

# **NEW ENERGY DYNAMICS AND AFRICAS** **CLIMATE**

## **Introduction**

What were anecdotal subjects of transmission by Africans and observers of the continent has now been established scientifically. The Climate of the continent is changing. When the change started and when it will end is subject to endless debate. One thing that is clear is that anthropogenic activities have contributed immensely to global climate change, and to that extent, a review of the anthropogenic systems is necessary and a reversal of the change is possible. One noted player in the climate change discourse is the production and use of energy. This is why the circumstances of Africa deserve a critical appraisal. Energy is a key lever in the economic and social development of developed countries, and it is accepted that it will play a similar role in Africa's development. The question is, what reflection would Africa's development have on climate change in the light of the concerns over the contribution of energy to climate change and the recent changes in the economics of energy? This paper argues that in view of the legal, structural and social circumstances of Africa, its contribution to greenhouse gases will increase.

## **Geography**

The second largest continent on earth with a land surface of 11.7m sq miles, and is the source of some of the most enigmatic features that relate to contemporary climate discourse. 54 countries indentified by their respective colonial heritage but also by desert, by wildlife, by forest, by rivers, mountains, coasts and culture. The continent shares the Atlantic Ocean to its west with North and South America, joined at the north eastern tip to Asia, and the Mediterranean Sea traverses the north linking

southern Europe. Numerous rivers and water bodies wash into these seas. The longest river on the continent –the Nile- takes its source from the Great Lakes region in the mid-eastern part of the continent and travels almost in a commandeered fashion through the dry arid lands of Ethiopia, Sudan and empties into the Mediterranean in Egypt. Just as the Nile dominates the East, so also the Niger dominates the West. Taking its origin from the Guinea highlands, Africa’s third biggest river meanders majestically through dry and arid countries of Mali and Niger, and into the Savannah of Northern Nigeria and Benin before going for miles in the forest regions and washed into the Atlantic by the formation of a large forked delta. The Congo and the Zambezi adorn the middle and southern parts of the continent. Of course, there are other important water bodies as Senegal, Mara, the Orange, Limpopo, Volta, Okavango, etc. The water basins on the continent also serve as food baskets, energy sources and joints that connect countries and regions. For example, the Volta is shared by Burkina Faso, Mali and Ghana and provides the bulk of electric power in Ghana and Burkina Faso. The entire agriculture of Egypt and Sudan is based on the Nile. The bulk of fish protein in Rwanda, Burundi, Kenya, Uganda and Tanzania is from Lake Victoria.

The contours of water bodies are sharply contrasted by the masses of dry arid and tortuous deserts. Africa has three main deserts - the Sahara which dominates the North, the Kalahari and the Namib to the southern parts of the continent. These deserts, especially, the Sahara are expanding. The expansion is hastened by global warming and the continuing destruction of forests. In 1990 Africa had 702 million hectares of forest cover. By the turn of the century this has reduced to 650 million hectares.<sup>1</sup> Some of the factors responsible for the loss of vegetation and in turn into global warming are agricultural practices, logging, mining and expansion of human

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<sup>1</sup> A loss of 7.8 percent in just a decade. Janet Larsen, Forest Cover Shrinking (Earth policy Institute, 2002), located at [www.earth-policy.org/Indicators/indicator4.htm](http://www.earth-policy.org/Indicators/indicator4.htm) last modified 25/08/08.

settlements. These also account for the decline in wildlife in most parts of the continent. The Eastern and Southern plains of Africa are renowned for the amazing array of wildlife and their respective lifestyles. Though not as well endowed, the Western forest regions also have significant record of wildlife. It is also the region where habitats for animals and the ecosystem are most threatened. For example, the mandrill, the potto, the bongo, the gray parrot, the cheetah are all endangered species because of the threats or elimination of their habitats.<sup>2</sup>

### **Africa and Climate Change**

Africa is reputed to contribute minimally to atmospheric pollution but its dominant economic activities in many ways undermine the ecological and environmental integrity of the continent. On the average, more than 50 percent of the population are involved directly in agriculture. The products can be categorised into “cash crops” mainly for export and “food crops” mainly for domestic consumption. The cash crops are farmed on large, commercial, often mechanised scale. This takes up large land usage, water consumption and chemical use. The take up of land for bio-fuel production will exacerbate these difficulties. Unlike cash crop farming, food crop farming is less regulated and not as well organised. It is also where traditional farming methods such as shifting cultivation, bush fallowing, farm burning, etc are used. Although traditional crop farming might not take up a lot of land space at one go, it brings settlements closer to ‘virgin land’, and the use of traditional methods hasten the degradation of the land. Mining activities not only open forests to settlements and encroachment but are often located in the heart of forests. In South Africa, Ghana, Zambia and the DRC, mining is either the highest or the second foreign exchange

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<sup>2</sup> Africa Cultural Center. [www.africanculturalcenter.org](http://www.africanculturalcenter.org)

earner and primary contributor to GDP. Most of the mining in Ghana, Zambia and Tanzania are surface mining and this involves the stripping of large tracts of land. The great dilemma is that since those countries have the 'misfortune' of the mineral resources being located at the areas of rich forest or ecosystems, the forests and ecosystems are sacrificed for gold and copper. Industrial production is minimal in Africa as the continent exports primary resources and imports finished goods. Other economic activities include fishing, tourism and services.

