



**Friends of
the Earth
International**



**Friends of
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Africa**

DIRTY ENERGY IN AFRICA

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Introduction

Dirty energy not only fuels dangerous climate change but also causes immense harm to people, communities, workers and the environment, all around the world. Dirty and harmful energy lies at the heart of a broken energy system that is unjust and unsustainable and destroying people and the planet.

Friends of the Earth International takes a holistic approach to fighting dirty energy—we include coal, oil, gas, nuclear power, industrial agrofuels and biomass, mega hydroelectric dams, and waste-to-energy incineration in our definition of dirty energy. These destructive energy sources and technologies are driving climate change and have a deplorable track record, ranging from air and water pollution causing serious health impacts, through to massive land grabbing for new dirty energy mines, plants and infrastructure.

This is a global problem, but in recent decades the tentacles of dirty energy have pierced through the entire African continent, destroying lives and livelihoods. But communities are fighting back against this destruction, as the case studies in this briefing illustrate.

The dirty energy system has also failed to deliver energy for all. For example, in terms of energy access Sub-Saharan Africa is the most 'electricity poor' region in the world (WEO, 2016). More than 620 million people (two thirds of the population) are living without access to electricity, and are denied the development benefits that energy access brings (WEO, 2016b). Nearly 730 million people in Africa are still forced to use unhealthy and inefficient cooking fuels (WEO, 2016b), such as biomass.

African governments were not the ones that invented these dirty energy options. The developed countries put the whole world on this harmful development pathway. But now many African governments are lining up to push for more investment in oil, coal and gas extraction, more dirty power stations, and more centralised and wasteful grid systems, often under the banner of 'carbon space to grow' or hiding behind the poor in their countries. Yet simply providing more energy at any cost has been shown over and over again to benefit corporations and not the people, and is unlikely to provide any short-term resolution to these entrenched energy inequalities.

The case study in South Africa is exemplary: Eskom produces electricity from plentiful domestic coal supplies, which is then used to power industry at subsidised rates and generate export income. Frontline communities and other South Africans unable

to afford the cost of unsubsidised electricity are left to struggle on, cooking indoors with coal or biomass year in, year out, while their health degenerates. This is part of an on-going colonial and post-colonial pattern of natural resource exports leaving Africa's ports for richer northern countries and other wealthy elites including in southern countries.

In the longer term Africa is currently on a lose-lose dirty energy trajectory.

Ambitions to keep average global temperature increase below 1.5°C compared to pre-industrial levels mean that carbon reductions must be very steep indeed. Developed countries must act first and cut the most drastically, and they must contribute their fair share of the climate debt to ensure that Africa can shift towards sustainable socially-controlled renewable energy. We need to keep fossil fuels locked underground.

This is of the utmost importance to African countries, where the average global temperature threshold will translate into much sharper regional increases. In much of Africa the temperature rises at 1.5 to 2 times the global average. South Africa's Department of Environmental Affairs has said, for example, that a "global average temperature increase of 2°C translates to up to 4°C for South Africa by the end of the century." (DEA, 2015:3)

Various African countries are already suffering debilitating climate change impacts. For instance, in Niger several years of drought were followed by heavy flooding in August 2010. People already vulnerable to malnutrition saw their crops destroyed, and exposed topsoil washed away. At least 200,000 people were flooded out of their homes. In January 2015, floods in Malawi, Mozambique, Madagascar and Zimbabwe killed 225, with another 150 missing, and displaced more than 400,000. Across the region, people lost their crops and many also lost their soil. Southern Africa has also experienced bouts of flood and drought, with seasons shifting and weather patterns becoming more erratic. In the southern Cape, the drought of 2010 was preceded by successive years of heavy flooding while the normally dry northern Cape was inundated with flood waters in early 2011. The north of the country was hit by floods in 2012, 2013 and 2014. On the East coast KwaZulu-Natal remains in the grip of a severe two-year drought (groundWork, 2015).

