spill and fish were getting killed by petroleum products.[15] If not monitored properly, oil in the water can make seafood dangerous for human consumption.[16] Oil also destroys the "insulating ability of fur-bearing mammals, such as sea otters, and the water repellency of a bird's feathers, thus exposing these creatures to the harsh elements."[17] Without their fur, these animals will die of hypothermia in the cold waters.

[12] WWF p. 1
[13] WWF p. 1
[14] National Ocean Service. "How does oil impact marine life?" *National Ocean Service*, 26 February 2021, https://oceanservice.noaa.gov/facts/oilimpacts.html. par. 2
[15] Matkin, Craig. "How Oil Spills Affect Fish and Whales." *NOAA's Office of Response and Restoration*, https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/how-oil-spills-affect-fish-and-whales.html. par. 4
[16] National Ocean Service. par. 3
[17] National Ocean Service. par. 1

Aside from animals, local communities are affected by oil facilities as well. Many small communities' main source of economy is tourism and outdoor recreation.[18] The tourists—hunters, vacationing families, hikers, etc.—do not expect to see oil tanks and noisy machinery when travelling.[19] According to the National Park Service, "237 million park visitors spent an estimated $14.5 billion" which supported over 234 thousand jobs.[20] The visitors' money also gave the workers "$9.7 billion in labor income … and $28.6 billion in economic output in the national economy."[21]

The impacts of oil and gas can also be looked at from a toxicologic perspective. Toxicology is the study of the detection and effects of poisons. The oil industry contains a variety of facilities and equipment which are a significant source of methane emissions. Methane is a potent greenhouse gas, contributing to 25% to 40%[22] of global warming and having a global warming potential 20 times more than carbon dioxide. Abandoned gas facilities across the United States also continue to leak methane gases. A study conducted by Stanford researchers recorded the emission of companies when they first explored a potential oil site and when they began transporting crude oil to refineries.[23] The recorded emissions accounted for approximately 98 percent of global production, which is "the most comprehensive assessment to date of carbon

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[18] Wilderness Society. "7 ways oil and gas drilling is bad for the environment." *The Wilderness Society*, 9 July 2021, https://www.wilderness.org/articles/blog/7-ways-oil-and-gas-drilling-bad-environment. par. 15

[19] Idib para15

[20] National Park Service. "Visitor Spending Effects - Economic Contributions of National Park Visitor Spending - Social Science (US National Park Service)." *National Park Service*, 25 April 2018, https://www.nps.gov/subjects/socialscience/vse.htm.

[21] National Park Service. par. 2

[22] Kann, Drew. "Oil and gas production is contributing even more to global warming than was thought, study finds." *CNN*, 19 February 2020, https://www.cnn.com/2020/02/19/world/methane-emissions-humans-fossil-fuels-underestimated-climate-change/index.html.

[23] Garthwaite, Josie. "Measuring crude oil's carbon footprint | Stanford News." *Stanford News*, 30 August 2018, https://news.stanford.edu/2018/08/30/measuring-crude-oils-carbon-footprint/.

intensity and pollution by oil fields."[24] However, the total emissions may be higher than the calculations because the current technology used for the analyses are not advanced enough to detect methane leaks.[25] The oil industry is also one of the largest industrial sources of volatile organic compounds (VOC) emissions; volatile organic compounds are a group of chemicals which contribute to the formation of ground-level ozone.[26] These VOC emissions are a major factor of the release of air toxics[27], which, if exposed to, could "[aggravate] asthma, [increase] emergency room visits and hospital admissions, and premature death."[28] These toxins can also negatively affect the health of living beings, specifically female reproductive health. Dr. Richard Judson is a researcher at the United States Environmental Protection Agency's Center for Computational Toxicology and Exposure. Dr. Judson has a BA in Chemistry and Chemical Physics from Rice university and a MA and PhD in Chemistry from Princeton University. At the EPA, Dr. Judson and his team develop "computer models, databases and web-based dashboards to help predict toxicological effects of environmental chemicals."[29] Dr. Judsons works to select the proper dispersants[30] to use for the needed oil spill. Dr. Judsons says that some of these