Fossil fuel exploration and production is in a class of its own. It dominates the economy of the countries that produce it. In Nigeria, it contributes 80 percent of government revenue, in Congo it is 77 percent Gabon is 70 percent, in Equatorial Guinea it is 83 percent and in Angola it is 90 percent.<sup>3</sup> Prior to the 1960s, the contribution of oil to GDP in Nigeria was negligible.<sup>4</sup> The country's agricultural base also served as its export fulcrum. Additionally, coal, tin and steel, were important export commodities. All this was to change in the 1970s with the oil boom and the resulting budgetary expansion. The pattern is similar in other oil producing countries. The tragedy in Nigeria is also that gas associated with crude oil is flared into the atmosphere. The realisation of this stupidity has led to the establishment of the West Africa Gas pipeline project. The pipeline from Encreavos in Nigeria to Tema in Ghana, is to transport gas from Nigeria to the three other participating countries of Benin, Togo and Ghana. The gas so transported is to be used principally for electricity generation. Another important pipeline project is that from Chad to Cameroon. This is solely to transport gas produced in Chad through Cameroun for export outside Africa. It is not, at this time, for continental consumption.

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<sup>3</sup> See RICARDO SOARES DE OLIVEIRA, OIL AND POLITICS IN THE GULF OF GUINEA 80 (2007).

<sup>4</sup> Revenue from petroleum went from 5 percent in 1965 to 80 percent in 1975. Ibid at 97.

In spite of the existence of the AU and its predecessor OAU, and a number of regional bodies (ECOWAS, SADDC, EAC, MAHGREB) as well as bilateral development commissions, there is very little intra-African trade and movement of people and capital. Africa contributes less than 5 percent of world trade. As already noted, its exports are primary commodities and imports almost everything including grains and other food items. Transportation network within and between countries is not comparable to other regions in the world. There are railway networks that connect some Southern African countries such as the Tanzania-Zambia network, but on the whole the transportation network is quite minimal. Road transport is the most common means of transport. This is almost entirely dependent on fossil fuel. Tourism is huge foreign exchange earner in countries such as Egypt, Kenya, Tanzania, Ghana and most of Southern Africa. Tourism on the continent is almost entirely based on environmental resources. Heritage and historic sites in Egypt and Ghana and safari parks in Eastern and Southern Africa. The environmental trajectories of the continent are thus complex.

At this stage, some of the internal economic and geographical dynamics and their place in the changing environmental and climate landscape of the continent are becoming apparent. But is there any evidence of climate change in Africa?

Africa as a whole is not a net or aggregate contributor to global warming, but there are some areas of concentration. South Africa, for example is ranked 15<sup>th</sup> on the list of countries emitting greenhouse gases. This is mainly because of the country's more advanced industrial base but also use of high carbon dioxide emitting coal for energy purposes.<sup>5</sup> Rainfall patterns on the continent vary considerably. The West recording 250cm, the Sahara and Sahel regions receive less than 25cm, the rest of the continent,

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<sup>5</sup> In 1997 South Africa generated 2 percent of global Co2 emissions and 3-7 percent of No2 and subjugate aerosols.

especially the Eastern parts receive about 50cm of rain annually.<sup>6</sup> In Eastern Africa, there is a 5-6 year periodicities in precipitation. This has reduced to 2.6 - 3.5 year cycles. Atmospheric trace gas concentration has doubled in the last century and this is expected to produce

An already hot continent, Africa has seen noticeable warming in the last century. The rate is 0.5 C. Anecdotal evidence from older folks is now confirmed that June-August and September-November, coinciding with the rainy seasons in the equatorial regions, record higher temperatures. The warmest years were all recorded from 1987 to the end of the 20<sup>th</sup> century.<sup>7</sup> It is projected that temperatures in the Sahara and Sahel regions would go up by about 1.6C by the middle of this century. The warming and drying would be higher in the desert regions and the semi-arid parts of Africa than in the Equatorial forest and coastal regions. Sea level on the African coast is also expected to rise by an average of 25cm by the same time. Changes in the intensity, patterns and periodicities of rainfall have also been recorded. The Sahel region witnessed 25 percent drying in the last half of the C20th although average rainfall largely remained unchanged at 371mm. There has been sporadic intensification of rainfall in East, South and West Africa. The higher rainfall were often preceded by dry seasons occasioning flooding and serious damage. It is therefore difficult to construct a pattern especially since there seem to be little correlation between higher temperatures and rainfall.<sup>8</sup> This is especially interesting, for our purposes, because of the uncertainty of greenhouse gas induced changes in the continental climate.

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<sup>6</sup> Rainfall is highest in the forest regions.