The pursuit of dirty energy will be counterproductive for African countries. In the absence of dramatic reductions in greenhouse gas emissions, especially by dirty energy industries in the North, where reductions need to happen first and foremost, temperature increases will be devastating for the continent, and potentially irreversible. At the same time, new investment in dirty energy infrastructure will lock African industries onto a dirty energy pathway at just that point in history when new and clean energy technologies are increasingly available.

Friends of the Earth groups throughout Africa are therefore working with communities to resist coal, oil, gas, tar sands and mega-dams. People across the continent are fighting back, pushing for energy sovereignty, universal energy access, decentralised grids, renewable technology and a just and democratic energy system. It is ironic, however, that local communities and environmental defenders opposing dirty energy infrastructure and fighting for Africa's best interests, frequently face repression and violence in return [1]. For example, 2016 saw the murder of anti-mining activist Sikhosiphi 'Bazooka' Radebe in South Africa's Wild Coast.

Coal in Africa

Coal is the world's dirtiest energy. Burning coal for energy is the largest single source of CO₂ emissions in the world, and its extraction, processing and burning all generate intense levels of pollution and destructive impacts for communities, workers and the environment. Coal mining can lead to the displacement of communities, often with little or no compensation, and mining accidents kill thousands of people every year. Pollution emanating from coal power plants causes severe health impacts including debilitating asthma, bronchitis, emphysema, heart attacks and premature death (FoEI, 2015; Adyani & Waller, 2015).

However, coal is still used to generate over 40% of the world's energy, produces almost 50% of current CO₂ emissions, and is a key source of air pollution (IEA, 2015). China is currently responsible for half the world's coal use and 80% of the increase in coal use since 2000 (IEA, 2015); and growing coal use in India and Southeast Asia is currently offsetting declines in Europe and the US, who were of course the initiators of this destructive energy use (IEA, 2015).

Countries seeking to develop their economies are still working to expand their coal industries, although this may risk them being locked into old and dirty energy technologies as new low-carbon technologies come on stream. Overall though, coal consumption recorded the largest percentage decline on record in 2015 (BP, 2016).

In a bid to survive, the coal industry is promoting itself as part of the solution, promoting 'clean coal' that uses Carbon Capture and Storage (CCS)—an approach which is considered "a vital asset protection strategy" (IEA, 2015). But 'clean coal' is simply impossible (FoEI, 2015) for both technical and economic reasons. It is being used as a smokescreen, to mask the need for an urgent move away from coal use.

The industry's proposal is to capture CO₂ emissions and store them underground. But it is already evident that the technologies currently under development cannot achieve what they promise. Capturing CO₂ requires additional energy to be used, meaning that more coal has to be used, reducing the efficiency of the

Dirty energy in the Maghreb

The North African region known as the Maghreb is also facing numerous climate change impacts. There are more frequent droughts, more frequent winter storms, failing agriculture, rising water shortages, and the desert is expanding while sea levels are rising.

At the same time, the Maghreb is also a hotbed for dirty energy infrastructure. For example, Algeria is currently the second biggest external supplier of natural gas to Europe, and has large deposits of shale gas. Europe is a big market for energy from the Maghreb in general: About 84% of Algeria's liquified natural gas (LNG) is sent to Europe through various pipelines. The rest is sent to Asian markets. In general, countries such as Algeria, Tunisia and Morocco are strongly linked into the European Union's energy policies [2], which are very influential in controlling the energy resources of the Maghreb. In fact the EU has been complicit in supporting authoritarian regimes in the Maghreb in exchange for the much-coveted notion of energy security. This relates to debate within the EU about establishing an 'EU-South Mediterranean Energy Community' starting with the Maghreb countries (EU, 2011).

