SAVING OKAVANGO'S UNIQUE LIFE

The Minister
Ministry of Agriculture, Water and Land Reform
Government Office Park, Luther Street
Private Bag 13184,
Windhoek
Namibia.

The Honourable Mr. Calle Schlettwein 18th February 2021

OPEN LETTER

KEEPING FRACKING OUT OF KAVANGO, NAMIBIA.

Dear Sir,

Introduction

Save Okavango's Unique Life (SOUL) is an alliance of Namibian and southern African civil society organisations and activists as well as international organisations promoting social, climate and environmental justice. We have been vocal in our resistance to the application by ReconAfrica (Pty) Ltd, a Canada-based petroleum exploration company, to explore for fossil fuels – in particular shale oil - in Kavango East and West, Namibia.

We have taken the liberty of writing this letter to you to provide some insight into the consequences of similar exploration projects internationally. ReconAfrica have consistently referred to *"unconventional oil and gas*" in their media briefings, public information brochures and media communication[1]. Hydraulic fracturing (fracking) is the technique used to extract so-called "unconventional oil and gas" resources. Whilst it has been denied that fracking will occur during the current exploration activities in the licensed area (PEL 73), it is known that this technique must be applied to determine the extent of any shale oil or gas reservoir and the viability of extracting these hydrocarbons. In the event of viable oil and gas reserves being proven, fracking will be required to release the fossil fuels from the shale

[1] https://oilprice.com/Interviews/The-Worlds-Last-Great-Oilfield-An-Interview-With-Nick-Steinsberger.html
https://beta.documentcloud.org/documents/20395045-reconafrica-investor-presentation-092019#document/p16/a2002879
https://www.prnewswire.com/news-releases/three-places-to-look-for-the-next-shale-boom-300980667.html
https://reconafrica.com/wp-content/uploads/ReconAfrica-Investor-Presentation-051919.pdf
https://reconafrica.com/wp-content/uploads/ReconAfrica-Haywood-Report-November-2020.pdf

formations. It is therefore somewhat misleading and disingenuous to deny that fracking is being considered. For this purpose, the company has especially hired Nick Steinsberger, who is called the "father of modern fracking", as senior vice president for the drilling projects.

Overview

Fracking is a highly technological process whereby a borehole is drilled vertically into the ground and at the depth of the gas bearing shale horizon, which may be as deep as 4000 to 6000m in Kavango, the drill string is directed horizontally, and the hole is continued for up to 2500m. A triple tube system of casing is installed into the borehole and is cemented into place to isolate the hole from the host rock and any water bearing aquifers. Subsequently holes are penetrated through the horizontal section of the borehole and fracking fluids are injected at high pressures to fracture the rock and thereby enabling the oil or gas to flow out of the low permeability shale. In the order of 16 to 20 million litres of water is required per fracking event, and the fluids will typically include 90% water, 9% sand and 1% highly toxic chemicals. The chemical mixture may include volatile organic compounds such as the known carcinogenic BTEX's. Following the fracking event anything between 30% and 80% of the fluids flow back to the surface, known as flow back, which is a hazardous waste containing radioactive materials[2]. This waste product, together with the produce water which is toxic brine that flows from the borehole must be removed for disposal as a hazardous waste. This wastewater is often injected into the underground, causing earthquakes in regions that weren't susceptible to earthquakes previously.[3]

Since 2005, according to industry and state data, nearly 140,000 fracking wells have been drilled or permitted in more than 20 US states[i]. According to industry-reported data in the FracFocus database, oil and gas wells fracked across the U.S. between 2005 and 2015 used at least[4]:

- 5 billion pounds of hydrochloric acid, a caustic acid;
- 1.2 billion pounds of petroleum distillates, which can irritate the throat, lungs and eyes; cause dizziness and nausea; and can include toxic and cancer-causing agents; and
- 445 million pounds of methanol, which is suspected of causing birth defects.
- 239 billion gallons of water since 2005, an average of 3 million gallons per well. Water used in fracking becomes unsuitable for most uses other than fracking another well.

Farmers can be particularly impacted by the oil and gas industry's demand for freshwater, especially in drought-stricken regions of the country. In one water auction in Colorado in 2012, oil and gas companies paid up to $3,300 for an acre-foot of water, as much as 100 times what farmers typically pay.

Consideration must also be given to the impact of the road network as well as pipelines and compressor stations that will be required to be developed between well pads. Habitat fragmentation and edge effects on local biodiversity, the potential introduction of alien species, emerging infectious diseases (EID) and impact on ecosystem services in the biome must be considered.

[2] https://www.thechemicalengineer.com/news/understanding-why-fracking-wastewater-contains-radioactive-waste/

[3] https://www.usgs.gov/faqs/how-does-injection-fluid-depth-cause-earthquakes?qt-news_science_products=0#qt-news_science_products

[4] Environment America, Fracking by the numbers (2016). Link: http://www.environmentamerica.org/sites/environment/files/reports/Fracking%20by%20the%20Numbers%20vUS.pdf

The unconventional fossil fuels industry, especially shale gas production, consumes space and resources on a large scale and has a massive detrimental impact on regional planning and development. Local councils must therefore have the freedom to decide upon whether or not their region should become the target of an industrialization process of at least 25 years of envisaged production by ReconAfrica.