<sup>7</sup> . It must be noted that the pattern and extent of the warming in Africa is not very different from the global circumstances. See Mike Hulme, et al., *Global Warming and African Climate Change: A Reassessment* (in Pak Sum Low, ed., *CLIMATE CHANGE AND AFRICA* 30, 2005).

<sup>8</sup> . Ibid.

Several causes have been outlined for the climatic changes in Africa, in particular, the rise in temperatures and dryness. Some have argued that the observed dryness are natural phenomena. That long before humans inhabited the continent there were periodic droughts and oscillation in temperatures as well as rainfall patterns. Records and modelling of the Holocene and pre-holocene periods are used to support this position. Others have stated that there is clear progression in the dryness and changes in the climate and this progression is owed to anthropogenic factors. Land degradation as result of farming, mining, logging, grazing, etc, contribute to the warming. The anthropogenic factors are divided into those internal to the continent and those impacting from outside. Explaining the climate changes in the Sahel for example, Reid Bryson posited that pollution in the northern hemisphere resulted in a cooling that caused southerly migration of the jet stream and the sub-tropical high pressure belt restraining the movement of rain producing elements. This view has been challenged. It's been indicated that activities on the continent itself contributed to the changing climate. In the decade 1981-1990, Africa lost an estimated 41 million hectares of forest cover.<sup>9</sup> In Ghana total area of forest reduced from 36 percent of the land surface to 13.3 percent 1990 and 10 percent a decade later.<sup>10</sup> In just a six year period between 1990 -1996, Ghana lost 400 percent of its sink capacity.<sup>11</sup> This massive lost of forest is due to a number of factors including logging, mining, agricultural activities and human settlements. Thus, human activities in the developed northern countries are responsible in part for the dryness in the Sahel and related regions of Africa, but the socio-economic activities of Africans themselves contribute to the hastening of land degradation and consequently, to climate change. Whatever

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<sup>9</sup> Keith Openshaw, *Natural Resources: Population Growth and Sustainable Development in Africa* (in Low supra note ....) 114.

<sup>10</sup> EPA, GHANA: STATE OF THE ENVIRONMENT REPORT 3 (2004).

<sup>11</sup> Ibid.

the cause of continental warming or climate change, it is clear that rise in temperatures exert enormous pressures on hydrological resources with severe consequences on agriculture, livelihoods and peace. Water bodies such as lake Chad have shrank considerably and would be completely dry in the course of this century. Chemu and Sakumo lagoons are not only dead but virtually not existing anymore. The ice cap on top of Mount Kilimanjaro is fast disappearing and may not exist in another generation.<sup>12</sup>

### **Old Energy Contributed to Climate Change in Africa?**

The energy mix in Africa is dominated by biomass. More than 80 percent of the energy consumed in Sub-Saharan Africa is from biomass. This consist of wood fuel, charcoal made from wood, dry shrubs and animal dung. Commercial energy, derived from fossil fuel, hydro-electricity, geothermal, etc, forms about 15 percent of the energy used on the continent. Reliance on biomass and fossil fuel constitute the biggest contribution to climate changing conditions. The harvesting of wood not only opens up closed forests but also removes the vegetative canopy that absorbs or acts as sink for greenhouse gases. It also prepares the grounds for runoff during precipitation allowing ultimately for infertility and desertification. The burning of biomass itself generates carbon monoxide and related gases that ultimately damage the climate.

Fossil fuel, particularly crude oil, is known to be a major contributor to green house gases and to climate change. A dozen African countries produce oil, and to a lesser extent, gas. These are Angola, Algeria, Nigeria, Chad, Cameroon, Gabon, Ghana, Ivory Coast, Equatorial Guinea, Sao Tome and Principe and Sudan. Their combined total production of crude oil is 10317.6 thousand barrels per day or 12.5