Tunisia supplies most of its domestic needs through domestic oil and gas, but also requires some energy imports. Since one of the pipelines taking Algerian natural gas to Europe runs through Tunisia, they get some royalties from the gas passing through. Tunisia also has 23 trillion cubic feet of shale gas reserves plus 1.5 billion barrels of shale oil (DoE, 2015). There have been significant civil society protests against the exploitation of these resources [3]

Morocco has no oil resources of its own and relies on energy imports from the Middle East. They do however have some reserves of shale oil. Morocco's geography enables it to be a hub in the electricity network linking Algeria to Spain (RLF, undated). But the focus is not just on fossil fuels. Morocco has also made huge investments in solar energy, such as the older Desertec scheme, and the Ouarzazate Concentrated Solar Power (CSP) plant in southern Morocco, south of the Atlas Mountains. This Ouarzazate solar plant has been criticised for 'green land grabbing', the acquisition of 3,000 hectares of communally-owned land, including pasture. It also involves using a huge amount of water in a semi-arid region of the world. However, people have risen up and protested against this, raising questions about land and water (Jadaliyya, 2016).

People in other parts of the Maghreb region have also rebelled against the region's dirty energy infrastructure. For example, 2015 saw huge protests against fracking in Algeria. This was preceded by major protests in 2011 as well. Dr. Hamza Hamouchene of Environmental Justice North Africa says that: "This uprising needs to be situated in its correct context, a context of political and economic exclusion and resources plunder to the benefits of a corrupt elite and predatory multinationals that are ready to sacrifice human rights and whole ecosystems in order to accumulate profits." (Hamouchene H., undated)

power plants. In addition CCS technologies, in so far as they exist, are proving prohibitively expensive. For example, FutureGen, a major project in the US, which would have cost over US\$1.6 billion, was suspended in 2015. The long-term safety and viability of underground storage locations are also uncertain (FoEI, 2015b).

There are coal deposits across Africa (Mbendi, 2016), although coal is only found and used on a globally significant scale in South Africa. Nevertheless some other African countries are looking to use coal as a mean of developing their economies, in spite of its track record of devastating health, environmental and social impacts.

The African Development Bank also supports the construction of new coal infrastructure. The bank includes conditions relating to developmental benefits and environmental impacts (AfDB, undated: 21), but it is not clear if those conditions are actually being met. Between 2007 and 2013 it was the second biggest regional donor supporting coal projects globally, to the tune of US\$2.8 billion.

This threatens to lock African countries into decades of out-dated, dangerous energy technologies. For example, since 2013 three development banks – the World Bank, the European Bank for Reconstruction and Development and the European Investment Bank – have decided not to support any more coal projects, or to do so only in exceptional circumstances (FoEI, 2015b). Friends of the Earth members are fighting the impacts of coal on local communities in South Africa, Ghana, Mozambique and Nigeria (FoEI, 2015b). For example, Ghana's first coal-fired electricity plant is scheduled to be built in the next three years, on the back of a US\$1.5 billion loan agreement with China through Shenzen Energy (Oilwatch Africa, 2016). There has also been much talk about a coal boom in Mozambique, which was supposed to create revenue for the government and jobs, but in the end it did not deliver for the people. Currently around 3,000 Mozambican people are employed in the mines, but over 3,500 families were displaced to make way for the mines (JA!, 2016).

South Africa: coal addict

South Africa's economy has been built on the strength of its plentiful supply of coal (Adyani & Waller, 2015). It obtains almost 90% of its electricity and 77% of its primary energy needs from coal, as well as using it as a raw material in the petrochemicals industry (Mbendi, 2016). As a result there is now an entrenched reliance on fossil fuels, which shows no sign of abating.

Key coal mining companies include Anglo Coal, Ingwe, Sasol and XStrata. Much of the coal produced is sold to Eskom, South Africa's electricity utility, and most of what remains is exported through the Richards Bay Coal Terminal (Mbendi, 2016). Sasol also converts coal into liquid fuel, a climate-damaging process that involves substantial energy losses (FoEI, 2015b).

