Oil drilling, possible fracking planned for Okavango region—elephants' last stronghold

Hundreds of oil wells could come to cover a huge expanse in Namibia and Botswana, in what has been called possibly the "largest oil play of the decade."

Seen from space, fingers of green define Botswana's Okavango Delta. This approximately 7,000-square-mile wetland amid the Kalahari Desert is fed by rains in Angola's highlands

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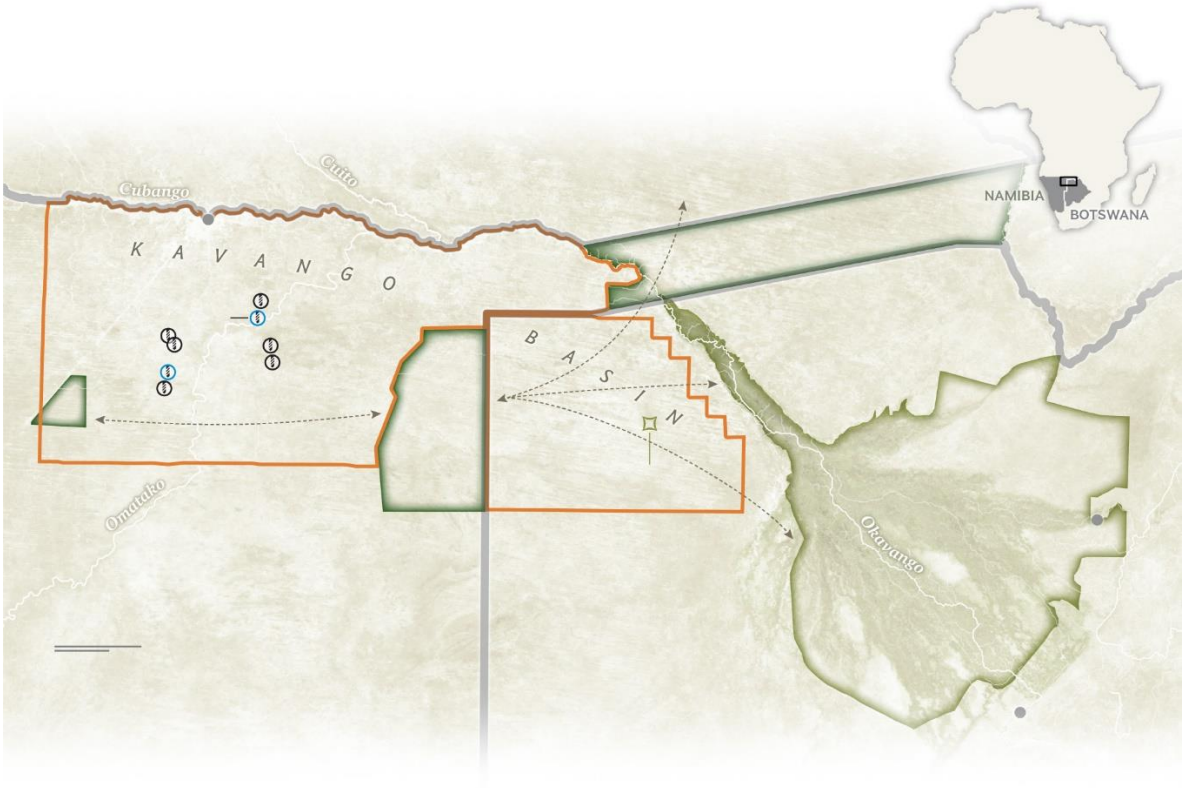
JOHANNESBURG, SOUTH AFRICA Conservationists and community leaders in the spectacular Okavango wilderness region of Namibia and Botswana are raising alarms over oil and gas exploration and potential production that they fear would threaten the water resources of thousands of people and endangered wildlife.

ReconAfrica, a petroleum exploration company headquartered in Canada, has licensed more than 13,600 square miles of land in the two countries. The home page of the company's website says its intention is to open "a new, deep sedimentary basin"—in other words, a new oil and gas field. The Kavango Basin, as the area is known to geologists, is larger than the country of Belgium, and ReconAfrica says it could hold up to 31 billion barrels of crude oil—more than the United States would use in four years if consumption remained the same as in 2019. It's possibly the world's "largest oil play of the decade," Oilprice.com, an energy news site, said in September.

ReconAfrica's initial goal, already approved by the Namibian government, is to drill test wells roughly one and a half miles deep in the country's northeast starting in December 2020 to determine the presence of exploitable oil and gas. Experts who have reviewed the Namibian environmental impact assessment for the test wells point to serious problems in the way it was carried out. Meanwhile, approval for a drilling permit in the licensed area in Botswana is under way.