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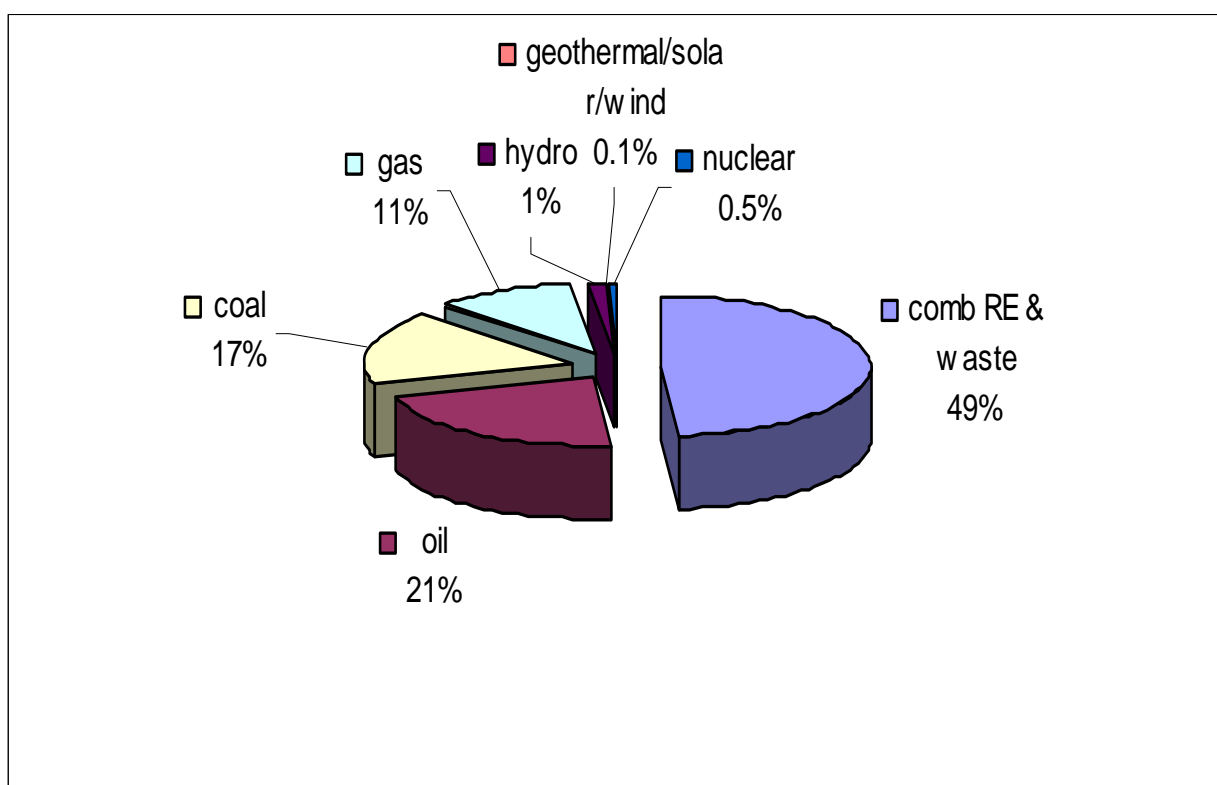
<sup>12</sup> Jonathan Amos, Kilimanjaro's White Peak to Disappear. The Mountain top lost 82 percent of its ice cap since 1912. BBC News 19 Feb. 2001. Located at [www.news.bbc.co.uk/1/hi/in\\_depth/sci\\_tech/2001/san\\_francisco/1177879.stm](http://www.news.bbc.co.uk/1/hi/in_depth/sci_tech/2001/san_francisco/1177879.stm)

percent of world production.<sup>13</sup> Most of which is exported to Europe, China and North America. The oil that is retained or imported into the continent is used in transportation and electricity generation. The use of old machinery, vehicles and the absence of any effective regulations on pollution means that the consumption of fossil fuel in Africa results in high emission of greenhouse gases. At the same time, the export of crude oil transfers the emission of the resulting gases to other geographical regions of the world. Conversely, the returns from the sale of oil have enabled the key population centres and urban areas in Africa to reduce their dependence on biomass as well as local agricultural produce.

Electricity in Africa is produced from water sources, fossil fuel and to a limited extent, coal and nuclear. In Ghana, 5 percent of the land surface was converted into a hydro-electric dam that is still the main source of electricity for the country. The Aswan dam in Egypt draws on the Nile river, the Inga dam draws on the Congo river, the Cahora Bassa dam draws on the Zambezi. Massive hydro-electric dams expand the surface of the water bodies used and therefore accelerate the rate of evaporation directly depleting the volume.

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<sup>13</sup> In 2007, Africa consumed 3 percent of world oil production. See MBendi, Africa: Oil and Gas – Overview, located at [www.mbendi.co.za/indy/oilg/af/p0005.htm](http://www.mbendi.co.za/indy/oilg/af/p0005.htm)



Source: Tsikata, Brew-Hammond and Osafo

The law that govern the production, harvesting and use of these sources of energy and their consequences for the African environment vary considerably. The four competing sources of law on the subject also make it unnecessarily complicated.<sup>14</sup> The customary law still influences, if not governs, the harvesting of forest resources and the use of water from river bodies at the local rural levels in Africa. Customary law also regulates forestry in many countries. In Ghana, forest groves are set aside for cultural and conservatory reasons. Entry into designated forests was also strictly controlled. Underlying all of this is the land tenure regime. In most of Africa, land was historically owned by communities represented by the

<sup>14</sup> These would be the customary law, the common or civil law, the national legislative measures and international law.

indigenous political or family leadership.<sup>15</sup> It meant that any member of the land owning community could subject previously unoccupied land to his or her occupation and immediate ownership and use. Land resources such as forestry, wildlife, water bodies were therefore not subjected to the market or price mechanism or rationed. As a consequence forestry and wildlife were accessed or degraded to the extent that their contribution as carbon sinks were jeopardised. More than that, the un-regulated removal of forestry for agricultural and domestic reasons contributed to the desertification of the continent and the changes in the continental climate. The effectiveness of traditional norms have waned over the years in the face of colonial, cosmopolitan and economic transformations of the countries in Africa. Thus the communal ownership of the ‘commons’ while it might have been a helpful method of regulating the use of natural resources at a rudimentary level of living with small populations in homogenous societies, could not hold the fort and contributed to the degradation of Africa’s environment.