Coal remains firmly embedded in the country's current industrial strategy (groundWork, 2015), with plans to build further dirty energy infrastructure (CNBC Africa, 2016). The government aims to introduce renewable energy in addition to coal, rather than instead of it. Overall emissions will continue to rise (groundWork, 2015).

Eskom is at the heart of this intransigence. The company has 12 coal-fuelled power plants in Mpumalanga in the Highveld. They are amongst the largest and most polluting power plants in the world and are responsible for the majority of South Africa's pollution (Adyani & Waller, 2015).

Communities living nearby are paying an extreme price for the country's electricity. Coal miners suffer silicosis, lung cancer and accidents; and communities living near the power plants are ravaged by respiratory and cardiovascular disease, which are responsible for over half of all deaths (Adyani & Waller, 2015). The coal/electricity sector is also water intensive and pollutes drinking water (Adyani & Waller, 2015).

South Africa does have laws designed to protect the environment and people's health, but these are effectively being ignored (groundWork, 2014). For example, Eskom and others—who were allowed to help write air quality laws in the first place (groundWork, 2015)—have successfully applied to postpone having to meet South Africa's minimum emissions standards themselves (News24, 2014). They are also invited to participate in South Africa's international climate change negotiating teams on a regular basis (FoEI, 2015b).

South Africa is now at a critical juncture. Its energy plans scarcely recognise its climate pledge. But it cannot meet that pledge without taking a new pathway, towards clean and safe renewable energies, before that choice recedes into the distance.

Public opposition to mining projects and water shortages is growing (groundWork, 2015), but the South African government is still trying to greenwash its energy industry, arguing that coal, fracking, oil and mining are all environmentally friendly (groundWork, 2015), and responding to opposition with violence. Friends of the Earth South Africa / groundWork and allies are demanding a change in the country's energy policies, and resisting the construction of new independent coal-fired power stations and coalmines (groundWork, 2016).

Oil in Africa

Oil extraction, processing, transportation and consumption generates multiple environmental and social impacts, including the emission of significant quantities of climate-destabilising carbon dioxide. Oil exploration also triggers deforestation; oil transport leads to devastating oil spills; and oil refining produces toxic muds and wastewaters, and thermal and noise pollution. Associated gas flaring has been linked to community health impacts including cancers, asthma, chronic bronchitis and blood disorders. There are also strong correlations between oil economies and human rights abuses, corruption and conflict (FoEI, 2016).

In 2015, oil was the world's leading fuel, accounting for 32.9% of global energy consumption (BP, 2016). In spite of the need to reduce fossil fuel use, oil production and consumption are increasing. Oil's share of the global total increased for the first time since 1999, driven by demand in OECD countries (BP, 2016).

It is estimated that 57% of Africa's export income is based on hydrocarbons (KPMG, 2015:overview), and Africa is the second major net exporter of oil in the world, after the Middle East, accounting for over 11% of global oil production over the last

decade (KPMG, 2015:2). The principal established centres of production are in Nigeria and Angola (Katsouris, 2016), but new oil reserves are being brought into operation in countries including Ghana, Niger (Katsouris, 2016), Togo and Uganda.

The impacts of oil production in Nigeria have been stark, and are well known. Communities in the area where Shell and other companies operate have been devastated by the long-term impact of oil pollution on their farmland, fisheries, forests and water (FoE Netherlands, 2016). With the support of Friends of the Earth in the Netherlands and Nigeria, Nigerian farmers are pursuing Shell through the Dutch courts where the Shell corporation has its headquarters, demanding ecosystem restoration and compensation for lost livelihoods (FoE Netherlands, 2016). Friends of the Earth Nigeria / Environmental Rights Action continues to campaign to break multinational companies' monopolies and to bring about climate justice and energy sovereignty (FoE Nigeria, 2016). Friends of the Earth Togo is also campaigning against impending offshore oil exploration and to promote renewable energy.