Licenses allow for oil and gas exploration in Namibia and Botswana. ReconAfrica believes that a formation known as the Kavango Basin holds significant amounts of oil and gas. Drilling of two test wells in Namibia is set to begin in December. The company's licensed region, which covers more than 13,600 square miles, is home to some 200,000 people and abundant wildlife, including important migratory routes for the world's largest

If ReconAfrica finds oil, a February investor presentation says, then the ultimate goal is to drill “hundreds of wells” in the area and open at least some of them using “modern frac stimulations,” a reference to fracking, the controversial practice where underground shale is injected with high-pressure fluid to crack open the rock and release oil and gas.

The threat from oil drilling to one of the planet’s most diverse ecosystems and to more than 200,000 people who live in this desert region “boggles the mind,” said Willem Odendaal, the former land, environment, and development project coordinator at Namibia’s Legal Assistance Centre, a public interest law firm based in the capital, Windhoek. ReconAfrica’s drilling areas overlap with a multicountry conservation park, six locally managed wildlife reserves, and one UNESCO World Heritage site (and could affect another, the Okavango Delta, nearby). The Okavango region is home to the largest herd of African elephants left on Earth and myriad other animals—African wild dogs, lions, leopards, giraffes, amphibians and reptiles, birds—and rare flora.

Oil and gas infrastructure involves “the construction of roads, pipelines, and buildings” that “could all negatively affect important animal habitat, migratory pathways, and biodiversity,” according to the World Wildlife Fund. Fracking in particular is of ecological concern because it requires large amounts of water and has been known to cause earthquakes, pollute water, release greenhouse gases, and lead to cancers and birth defects, among other problems. Physicians for Social Responsibility, a nonprofit U.S. organization working for a cleaner environment, reports that fracking for oil and gas can be disastrous for wildlife because it can poison the food chain, destroy habitat, and cause mass die-offs of fish and other aquatic species. Nonetheless, the process is often used in shale formations containing hydrocarbons because it’s an effective way to wring more oil and gas from rocks.

In response to questions from National Geographic about potential harm from drilling, ReconAfrica’s spokesperson Claire Preece said, “ReconAfrica will ensure that there is no environmental impact from these wells. Specific steps are taken that are part of our plans and verified by environmental auditors and technical specialists. ReconAfrica follows Namibian regulations and policies as well as international best practices.”

Odendaal said the Kavango Basin license has come as a surprise to many people who would have expected to be aware of it. “I didn’t know about this,” he said, “nor saw this coming.”

Even many who live in the affected region were unaware. “I didn’t know there is some company that will come to drill the oil,” said Jacob Hamutenya, chairperson of George Mukoya Conservancy, which is about 50 miles from one of the test well sites. The conservancy makes money through sustainable hunting and as a destination for wildlife-watching visitors. “Our income is coming from wildlife and tourists, but if that oil industry comes, it will destroy everything,” Hamutenya said, perusing a map of the locations of the test wells.

Namibia’s Ministry of Mines and Energy, however, is emphasizing the potential positive effects. The ministry did not answer questions from National Geographic but said in a press release on September 18 that “the socioeconomic impacts of exploratory drilling will result in the employment of locals” and many other benefits, such as new water wells for communities near the proposed drill sites. The Namibian government holds a 10 percent stake in ReconAfrica’s oil and gas development, but it is not yet clear what that share represents or what it will amount to.

ReconAfrica says it aims to strike a deal with major oil and gas companies if the Namibian test wells prove productive. “We can sit down with Exxon, Total, et cetera, because this is a majors-sized play,” said Craig Steinke, ReconAfrica’s founder and largest shareholder, in a July 13 interview. “We’re confident we’ll be able to cut a deal with them.”

Life-giving water

Emerging on the edge of the Kalahari Desert, water shimmers like a mirage in the Okavango Delta. This approximately 7,000-square-mile wetland lies east and southeast of ReconAfrica's licensed area. It's one of the largest inland deltas in the world—a virtually pristine wilderness where antelope splash through grassy floodplains, zebras emerge from mopane woodlands, and elephants plod across shallow channels. More than two trillion gallons of water flow in each year to create a shifting, verdant patchwork of islands, channels, and lagoons.