It can be argued that the failure of post-colonial governments to effectively integrate traditional or customary norms into the national modern legal system is responsible for the confused, if not free for all use of natural resources.<sup>16</sup> What the laws that were passed by the post-colonial governments did were to assert in a piecemeal fashion regulatory or managerial authority over natural resources, while in many cases purporting to leave ownership of the resources to the local people and their customary systems. In the Lake Chad region of the state of Borno in Nigeria, the Federal State asserted title to the lake floor but access and use is granted to

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<sup>15</sup> This is akin to the Open Access system. See JAN HANCOCK, ENVIRONMENTAL HUMAN RIGHTS 138 (2003).

<sup>16</sup> . This argument was rigorously pursued by David Dzidzornu , Environment Protection in Africa: A Panorama of the Law and Practice, 22 JENRL 165-170 (2004).

communities in the area in accordance with customary law.<sup>17</sup> In some cases, ownership of the resource such as fossil fuel, gold, diamond, copper and other precious minerals are vested in the national state but surface rights or access rights remained with the indigenous people. This is the format of the Minerals and Mining Act in Ghana, the Petroleum Act and Land Use Decree of Nigeria. The environmental consequences of mining, particularly the lost of vegetation and in many cases the siltation and pollution of water bodies were either not addressed or done in a perfunctory way. For example section 72 of the 1986 Minerals and Mining Law of Ghana stated that

the holder of a mineral right shall in the exercise of his rights ... have due regard to the effect of the mineral operations on the environment and shall take such steps as may be necessary to prevent pollution of the environment as a result of such operations

The laws on forestry were no better. Not only were they incoherent but also hardly enforced. Even in the face of grave threats to the survival of forests, advance of desertification, drying of wetlands, the governments of Africa's continued reliance on natural resources means that their commitment to rigorous environmental protection remains minimal.

That minimal effort is largely induced by International laws and norms on the environment. The customary International Law on state responsibility and on the use of shared water and other resources as evidenced in the Trail Smelter Arbitration and Lake Lanoux case were, in the main, followed by African governments. Perhaps, not because of any great awareness or belief in the norms but because there was no immediate need to call those norms into question. The Cameroon-Nigeria, Tunisia -

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<sup>17</sup> . See M-T Sarch, Fishing and Farming at Lake Chad: Institutions for Access to Natural Resources, 62 J. Env't'l Mgt 185-199 (2001).

Libya<sup>18</sup>, Botswana-Namibia, Guinea – Guinea-Bissau<sup>19</sup> and Mali-Burkina Faso cases were all fought on the basis of boundary disputes even if, as in the Cameroon-Nigeria case, crude oil resources were the underlying anchor of the dispute. To be fair, the customary rules were formulated without any coherent thought about climate change. International treaties on the environment have asserted themselves in the apparent vacuum left unfilled by national laws and customary international law. Many scholars mark 1972 as a watershed in international environmental legislation. This was when the United Nations determined that there the “need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment”. The Conference on the Human Environment declared, *inter alia*, in article 17 that appropriate national institutions must be established to manage and promote the environment. In response to this, several African countries, including Ghana, established distinct bodies to manage their respective environment. Again in response to the Rio Principles, fully fledged Ministries were established to integrate environmental issues at the highest levels of government. Many of these institutions lacked the necessary resources and political space to be efficacious.

More substantively, the international community ‘passed’ legislation that were of direct relevance to climate change in Africa. The UN Framework Convention on Climate Change which entered into force in 1994 seeks to stabilise atmospheric emissions both by controlling emissions and by restraining the destruction of carbon sinks. It was one of the first treaties to articulate the common but differentiated responsibility principle. This, together with the Convention on Bio-diversity, Convention to Combat Desertification, Convention for the Protection of the Ozone

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<sup>18</sup> . ICJ Reports (1982) 2.

<sup>19</sup> . 77 ILR 635 (1988).

Layer, the Convention on Long Range Trans-boundary Air Pollution and related Protocols, seek to deal with climate change both at the source and at the absorption ends. The worrying defect in all of these initiatives is the assumption that African countries are more of victims of climate change and not necessarily contributors. This then leads to the relatively mild obligations on African countries and expectations of 'help' from developed countries. This, it is submitted, weakens the potency and reach of the international treaties on climate change.

### **New Energy Dynamics**

A key new dynamic in the energy business is the latest cycle of price changes in oil and gas. This is caused by demand and supply imperatives. In 2004 the demand for oil was 84 million barrels per day and supply was 83.5 million barrels per day.<sup>20</sup> There is an oil crunch! Price jumped from 11 dollars a barrel in 1999 to 140 dollars in June this year. This has a number of implications for Africa's climate. First, about a dozen African countries produce oil and associated gas. Most of the oil is exported and the revenue generated is the main source of revenue to the exporting countries. The increase in world market price means increased state revenues. This new revenue is largely channelled into consumption which ultimately results in further damage to the environment. There is also a surge of interest by various powers and oil companies in Africa as the next gulf. Oil discoveries have been announced in Ghana, Mauritania and Sao Tome and Principe. If the experience of Nigeria and other African countries is anything, the burgeoning interest in Africa's oil would mean more emissions and both atmospheric and aquatic pollution. The damage to Africa's climate will continue to catch up with the rest of the world. But by and large, majority of African countries

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<sup>20</sup> . JIM ROGERS, HOT COMMODITIES 124-125 (2004).

are oil importing and have to restrain demand and consumption. The budget of African countries is dominated by oil. The higher the prices, demand, even where fairly inelastic, will be restrained and that means less atmospheric pollutants.