Oil: Uganda's slippery slope

Oil exploration and drilling by international companies in Uganda has been tentatively underway since 2000, but now looks set to undergo massive expansion. The Ugandan government finally issued eight production licences in August 2016 (Mwesigwa, 2016), authorising production by Tullow Operations Pty Ltd (linked to London-headquartered Tullow Oil plc) and Total E&P Uganda BV (part of French oil and gas company Total S.A.). Their Chinese counterpart CNOOC Uganda Ltd already has a licence for the Kingfisher oil field in Hoima (Oil in Uganda, 2016).

The aim is to be producing crude oil by 2020/2021, and to export it to the international market via an oil pipeline through the coastal port town of Tanga in Tanzania. The Ugandan government is expected to issue more oil exploration licences (Oil in Uganda, 2016), and an oil refinery is also planned (Oil in Uganda, 2016). It is believed that the virtually untouched 'Albertine Graben' region of the African Rift Valley may contain as much as 6.5 billion barrels of oil resources (Oil & Gas Journal, 2015), of which at least 2 billion barrels are expected to be commercially viable (Mwesigwa, 2016).

It is anticipated that the extraction and transport of oil is likely to exacerbate existing oil-related land grabbing, with particularly marked impacts on local fishing and small-scale farming communities (Mwesigwa, 2016). Oil production is also likely to degrade the rich ecosystems in the Albertine Graben region, which is thought to be home to half of all African bird species. With respect to mammals, including the mountain gorilla, it is the second most biodiverse country in Africa (after the Democratic Republic of Congo) and the ninth most biodiverse in the world [4]. There are also concerns about secrecy and corruption relating to plans to develop the oil sector (Mwesigwa, 2016).

Friends of the Earth Uganda/NAPE is campaigning to leave the oil in the ground, for the benefit of the climate, and Uganda's local communities and fragile environment.

Megadams in Africa

Megadams, now found on practically all the world's major rivers, are large cement walls built across rivers to generate hydroelectricity or store water. Over the last three decades, megadams have come under harsh criticism worldwide for their negative environmental, social and economic consequences. The World Commission of Dams, which was a comprehensive, multi-stakeholder process established to assess the state of the world's dams, launched its final report under the patronage of Nelson Mandela in November 2000. It concluded that in "too many cases an unacceptable and often unnecessary price has been paid to secure [the] benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment." (WCD, 2000)

While the human and ecological impacts of dams have been long understood, it has also come to light that these dams often have devastating consequences for the climate. The rotting biomass in the water reservoirs caused by megadams is a significant source of methane and CO₂, especially in tropical areas. Megadams also cause emissions from habitat destruction mainly in pristine areas. Globally, reservoirs are responsible for about 1.3% of man-made greenhouse gas emissions each year—or about the same as Canada's annual total emissions. In addition, large dams consume huge quantities of steel and cement, which are highly CO₂-intensive to produce (Reclaim Power, 2016).

Hundreds of megadams are being planned on Africa's rivers. Existing African dams have already caused considerable social and environmental harm, led to huge development-induced displacement, and have done little to reduce energy poverty and inequality in the continent (International Rivers, 2016). Adding to this, Africa's already varied hydrological systems mean that climate change is likely to cause more droughts and more floods, which hugely reduces the effectiveness of megadams. This is especially the case in southern Africa, including in Mozambique (Beilfuss, 2012).

Communities and organisations across Africa are exposing these problems with megadams, and are fiercely challenging the notion that equates megadams with development.

Megadams in Mozambique

The Zambezi River is the largest African river, flowing into the Indian Ocean in coastal Mozambique. The Zambezi is already choked by the Kariba dam located on the border of Zambia and Zimbabwe, and the Cahora Bassa dam built by the colonial Portuguese government in Mozambique.

Mozambique's predominantly rural population is highly dependent on rivers and riverine ecosystems for their livelihoods. Therefore, the mismanagement of water resources has not only had devastating impacts on river ecosystems but also on communities that depend on the rivers. In addition it has frequently been associated with human rights abuses and the perpetuation and exacerbation of social and economic injustice. At the centre of the abuses have been large dams, such as the Cahora Bassa dam, which has been linked to extensive environmental degradation and social injustice. Centuries-old cultural traditions have been destroyed, making the communities living along the Zambezi more prone to the devastating impacts of floods.