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[24] Garthwaite par. 3
[25] Garthwaite par. 4
[26] United States Environmental Protection Agency. "Basic Information about Oil and Natural Gas Air Pollution Standards | US EPA." *US Environmental Protection Agency*, 6 October 2021, https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/basic-information-about-oil-and-natural-gas. Accessed 20 May 2022.
[27] Air toxics are harmful pollutants which are known, or suspected, to cause cancer and other dangerous health effects.
[28] United States Environmental Protection Agency. "Basic Information about Oil and Natural Gas Air Pollution Standards | US EPA." *US Environmental Protection Agency*, 6 October 2021, https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/basic-information-about-oil-and-natural-gas. Accessed 20 May 2022.
[29] https://www.epa.gov/rtp-speakers-bureau/forms/richard-judson-phd P1
[30] "Dispersants are chemical agents … that help break up an oil slick into very small droplets, which dilute throughout the water." Oil Spill Prevention and Response. "Dispersants." *Oil Spill Prevention and Response*, https://oilspillprevention.org/oil-spill-cleanup/oil-spill-cleanup-toolkit/dispersants. Accessed 25 May 2022.

dispersants that are being used to clean up oil spills, are potentially estrogenic. Some dispersants contain a compound called nonylphenol, whose molecular bonds can be broken to result in a molecule similar to an estrogen molecule.[31] Until recently there were no tests to verify whether a dispersant contains nonylphenol or not. When an animal is exposed to a nonylphenol dispersant at the wrong time, there is a possibility of intersex.[32] This can lead to infertility and reproductive transact cancers.[33]

Across the United States itself, there are about 1.2 million oil and gas production facilities located within a half mile radius of citizens' communities.[34] These people are "exposed to pollutants on a daily basis", which can eventually lead to "respiratory, cardiovascular and other diseases and is responsible for more than 13 percent of deaths in people aged 14 and older in the United States." [35] These communities can also experience a leak of toxic substances, from the oil and gas facilities, in their soil or drinking water sources—the substances can cause liver damage, cancer, and birth defects.[36] Studies show that redlining plays a major role in the location of the oil and gas facilities—with Black and Latino communities having twice the amount of oil drilling wells as compared to White communities. A study by scientists at the University of California at Berkeley and Columbia University in New York shows that "Black and Latino Americans live with more smog" and are four times more likely to die from exposure to

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[31] Mississippi-Alabama Sea Grant. *Richard Judson, PhD. Analysis of eight oil spill dispersants for cell toxicity and estrogen activity. Youtube*, https://www.youtube.com/watch?v=CZpsdWcYwcA.

[32] Intersex is the term to refer to organisms who have neither a male or female reproductive system.

[33]"Richard Judson, PhD. Analysis of eight oil spill dispersants for cell toxicity and estrogen activity." *YouTube*, uploaded by Mississippi-Alabama Sea Grant, 28 Aug. 2020, https://www.youtube.com/watch?v=CZpsdWcYwcA.

[34] Wilderness Society. "7 ways oil and gas drilling is bad for the environment." *The Wilderness Society*, 9 July 2021, https://www.wilderness.org/articles/blog/7-ways-oil-and-gas-drilling-bad-environment. par. 5

[35] Idib paragraph 6

[36] Idib paragraph 6

pollution than White people.[37] Since redlining began in the late 1930s by the Home Owners' Loan Corp., businesses have been working alongside local zoning officials to decide the locations of "polluting operations such as industrial plants, major roadways and shipping ports in and around neighborhoods that the federal government marginalized."[38] A study by researchers at Columbia University, UC Berkeley, and University of San Francisco states that, in a neighborhood, "the number and density of oil and gas wells were linked to the HOLC score."[39] With these unjust housing policies and practices by businesses and the HOLC, communities of color are "disproportionately exposed to pollution and … resulting [in] poor health outcomes"[40] and have poorly built communities that are "more susceptible to extreme weather events."[41] In Texas, an analysis conducted by the Associated Press showed that there was a larger density of Total Energies' wells in neighborhoods of color, with oil wells a few hundred feet from homes. Longxiang Li, a postdoctoral researcher at Harvard School of Public Health, said to Los Angeles times that this analysis shows a "moderately strong connection between redlining and well location, and strengthens evidence that disadvantaged communities have fewer legal resources to defend themselves against drilling expansion."[42]