It also means switching to less expensive sources of energy. A number of African countries have been experimenting or piloting the use of gas in electricity generation, transportation and domestic household use. The West African Pipeline Company owned by the governments of Nigeria, Togo, Benin and Ghana is to transport natural gas from Nigeria to points in the other three participating countries mainly for power generation. Since gas generates less greenhouse gases, the apparent shift should restrain pollution and climate change. Unfortunately, the steep rise in crude oil drew the price of gas higher and therefore makes the shift to gas less dramatic. And if the savings from the move to gas is not significant, then the total cost of the move would be higher in the long run than staying with the 'status quo'. The difficulties of dash for gas are compounded by the infrastructure constraints and the fiscal policies of governments. There are no networks for gas distribution in any African country. Whereas this may not be much a problem for electricity generation from gas, it is a hindrance to domestic gas use. Secondly, governments levy taxes on crude oil and in order to alleviate the pressures of high prices governments are reducing or receiving less oil tax revenue. To make up for the shortfall new taxes are being imposed on gas consumption.

Another alternative energy source in the face of high oil prices is biomass and bio-fuels. The resources that are depended upon to produce agricultural products are now being called on to produce bio-fuel. There is no large scale production of corn, sugar cane, palm, etc solely for energy purposes yet. But experiments have been done and trials have been going on regarding the energy potential of plants such as jatropha

and palm. If plantations are pursued for bio-fuel there will be enormous pressures on the already stretched water and labour resources in the producing areas. Fertile land will also be in short supply for agricultural purposes. The degradation of forests and the consequent precipitation patterns will impact the continent's climate tremendously. There is also more interest and experimentation with solar panels for domestic electrical needs. The same can be said for wind power. Growth in wind and solar energy use in Africa will have, as in other parts of the world, hugely beneficial impact on the continent's environment as well as the economy. No greenhouse gas emissions, no land degradation and no water pollution, clean energy sources will reinvigorate the economies of African countries by the creation of new jobs, the import and use of cleaner equipment and the reduction of dependence on energy sources external to the particular country. This is so for oil importing countries but also relevant to oil exporting countries as they are able to diversify their sources of revenue. In the end, if more of the world's population use emission free energy, the global climate will improve and Africa will be a beneficiary as well.

### **The Law**

In view of the shortcomings in the law on environmental protection outlined earlier, is there any way at all that the law can be an instrument of climate management if not a restraint on climate forcings? The answer has to be yes, for the simple reason that society is founded on laws and it is by law that almost every aspect of human activity is governed. Given the largely trans-national nature of climate change, the laws that can be effective in dealing with the subject have to be, of necessity, trans-national. Yet the first scene of the workings of law is mostly domestic. This is why rights law is one of the first sources to search in our quest for law that will be effective in

managing climate change. “Noting the urgency of climate change we can arguably use human rights law, ..... as a ‘gap filler’ in the absence of convincing environmental regulation on a particular issue ... if we trying to halt climate change or achieve climate justice”.<sup>21</sup> Is there a right to healthy environment? And if there is, can that be effective in managing the climate in Africa? At the international level, the Human Rights Council of the UN adopted a resolution co-sponsored by more than a dozen African countries to conduct studies into the effects of climate change on human rights. A debate on the report is scheduled for the Spring of 2009, expected to be followed by a General Assembly resolution. There is simultaneous work on the subject by the UN Human Rights Commissioner. There can be little doubt that climate change, especially as manifested in the drying up of water bodies, affects the access to and quality of water that is needed for domestic and industrial survival. Climate change also affects the quality of air and therefore endangers the health of people. Education, culture, land rights are the other aspects of rights that are affected by climate change. Regional bodies in Europe and Latin America as well as national courts in various countries have made important strides in recognising, at least, incidentally, a right to healthful environment.<sup>22</sup>

In Africa, the Charter of Human and Peoples Rights states in article 24 that “all peoples shall have the right to a general satisfactory environment favourable to their development”. Although there are other provisions that can be relied upon to address environmental issues, this is the clearest provision dealing directly with the environment. The language of the provision is, however, problematic. In one sense it is mandatory in its emphasis but by seeking to contextualise the right to “their

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<sup>21</sup> . Karen E. MacDonald, A Right to a Healthful Environment – Humans and Habitats: Re-thinking Rights in an Age of Climate Change (in *European Energy and Environmental Law Review*, Aug. 2008) at 217.