"Clean water: That is the oil and the gold," David Quammen wrote in a 2017 *National Geographic* magazine story documenting the Okavango Wilderness Project, an initiative supported by the nonprofit National Geographic Society in partnership with other nonprofits and the Namibian government. The project has undertaken scientific expeditions to document biodiversity and human presence in the region, amassing a mountain of data intended to demonstrate why this globally vital region, with its all-important natural water supply, should have the highest level of protection. Take away that water, "and the Okavango Delta would cease to exist. It would become something else, and that something would not include hippos, sitatungas, or African fish eagles," he wrote.

This desert oasis is so extraordinary—and fragile—that in 2014, UNESCO added it to its list of World Heritage sites. The delta is also sheltered by Ramsar, an international treaty to protect wetlands whose signatories include Namibia and Botswana. The Okavango Delta is recognized by an act of the U.S. Congress and various other treaties.

Most of the delta's water originates as seasonal rain in Angola's forested central highlands, flows into the Okavango River, and snakes in a three-month journey across the Caprivi Strip before spreading out like a many-fingered hand in the northwestern corner of Botswana. ReconAfrica's licensed exploration area abuts the main river that feeds the Okavango Delta for some 170 miles. Few other water sources are available during the long dry season here.

"It's that pulsing every year that I liken to a heartbeat," said Anthony Turton, a professor at the University of the Free State in South Africa's Centre for Environmental Management who specializes in water resource management.

At present, few fences section off the Okavango wilderness, so as the waters return every year, eland scatter into surrounding areas to find good fodder, and as the antelope disperse, predators—including packs of wild dogs, prides of lions, and solitary leopards and cheetahs—follow them. Wild animals use the entire region, which is why Angola, Botswana, Namibia, Zambia, and Zimbabwe have created the Kavango-Zambezi Transfrontier Conservation Area, or KAZA for short. Bigger than Italy, it's the largest conservation area on the continent. ReconAfrica's licensed areas overlap with this huge international park.

ReconAfrica's prospecting and exploration license in Botswana also encompasses the Tsodilo Hills, a World Heritage site that UNESCO has called the "Louvre of the desert"—a repository for more than 4,500 rock paintings, some dating back 1,200 years, created by the Indigenous San. San people from the Khwe and Ju/'hoansi communities in Namibia and Botswana revere this sacred place.

An influx of oil workers into this remote landscape—and the money, roads, alcohol, and pollution they'd bring—would jeopardize the traditional way of life of the San, said Jennifer Hays, a professor of social anthropology at the Arctic University of Norway. Hays has worked closely with San communities in the region for more than 20 years.

Mixed messages

Some facts about ReconAfrica's project remain murky, but important details are coming to light.

Multiple statements by ReconAfrica officials, as well as technical studies such as the company's May 2020 Kavango Basin Research Report and investor presentations, reinforce the probability that exploration would involve fracking. Members of ReconAfrica's Kavango Basin senior team include fracking experts. Scot Evans, ReconAfrica's CEO, is a former Halliburton vice president with decades of technical and operational experience fracking shale oil in the U.S., and Nick Steinsberger, the senior vice president for drilling and completions, is often referred to as one of the fathers of fracking for his promotion of the use of high-pressure water mixed with chemicals to crack open the rocks.

In a February 2020 financial investment podcast interview, Evans said, "We think this unconventional play has a really high chance of success." In standard industry parlance, "unconventional" signals that "a combination of horizontal drilling and hydraulic fracturing" is often needed.

ReconAfrica spokesperson Claire Preece noted that "fracking is an oil or gas production method in unconventional reservoirs" in her October 21 reply to questions from National Geographic. At the same time, she reiterated that fracking isn't applicable to ReconAfrica's exploration license and insisted that the company was focused on "hydrocarbons in conventional reservoirs" that don't need to be fracked.

The Namibian government says it has not given permission for ReconAfrica to frack. It says that ReconAfrica has a permit to drill two initial test wells but that no onshore oil production license has been granted.

Yet in the "operations section" of ReconAfrica's website, the company says it's entitled to a 25-year production license. Although ReconAfrica says that fracking is not part of its

exploratory drilling plan, the company's investor presentation says that the vision, if oil is found, is to open a huge new oil and gas field, which likely would involve fracking. Spokesperson Claire Preece, however, told National Geographic the company intends to focus on oil from conventional reservoirs, which don't require fracking.

The possibility of earthquakes from fracking is a serious concern to Turton. He worries that because this area is so geologically active, seismic jolting could disrupt the flow of the Okavango River, the lifeblood of the region's people and wildlife. "The strategic question that arises," he said, "is whether the potential benefits of [petroleum] outweigh the potential cost of alteration to the only permanent flowing surface water" in the region.