The consideration of single applications of oil/gas companies must consider all impacts from the exploration to the extraction of so-called unconventional fossil fuels and should recognize that these projects inevitably collide with the existing highly sensitive ecosystem and local communities in the targeted areas.

Hydraulic fracturing is also a crucial part of the exploration phase contemplated in Namibia.

Without the so-called "stimulation drilling" a company cannot ascertain if there is enough economically viable gas in the underground. Once companies make that positive determination, full scale fracking will inevitably ensue.

Negative impacts on these ecosystem services may be costs that will be borne by Namibian citizens, and will be reflected decades and perhaps centuries after the energy companies have departed. Further information can be obtained from *The Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking* (the Compendium) is a fully referenced compilation of evidence outlining the risks and harms of fracking. It is a public, open-access document that is housed on the websites of Concerned Health Professionals of New York (www.concernedhealthny.org) and Physicians for Social Responsibility (www.psr.org).

The very real possibility of the Namibian fiscus having to bear the clean-up and rehabilitation costs of abandoned wells must also be considered, as demonstrated in the USA, where many shale oil/gas companies have gone into liquidation in the past 2 years because of low gas prices and high operating costs.

Water Usage

Namibia is a water deficit country and enjoys an average of about 350mm rain per year, less than half of the world average of 800mm. Much of Namibia's water resources are based on groundwater and to a lesser extent on water from the Kavango River. Access to water is therefore a potentially limiting factor to economic growth, food security and socio-economic advancement.

ReconAfrica have already stated in a research brochure published in July 2020 that:

> *"Of tremendous concern in South Africa is water, a significant requirement for unconventional plays requiring fracture stimulation. Shell is looking at conservation, recycling, and brackish water as to not compete with locals for freshwater resources. ReconAfrica's situation is significantly better in that surface rights and access are held by the government, and abundant ground water supplies should be a source of building, not breaking, relationships with the local population."*[5]

[5] https://reconafrica.com/wp-content/uploads/ReconAfrica-Research-Report-July-2020.pdf

This glib statement is made without consideration being applied to the vast quantity of water required for fracking, or the geohydrological characteristics of the aquifers. Potential draw down of the groundwater level and contamination of water resources could significantly impact the agricultural potential and the people of Kavango

Peer reviewed research in the USA, has shown that pollution of groundwater due to elevated thermogenic (gas derived from deep rock horizons) gas concentration in ground water are 6 times higher within 1 km of a fracked well. Furthermore, data derived from the Pennsylvania Department of Environment has shown that in the order of 6 to 8% of boreholes drilled between 2009 and 2012 showed well casing defects. When considering the density of well that are typically drilled in a shale gas play, such as anticipated in the Kavango Basin, with a density of 1 fracking pad every 6 to 7km^2, it can be expected that a highly industrialised activity set in a rural area such as the Kavango may have a significant impact on groundwater resources

Risks to Groundwater in Kavango

We are particularly concerned that ReconAfrica are currently using water obtained from a borehole drilled specifically for the purpose of supply water to the drilling operation – without a water use permit. This action appears to be in contravention of Section 44 of the Water Resources Management Act of 2013. We would appreciate an indication from MWALR what course of action will be taken to rectify the current situation.

In addition to the concerns expressed above, it is also apparent the ReconAfrica has seen fit to not include an impervious lining system beneath the containment pond constructed adjacent to BH 6-2 in Kawe.

Although not explicitly stated in the EIA and EMPR prepared by Risk Based Solutions, there are two reference in the documents that point to the fact that a liner must be placed in the pond. The report makes it a requirement of ReconAfrica to *"…Never allow any hazardous substance to soak into the soil*". Furthermore, the document also requires that upon completion of the drilling, ReconAfrica must *"… allow the pollution control dam to evaporate completely, scrape all waste that has collected in the pond and dispose of these and the* ***pond lining*** *at a suitable site"*

The poorly prepared EIA should have made it an absolute requirement, and the failure to do so is an indication of the inferior standard of the work compiled. This, however, should not be used as a reason for ReconAfrica not to abide by international oil and gas industry best practice, or to neglect to implement British Columbia Oil and Gas Commission Guidelines. These guidelines state that a minimum of two 1.5mm thick impervious liners, with a leakage detection system is required in Canada. Why do ReconAfrica apply different standards when working in Namibia?

Drilling fluids and produced water that will be contained in the pond will include hypersaline brine and rock cuttings from the formations that they are drilling through and these may contain volatile organic compounds and naturally occurring radioactive materials (NORMS). Furthermore, the EIA does not exclude the possibility that ReconAfrica may resort to using oil based drilling fluids that are known to be toxic. This cocktail of chemical elements will render the waste a highly toxic liquid waste product.