Now the government wants to construct another destructive megadam, the Mphanda Nkuwa hydroelectric dam on the Zambezi river, planned to be located about 70km downstream of the existing Cahora Bassa Dam. This will have devastating impacts along the lower Zambezi.

Mphanda Nkuwa is expected to cost over US\$2.3 billion (a 2002 estimate that is likely to be much increased now). It is supposed to have the capacity to produce about 1,300 MW of electricity, but 85% of the power generated from the dam is to be sold outside Mozambique, and will not be used for the people of Mozambique or for rural electrification. At this point, much of the dam's electricity is intended for use by South Africa's Eskom utility and hence the mines it subsidises.

For over 16 years, Friends of the Earth Mozambique / JA! has worked to demand information and key studies on the project to be released for public debate, but many questions remain unanswered.

Mphanda Nkuwa's reservoir will displace around 1,400 households, but there is still no formal plan for compensation. This is particularly concerning given past experience of resettlement projects where, in the vast majority of cases, households have been left worse off after relocation than they were before. There is no example of resettlement having been considered a success in Mozambique.

Therefore it can be anticipated that approximately 200,000 people living downstream of the dam will receive no compensation for the negative impacts that the dam's operation and construction will have on their livelihoods. This is in contradiction with the guidelines on best practice contained in the World Commission on Dams. Changes in river outflow from the dam are also predicted to damage the Zambezi Delta, which is listed as a 'Wetland of International Importance' by the Ramsar Convention.

In addition to the livelihood and environmental costs, the proposed dam embodies major technical, institutional and governance failures. These include a failure to account properly for the seismic risk associated with the dam.

Mphanda Nkuwa as it is currently planned will not only increase poverty and inequality, but is also a danger to the people living in the Zambesi valley. Hence JA! demands that the project be rejected until all these issues are resolved, and the dam's true impacts assessed and analysed in an honest, genuine, and scientifically valid manner.

The next frontier: Extreme energy

The energy sector is volatile, with access to energy resources often being dependent upon (and the cause of) global and regional geopolitical tensions. Oil prices fluctuate, and concerns about energy security and meeting energy demand tend to dominate the thinking of both governments and the energy sector. Climate change and the urgent need to keep fossil fuels in the ground sometimes seem to be a distant concern, drowned out by the growing stampede to find new, more secure and profitable fossil fuel resources.

Tar sands mining in Canada – a warning for African countries?

The consequences of tar sands mining in Canada—which, along with Venezuela and Saudi Arabia, holds one of the world's three largest tar sands reserves—are so drastic that they are visible from space (National Geographic, 2011). It has involved the clearing of entire forests, leaving a vast landscape utterly devoid of vegetation, which is sometimes described as 'Canada's Mordor' (Ravensbergen, 2009). The area that may eventually be surface-mined is nearly five times the size of Berlin (although much larger underground deposits exist, which may eventually lead to underground mining across an area the size of England (FoEE, 2015)). Industry is supposed to reclaim the land, but this idea is highly questionable given that ecosystems develop over centuries.

Tar sands mining also leaves a toxic waste water legacy. It uses immense quantities of hot water to separate the bitumen from other soil components, using up water resources and resulting in a toxic sludge that has to be stored in dams known as 'tailing ponds'. Canada's dams leak toxic water on a daily basis (FoEE, 2015:8).

Tar sands mining in Canada has wrought devastation across millions of acres of land owned by Indigenous Peoples, destroying pristine boreal forest, polluting rivers and lakes, poisoning drinking water, agricultural land, plants and animals, and destroying the livelihoods of communities who have lived in harmony with rich ecosystems for thousands of years.