In a report on fracking, the Transnational Institute, an international research and advocacy group based in the Netherlands, raises concerns about loss of community control of land and water where fracking occurs, "especially through water diversion, depletion, and contamination."

"This is one of the worst forms of land theft and neocolonial resource extraction," said Annette Hübschle, a Namibian-raised environmental social scientist and senior research fellow with the Global Risk Governance Programme at the University of Cape Town, in South Africa. After examining ReconAfrica's September 2019 investor proposal describing drilling, possible fracking, and the digging of hundreds of wells in the area, she said that "either the Namibian government didn't read the fine print or it is in denial as to what it signed off on."

Neither Namibia's mining nor environment ministries responded to questions about ReconAfrica's long-term plans. Botswana's environment ministry did not respond to questions either.

Impact assessment violations

Industry experts, community groups, and environmental activists have expressed concern that ReconAfrica's plans for its test wells have not been properly vetted through Namibia's environmental review process. National Geographic asked three independent experts to evaluate ReconAfrica's environmental impact assessment (EIA) for its operations in Namibia.

The experts pointed to the lack of physical assessments of fauna and flora and to the possible effects on local communities and other people, on archaeological sites, and on groundwater and surface water. They said that the assessment, consisting only of desktop studies without any fieldwork, is not sufficient to justify the proposed drilling. (The studies and other documents were not made available to National Geographic by either the government or the company, despite requests.)

Namibian law provides for a powerful environmental safeguard, which allows any person, organization, or agency to be an active part of the review process for projects such as this by becoming registered as interested and affected parties; the interested parties are then supposed to be informed and consulted as the review proceeds. This legal protection for the environment and communities apparently was not fulfilled by Sindila Mwiya, the private environmental assessment practitioner in charge of ReconAfrica's environmental impact assessment.

In an email on October 12 to Annette Hübschle and others who had requested the list of interested and affected parties, copied to National Geographic, Mwiya admitted that he had not followed the legally required process for registering interested and affected parties.

Namibia's Environmental Management Act stipulates that an assessment be done "in an objective manner." Throughout the EIA, Mwiya highlights the benefits of the project, and he encouraged the government to approve it.

ReconAfrica's assessment "does not meet with the standards of comprehensive unbiased and scientific investigation required," said Jan Arkert, a consulting engineering geologist who's based in Uniondale, South Africa, and has worked for decades on drilling-related projects.

"It is shocking that this EIA was authorized at all," said Avena Jacklin, a former environmental consultant in the mining sector. She confirmed that the assessment didn't include interested and affected parties and "left out key assessments and specialist studies…and has not identified alternatives to fracking," such as solar and wind power. "None of this has been laid out in the EIA."

Arkert said the pits to store drilling mud and water described in the assessment are so big that ReconAfrica's plans for its test wells already may include fracking and may not have been fully disclosed to the Namibian government. (ReconAfrica denies that it plans to use fracking during the exploratory phase, and the Namibian government did not respond to questions about potential fracking plans.)

Whatever ReconAfrica's intentions, its test wells will require large quantities of water. They'll also produce large volumes of "cuttings"—polluted rock removed from the drill hole. ReconAfrica's assessment says the source for the water will be the Omatako River, which flows underground most of the time. Jacklin and Arkert, two of the independent experts who reviewed the environmental impact assessment for National Geographic, said details about water needs for the test wells, which should be addressed, are neglected in the EIA. That includes the volumes of water needed, the number of boreholes, where the water will be taken from the Omatako, how the extraction of water could affect nearby water wells or surrounding communities, and the disposal and treatment of wastewater from drilling.

The assessment acknowledges, however, that ephemeral rivers are of "special ecological importance in Namibia due to [their] biotic richness, large mammals, high value for human subsistence and tourism."

ReconAfrica's Preece said the company "will be drilling a water well, then turning it over to the local community" and "will work with them to provide ongoing sustainable opportunities" for making money.

Preece said ReconAfrica is undertaking "exploration, as indicated in the EIA, and if further exploration activities are required, subsequent EIA studies will be undertaken as per the Namibian national legislation and regulations encompassing issues related to water and all other environmental components." According to the Namibian government, ReconAfrica would need another environmental impact assessment in order to begin fracking for production.

In response to questions about other environmental effects of test wells, Preece said, "Drilling fluids will be reused" and "disposed of safely off-site," and cuttings "will be managed in lined pits, cleaned, and disposed of off-site," according to company and regulatory requirements.