The unlined pond has been constructed in an area where the groundwater table is at a level of 5 to 30m (average depth is 12.3m) below ground level and the intermediate soils between the base of the pond and groundwater is loose unconsolidated sand. Without having direct access to the geological soil

profile directly beneath the pond, some estimates and assumptions have been made that indicate that the ground water could be contaminated within 23 to 250 days.

From an environmental aspect this is grossly unacceptable and from a social aspect is reckless and disgraceful. The communities are totally dependent on groundwater for domestic and agricultural purposes and any contamination to the aquifer will be all but impossible to contain and clean up.

Motivation

SOUL, therefore, are of the opinion that it does not make sense to potentially contaminate groundwater resources, harm viable ecosystems and disrupt existing economic activities in Kavango for foreign owned companies to make large financial gains. The 25 to 30 year period that it is anticipated that shale oil/gas extraction will last, will continue to introduce carbon dioxide into the atmosphere but more critically will introduce methane extracted as fugitive emissions. The International Panel for Climate Change IPCC have recognised that fossil methane is 87 times more effective as a greenhouse gas in the short term (20 years) and 36 times more aggressive in the long term (100 year). Shale development in the Kavango basin will contribute to more methane emissions, raising questions about Namibia's efforts to fulfil the climate obligations under the Paris Agreement.

Conclusion

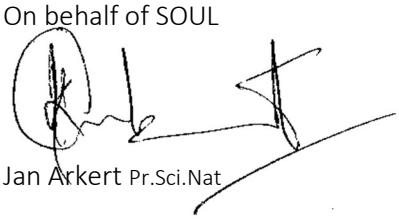
SOUL, therefore, calls upon the Minister of Agriculture, Water and Forestry to engage with other relevant government ministries to apply an immediate moratorium on the current petroleum exploration activities in Kavango. We appeal to the Namibian government to commission a transboundary Strategic Environmental Assessment (SEA) in Kavango, which will investigate the cumulative temporal and spatial impacts of hydraulic fracturing. A study of this nature must be multi-national and must include all nations that share the Kavango River Catchment Area.

The Namibian Ministry of Health and Social Services recently signed an agreement with Vienna based International Atomic Energy Agency to assess how climate change is impacting Namibia's groundwater resources. A moratorium on the further steps of the exploration phase (including seismic surveys) should be put in place until the results of the project called "*Assessing the impact of climate change and variability on groundwater resources in major aquifers in Namibia*" have been provided and can be properly assessed.

SOUL humbly makes these requests so that appropriate decisions can be made by the relevant authorities, guided by the best applicable scientific information available.

We hold ourselves available to provide any further assistance that we can.

Yours Faithfully
On behalf of SOUL



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Adolf Muremi, Chairperson, Kavango East Farmers Union (KEFU)

AFSA MEMBER ORGANISATION
1. African Biodiversity Network (ABN)
2. African Centre for Biodiversity (ACB)
3. Association Ouest Africaine pour le Développement de la Pêche Artisanale (ADEPA)
4. Biodiversity and Biosafety Coalition of Kenya (BIBA)
5. Coalition pour la Protection du Patrimoine Génétique Africaine (COPAGEN)
6. Comité Ouest Africain de Semences Paysannes (COASP)
7. Community Alliance for Global Justice (CAGJ)
8. Comparing and Supporting Endogenous Development (COMPAS Africa)
9. Eastern and Southern Africa Pastoralist Network (ESAPN)
10. Eastern and Southern Africa Small Scale Farmers Forum (ESAFF)
11. Faith & Justice Network of the Mano River Basin (FJN)
12. Farm-Saved Seeds Network (FASSNET)
13. Fédération Agroécologique du Bénin (FAEB)
14. Fellowship of Christian Councils and Churches in West Africa (FECCIWA)
15. Friends of the Earth Africa (FoEA)
16. Global Justice Now!
17. Groundswell West Africa (GWA)
18. Health of Mother Earth Foundation (HOMEF)
19. Indigenous Peoples of Africa Coordinating Committee (IPACC)
20. Institut Africain pour le Développement Economique et Social (INADES-Formation)
21. Institut Panafricain pour la Citoyenneté, les Consommateurs et le Développement (CICODEV Africa)
22. Jeunes Volontaires pour l'Environnement (JVE International)
23. John Wilson
24. La Via Campesina SEA
25. Network of Farmers' and Agricultural Producers' Organizations of West Africa (ROPPA)
26. Participatory Ecological Land Use Management (PELUM) Association
27. Plate-forme Régionale des Organisations Paysannes d'Afrique Centrale (PROPAC)
28. Regional Schools and Colleges Permaculture Programme (ReSCOPE)
29. Réseau Africain pour le Droit à l'Alimentation (RAPDA –Togo)
30. Rural Women's Assembly (RWA)
31. Southern African Faith Communities' Environment Institute (SAFCEI)
32. Tanzanian Alliance for Biodiversity (TABIO)
33. Thousand Currents (formerly IDEX)
34. Union Africaine des Consommateurs (UAC)
35. We are the Solution (WAS)
36. World Neighbors
37. Zambia Alliance for Agroecology and Biodiversity (ZAAB)