<sup>22</sup> The Oposa case.

development”, it has subjected the right to a narrow anthropogenic and sectional interests. Who determines what is ‘general satisfactory environment’? and who determines whether a particular environmental trajectory is ‘favourable’ to a particular person or group’s development? As it stands, the provision offers little assistance to an individual or a ‘minority’ group in asserting their environmental rights.<sup>23</sup> In a discourse of common but differentiated responsibilities and concessionary attitudes to developing countries, subjecting right to healthy environment to developmental needs not only blunts the sharpness of the right but also removes any moral responsibility that can motivate efforts at promoting environmental health. Apart from difficulties inherent in the provision, there are procedural issues that would prevent the articulation or vindication of the right in the first place. These include the requirement by the African Human Rights Commission for the exhaustion of domestic remedies,<sup>24</sup> the determination of standing and the award of remedies.

Given the shortcomings of the continental Human Rights regime to garner and sustain environmental protection, reference to patent environmental legal instruments and their effectiveness in containing climate change in Africa is inevitable. The first, and perhaps, the most comprehensive regional or continental environmental treaty is the African Convention for the Conservation of Nature and Natural Resources of 1968 (known as the Algiers Convention). Although this Convention has been amended, until the amendment comes into force, the original Algiers Convention continues to

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<sup>23</sup> Antoine Bisangou v. Republic of Congo, *infra* note 11. The African Human Rights Commission held that the destruction a person’s property did not amount to “a people striped of their wealth and natural resources” in terms of article 21 of the African Charter.

<sup>24</sup> Antoine Bssangou v. Reoublic of Congo, Communication 253/2002, Nov., 2006 (15 IHRR 871, 2008). In this case where Mr Bissangou was denied compensation for the damage of his real estate and personal property by Congolese forces during the civil conflict in 1993, the Commission held that he had exhausted domestic remedies.

serve as the legal framework for continental environmental analysis.<sup>25</sup> The Convention, in many ways, was a progressive step at time when environmental consciousness was not the major global concern that it is today. Considering that the economy of the continent is heavily dependent on natural resources, it is not surprising that there should be continent-wide initiatives to accommodate resource exploitation in an environmental framework. It is also not surprising that the Algiers Convention seeks demarcations of areas of exploitation and areas of conservation. It also calls on state parties to promote research in conservation, utilisation, management, co-operation and education. Lead institutions must be established to deal with conservation issues especially biomes that are endangered. To implement the ideals of the Convention, countries are entreated to pass legislation that targets resource conservation and management. Efforts in this direction must be reported to the African Union. There are no sanctions for non compliance and there is nothing more to the received reports. Apart from symbolic monitoring, the Convention does not lay particular emphasis on energy and climate change but a widespread conservation effort in member countries will contain desertification, loss of wetlands, industrial pollution and will go a long way in removing some of the factors that contribute to climate change or the loss of sinks that assist in holding climate change. The problem though, is that even in its amended form, the Algiers Convention does not respond effectively to the energy dynamics of the twenty-first century.

Although there is no indication of national legislation emanating from the Algiers Convention, African countries have taken a number of legislative measures to manage the environment in a serious way. New constitutions that emerged in the wake of the end of the Cold War enunciated provisions that dealt directly with the

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<sup>25</sup> . See David Dzidzornu, *Environment Protection in Africa: A Panorama of the Law and Practice*, 22 JERL 148-156 (2004).

environment. The 1994 Constitution of South Africa provides that “every person shall have the right to an environment which is not detrimental to his or her health or well-being”. The 1992 Ghana Constitution states in article 36(9) that “the State shall take appropriate measures to safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for purposes of protecting the wider international environment for mankind”. Article 37 of the constitution of Mozambique mandates the state to “promote efforts to guarantee the ecological balance and the conservation of the environment”, and the 1999 Nigerian Constitution calls on the state to “protect and improve the environment and safeguard the water, air, land, forest and wildlife of Nigeria”.<sup>26</sup> The Zambian, Ethiopian and other constitutions have similar provisions. These constitutional provisions by themselves, especially where they are part of a preamble or directive principles of state policy, are grossly inadequate for general environmental juridical enforcement. That is why the South African constitution for example has general provisions for the conferment of standing, for the unrestrained access to information relating to decisions affecting the environment, property rights and compensation.<sup>27</sup>

### **Reasons why New Energy Dynamics will not Change Climate Results in Africa.**

Europe in the early nineteenth century faced environmental problems not entirely dissimilar to those faced by African countries today. There were conflicting demands on forests and land. People in towns and urban centres saw forests as source of fuel wood, timber for construction and export while farmers needed fertile land for

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<sup>26</sup> Article 20 of the Constitution of the Federal Republic of Nigeria. For more on constitutional environmental law in Africa see E.E. Okon, *The Environmental Perspective in the 1999 Nigerian Constitution* 5 *Env. L. Rev.* 256 (2003).