To this end energy companies are extracting oils from higher risk and harder-to-access resources, such as tar sands and shale rock. This involves processes that are highly energy and water intensive, extremely polluting, and damaging to biodiversity. They are even more of a threat to our climate as well: for example, converting tar sands into fuel emits two to three times more greenhouse gases than the production of conventional oil (depending on the way it is extracted) (Charpentier *et al*, 2009).

The extraction of gas and oil from shale rock and coal-beds uses a process known as 'hydraulic fracturing' or 'fracking', which involves the injection of millions of litres of water, silica sand and chemicals (known as 'fracking fluid') at high pressure, to fracture the rock and release the gas or oil. This leads to ground-water contamination, serious health impacts, and, again, significantly higher carbon emissions than other fossil fuels [5].

'Tar sands', more formally known as 'oil sands' or 'bitumen', are soils containing a thick, heavy mixture of sand, clay, water and bitumen. They are frequently mined at the surface, with devastating consequences for forests and other biodiversity and the livelihoods of people dependent on the land, especially Indigenous Peoples and subsistence farmers whose ways of life, health and cultures are all put at risk by tar sands development.

Africa is a new frontier for the development of extreme energy resources such as tar sands and shale rock.

For example, Algeria and South Africa are listed as two of the world's top ten countries with 'technologically viable shale gas resources' (EIA, 2013). Yet accessing gas from shale rock by 'hydraulic fracturing' (also known as 'fracking') has numerous potential environmental impacts on local communities, due to the use of critical local water resources which are used together with silica sand and chemicals to blast the shale rock; their subsequent disposal, which can contaminate groundwater; competing land use requirements; and increased seismic activity (BGS, 2016). Communities in countries such as South Africa, together with organisations such as Groundwork / Friends of the Earth South Africa, are already building resistance to proposed fracking projects in Africa, and proposing alternative energy approaches (Groundwork, 2016b; Groundwork *et al*, 2014b).

Tar sands and unconventional oils are found in a number of African countries including Angola, the Democratic Republic of Congo, Ethiopia, Madagascar, Nigeria, and the Republic of the Congo (NRF, 2012; Ouedraogo, 2012). At least some of these countries are now investigating the possibility of exploiting these resources, in collaboration with energy companies such as BP, ENI and Total (Ouedraogo, 2012). However, the social and environmental impacts could be extensive, especially where the bitumen is extracted through surface mining, which will destroy farmland and wildlife habitats (Milos C., 2015). These consequences are likely to be aggravated in countries with weak political and environmental governance, or where corruption is rife.

Tar sands in Nigeria

In Nigeria, oil is generally treated as a means of earning export income. Domestically, however, there is a massive energy crisis, and the government is under intense pressure to utilise and support investments in new dirty energy infrastructure to meet energy demand. This includes pressure to explore extracting further oil from tar sands, referred to as 'bitumen' in Nigeria.

Nigeria's bitumen and 'extra-heavy' ('unconventional') oil reserves are estimated to be the sixth largest in the world, with about 38 billion barrels thought to be in place (roughly equivalent to its present conventional oil reserves (Milos C., 2015)). They stretch for some 120km along the coastline in the southwestern part of the country, in the states of Ondo, Ogun and Edo. It is thought that the resource is possibly larger than that in Madagascar or the Republic of the Congo. There is also a low-sulphur oil shale deposit in southeastern Nigeria (Ouedraogo, 2012).

The planned development of tar sands reared its head over a decade ago, but Environmental Rights Action / Friends of the Earth Nigeria (ERA/FoEN) staunchly resisted it at that time, and it was subsequently put on the back burner (Ojo G & Oluwafemi A, 2003). However it seems that it is now being resuscitated as a result of the new administration's desire to diversify Nigeria's revenue streams. In May 2016 Nigeria's Minister of solid minerals announced support for the exploitation of bitumen deposits in Ondo state, Southwestern Nigeria (Sowole, 2016). The Ondo state government subsequently announced a Joint Operating Agreement (JOA) signed with American company Liquefied Resources' Nigerian subsidiary [6], targeting a daily output of 10,000 barrels (Punch, 2016).