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[37] Washington post article p. 1
[38] Idib p. 3
[39] Columbia University. "Historically Redlined Neighborhoods Burdened by Excess Oil and Gas Wells | Columbia Public Health." *Columbia University's Mailman School of Public Health*, 13 April 2022, https://www.publichealth.columbia.edu/public-health-now/news/historically-redlined-neighborhoods-burdened-excess-oil-and-gas-wells.
[40] Washington post article p2
[41] Wilderness Society. "7 ways oil and gas drilling is bad for the environment." The Wilderness Society, 9 July 2021, https://www.wilderness.org/articles/blog/7-ways-oil-and-gas-drilling-bad-environment. par. 10
[42] Webber, Tammy. "Redlining tied to more oil, gas wells in urban areas, according to study." *Los Angeles Times*, 22 April 2022, https://www.latimes.com/world-nation/story/2022-04-22/redlining-tied-to-more-oil-gas-wells-in-urban-areas-according-to-study.

The government and private oil businesses play a major role in the advertising of crude oil and supplying consumers. In the United States, companies can construct and use oil drilling facilities on public and private land, and offshore waters. These companies are usually independent producers and mainly operate in the United States. The National Oil Companies (NOCs) are oil and gas companies which are mainly owned by the government.[43] The NOCs operate as an extension of a nation's government, provide financial support, and can sometimes provide "strategic support."[44] NOCs are not necessarily market-oriented because of their "diverse objectives of their supporting governments"[45] and provide fuels to their domestic consumers with a lower price than their international market. These companies focus on strengthening their government's domestic or foreign policies, "employing citizens,… generating long-term revenue to pay for government programs, and supplying inexpensive domestic energy." NOCs are also members of the Organization of the Petroleum Exporting Countries. At the beginning of 2020, OPEC members "held about 71% of the world's total proved crude oil reserves, and the OPEC members in 2020 accounted for about 36% of total world crude oil production."[46] Each country that is a part of OPEC has at least one NOC, and some countries allow International Oil Companies to operate within its borders. There are oil and gas companies referred to as major oil companies, which have thousands of their employees spread out across the world: International Oil Companies (IOCs). International Oil Companies (IOCs)—which include ExxonMobil, Royal Dutch Shell, and BP—are entirely owned and controlled by investors. IOCs generally try to develop and produce oil quickly in order to sell their product on the global market. Unlike

[43] US Energy Information Administration. "Oil and petroleum products explained: Where our oil comes from." *EIA*, 7 April 2022, https://www.eia.gov/energyexplained/oil-and-petroleum-products/where-our-oil-comes-from.php . par. 10

[44] Idib par. 10

[45] Idib par. 10

[46] Idib par. 12

NOCs, these international companies are solely focused on increasing value for their shareholders and gravitate toward making decisions based on economic profit.[47]

The oil and gas industry is one of the largest prospering businesses in the world. Oil fields provide humans with petroleum products that we use in our everyday lives. We drive on roads made from asphalt. We travel in vehicles which require gasoline to run. We stay warm in our homes with oil-heaters. But at what cost? Oil fields are damaging natural habitats and human health. Toxins from oil spills are contributing to global warming, harming the health of millions of organisms including ourselves. The Cambo oil field proposal was rejected. A single oil field's development has been stopped. But just how many more fields must be taken care of, before the damage to our planet becomes irreversible?

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[47]Idib par. 9

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