National Geographic repeatedly asked Timoteus Mufeti, Namibia's environmental commissioner, why the environmental impact assessment didn't disclose water use by the test drilling, and to comment on problems the drilling could cause for local people and the environment. He eventually said he was too busy to talk but that we could come to his office in Windhoek to review the environmental impact assessment and all supporting documentation we'd requested. We asked Shinovene Immanuel, a local journalist, to take up the offer, but when Immanuel got to the office, he was given just a copy of the assessment itself without any supporting documentation.

Implications for communities and wildlife

"People in the area get their water from hand-dug wells and small hand pumps, Arkert said. "What happens if the company drops the groundwater table and people who live there can no longer access the water they have relied upon for generations?"

The U.S. Environmental Protection Agency estimates that it takes about 1.5 million gallons of water to frack a single oil and gas well. A water tanker that holds 3,000 gallons would have to make 500 journeys for each well. ReconAfrica has said it ultimately hopes to drill hundreds of wells in the Kavango Basin.

Community organizer Diphetogo Anita Lekgowa, an Indigenous leader from the small settlement of Khwai in the Okavango Delta, found out about ReconAfrica's plans only about a month ago. Since then, she's been talking to members of her community as well as other local

and regional leaders about the project and its ramifications for those who depend on the delta for their food and water.

She's worried.

Lekgowa said that no one has told her anything about ReconAfrica's plans for water use, and she wonders what her community will do if the delta's waters aren't protected from possible contamination by oil and gas exploitation upstream. "We get fish and fruits from the river, so if this drilling pollutes the river, this is not going to benefit us—it is going to kill us."

According to the UN, Namibia cannot feed itself. Its farms support only about 70 percent of its people, and the lands under ReconAfrica's drilling license have more than 600 working farms, some irrigated with water from the Okavango River. Drilling here could further imperil this precarious food supply.

"What will happen when our water gets contaminated?" wondered Ina-Maria Shikongo, the main coordinator of the Namibian chapter of Fridays for Future, a global climate youth movement inspired by the Swedish activist Greta Thunberg. For Shikongo, it's not a question of whether water will be fouled, but when. "What will the neighboring countries do when their livelihoods are impacted because of a choice Namibia made for them?" she asked.

According to the International Union for Conservation of Nature (IUCN), the organization that keeps a record of Earth's dwindling species, ReconAfrica's license encompasses the territories of seven endangered animal species, among them the gray crowned crane and the African wild dog, and four critically endangered animals, including the black rhinoceros and white-backed vulture. It's also home to 20 other species listed as "vulnerable," including Temminck's pangolin and the martial eagle.

ReconAfrica's environmental impact assessment calls the potential significant effects of oil and gas drilling on fauna and flora in the prospecting area "negligible." According to ReconAfrica's Preece, "The area of interest named Kavango Basin is not situated in a sensitive area at all and all the exploration activities are highly localized."

Rosie Woodroffe, coordinator of the African Wild Dog Working Group with the IUCN, said there are more African wild dogs around the ReconAfrica-licensed region than anywhere else in the world. "Wild dogs are highly sensitive to habitat loss," she said, "and any development within wild dog range which destroys, degrades, or fragments habitat is likely to be detrimental."

Extracting and transporting oil and gas fragments habitat and cuts across animal migration routes. New roads also facilitate animal poaching by providing easy access to wild places. An

influx of oil workers in central Africa spurred unsustainable demand for the wild meat of animals such as duikers and buffalo and increased poaching for high-value species—elephants, primates, lions. Even after drilling stops and workers leave, poaching can persist.

Noise too can be disruptive. The Elephant Listening Project found that forest elephants in central Africa switched to a more nocturnal lifestyle as a result of noise from oil exploration and development. Similarly, the American Ornithological Society published a report in 2018 showing that competing noise from oil development caused birds in Alberta, Canada, to change their songs.

"Studies show that there are multiple pathways to wildlife being harmed," biologist and author Sandra Steingraber, who has long studied risks from fracking, told the *Revelator* last year. "Biodiversity is a determinant of public health—without these wild animals doing ecosystem services for us, we can't survive." Elephants, for example, fertilize and seed trees with their dung and excavate the ground, opening up water sources for other animals.

Oil development "is a threat to our livelihood," Lekgowa said. "We drink from the river because we live far from the town, and we don't have treated water, but if these people come with a system that will damage the water, this is life-threatening to us."

Jeffrey Barbee is a science writer, photojournalist, and documentary filmmaker, whose documentary The High Cost of Cheap Gas, about fracking for oil and gas, has been translated into six languages and won numerous awards. He's the founder of Alliance Earth , an independent environmental and science reporting initiative that collaborates with news organizations around the world.

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