ERA/FoEN's recent visit to the communities in August 2016 shows that the development of this project has not followed due process, which should have been based on the free, prior and informed consent of the communities. Furthermore, no environmental and social impacts have been published. But such a project could extend the devastating social and environmental damage already suffered by communities in Nigeria's conventional oil producing areas to neighbouring states, and deepen Nigeria's dependence on dirty energy.

It is anticipated that the impacts will be similar to those experienced in Canada, as the geology is similar (Milos C, 2015), although the precise environmental impacts will depend on the final mix of surface and underground mining used. Nevertheless, all environmental impacts are expected to directly affect the livelihoods of people reliant on the land in Nigeria's 'bitumen belt' (Milos C, 2015), and "on sites where bitumen is located near the surface, all topsoil would be removed, making farming impossible." (Milos C, 2015) In addition to increased greenhouse gas emissions, other impacts will variously include contamination from oil spills, air and water pollution, loss of water availability, and loss and fragmentation of vegetation and habitats (Milos C, 2015). We can also expect further social dislocation given the history of human rights abuses associated with conventional oil extraction in Nigeria [7].

The Nigerian government needs to wean itself off fossil fuel development including unconventional tar sands oil, and introduce new policies ensuring transition to community- and peoples-controlled renewable energy infrastructure capable of addressing the country's energy crisis.

Ending dirty energy, transforming our energy system

It's time to end the scourge of dirty energy in Africa, and everywhere else in the world. It's time to support the communities fighting back and demanding a just energy transformation. Climate change is already having devastating impacts in Africa and worldwide, while the dirty energy that caused it is wrecking communities and the environment.

African governments need to introduce new policies ensuring a transition from underdeveloped dirty energy infrastructure to clean, community-controlled renewable energy infrastructure which will actually provide energy for people and will address the on-going energy crisis and energy inequality. New incoming investment needs to be directed towards these ends to avoid the African continent being locked into a dirty energy pathway while our world needs new, clean and low-carbon technologies.

We are fighting to stop specific dirty energy projects from going ahead, and to end existing dirty energy projects, as important steps along the path to fundamentally challenging and transforming our current broken energy system. Our vision is guided by an idea called 'energy sovereignty'. This is the right of people to have access to energy, and to choose sustainable energy sources and sustainable consumption patterns that will lead them towards sustainable societies.

Rich, developed countries need to do their fair share of the international climate effort and to provide the finance that will enable developing countries to follow a sustainable and people-centred development pathway.

However, southern governments have an obligation to strive for a life of dignity for their own people. They cannot wait on northern payment of the climate debt to start acting themselves. Not acting consigns millions to death, starting with the poorest. Already, pollution from fossil fuel extraction and dirty energy harms millions of people, making them more vulnerable to climate change. In addition, people's capacity to adapt is being compromised by the destruction of local environments and the pollution of water catchments.

Southern countries need to avoid the dirty energy development pathway, to protect their people now and in the future. It's time to replace dirty energy with a systemic, people-centred transformation to good energy in Africa.

Footnotes

[1] For further reading see: <http://gebe.foei.org/good-energy-bad-energy/destructive-energy-sources/> and <http://www.foei.org/wp-content/uploads/2014/06/We-defend-the-environment-we-defend-human-rights.pdf>

[2] For more information see: Arroyo (2015).

[3] For example see: Bankwatch (2013). ADD EJATLAS

[4] According to Uganda's National Biodiversity Strategy an Action Plan (NBSAP), submitted to the Convention on Biological Diversity: <https://www.cbd.int/doc/world/ug/ug-nbsap-01-en.pdf>

[5] Read more about shale gas: <http://www.foeeurope.org/shale-gas-in-depth>

[6] See: <http://liquefiedres.com/>

[7] See also: Ojo, G. U. (2012)

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Friends of the Earth International

info@foei.org
www.foei.org