<sup>27</sup> . Jan Glazewski, *Environmental Rights and the New South African Constitution* (in A. Boyle and M Anderson eds, *HUMAN RIGHTS APPROACHES TO ENVIRONMENTAL PROTECTION* 187-197, 1996).

agriculture.<sup>28</sup> There were also conflicts as to ownership, access and the uses to which land may be put.<sup>29</sup> The solution was radical changes in land tenure systems from the remnants of feudalism to modern decentralised ownership. Another key factor that solved the resource conflict and regenerated or preserved Europe's forests was the use of coal and later fossil fuel, hydro and nuclear energy. At the moment, these would seem to be far off the radar for Africa. Most of the conflicts on the continent are seen in the political realm as the result of bad governance. Underlying this, however, is the struggle for control over land and natural resources. The conflicts in Angola, Nigeria, Senegal, Congo, Uganda and Ghana have all been centred on natural resource or land heritage. The consequence of the conflicts is that there is little interest or attention paid to conservation and growth of the resource in question. Instead, the effort is the maximum, and often, the most inefficient way of exploiting the resource. There is no indication that the issue is being dealt with in a fundamental way. Land tenure systems in Africa still remain dominated by customary practice. Many commentators romanticise about the benefits of customary system of land tenure but the system has not reinvented itself and is overtaken by cosmopolitan population growth, modern methods of production, etc. In Ghana for instance, it is still very difficult to determine with certainty the true owner of land in the southern part of the country.<sup>30</sup> The hierarchy of allodial, usufructuary, leaseholds, and other forms of holdings are not clearly defined and recorded.<sup>31</sup> It means that the "Open Access" system theoretically operates giving rise to confusion in practical application. It is this confusion that has

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<sup>28</sup> CHRISTIAN KUCHLI, *FORESTS OF HOPE* 10 (1997).

<sup>29</sup> *Ibid.*

<sup>30</sup> See F. Nii Botchway, *Land Ownership and Responsibility for the Mining Environment*, Nat. Res. J. (1998). It is said anecdotally that 'to buy land is to buy litigation'.

<sup>31</sup> *Ibid.*

led to the establishment of settlements, farms, mines and even towns in forest reserves.<sup>32</sup> Fundamental land reform is needed urgently.

The Reform need not be from one extreme confused tenure to one centralised state ownership, or management by edict. Centralised state ownership has been shown to be a disaster to forestry resources, leading to the assertion that “wherever national government or powerful market forces deny local people the chance to control their own resources, profound changes in land use occur. Trees often disappear, or forests are converted into monocultures”.<sup>33</sup> A nuanced system which incorporates some of the traditional practices and involves sustainable long term beneficial outputs for the local people will be a better way forward. This is what Uganda tried to do with the 1994 National Environment Act.<sup>34</sup> The Act established District Environment Committees made of representatives of local as well national bodies. Further down, Local Environment Committees were also created. These local committees were given the task of preparing work plans, educate the local communities about the environment, mobilise the people to restore degraded areas and to monitor and report all activities that have or are likely to have significant environmental impact. Key enforcement functions were assigned to the local committees especially in the area of tree planting to the extent that “where a holder of an interest in land fails to comply ... the local environment committee may mobilise the community to ensure compliance”.<sup>35</sup> This decentralised environmental management is complemented by the 1998 Land Act which also decentralised the administration of land in Uganda. As commendable as this model may be, the local administration still lacks adequate human resources to effectuate their mandate. There are still suspicions of the central

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<sup>32</sup> EPA, GHANA: STATE OF THE ENVIRONMENT REPORT 67 (2004).

<sup>33</sup> See *ibid.* See also Kuchli, *supra* note .... at 9.

<sup>34</sup> B. Richardson et al, *Environmental Law in Post-Colonial Societies* (in B. Richardson and S. Wood eds, *Environmental Law for Sustainability* 429, 2006).

<sup>35</sup> Section 39 of the National Environment Act 1995 (Ch153).

government intentions especially in the light of the 2007 efforts to centralise and give enormous power and discretion to the Minister in land matters. A similar but arguably more comprehensive model of local and indigenous involvement in forestry and land management is illustrated in the Tanzania.

In June 2002, the Tanzania Parliament passed the Forest Act. The principal objective is to promote and conserve natural resources for the benefit of present and future generations. The chosen means of achieving this goal is “the active participation of the citizen in the sustainable planning, management, use and conservation of forest resources through the development of individual and community rights, whether derived from customary law or under this Act”.<sup>36</sup> To manifest this, a layer of national, local authority, village and community forest reserves and forests on general lands have been created. Provision is also made for private forest reserves. These units are to have forest management plans detailing the baseline information of the forests and their most sustainable use. There is a Forest Fund established and other financial provisions regarding royalty and fee charges and their collection. To promote accountability the village forest and land management councils are elected and supervised by the village assembly consisting of all adult members of the community.<sup>37</sup> Together with the Land Act of 1999, the Tanzania forest management regime is hailed as an example of the way forward in environmental management and the avoidance of climate change.<sup>38</sup> This is indeed true in the African context where governance is not very effective. One difficulty with the Tanzania Forest Act is that in some ways, it perpetuates the “Common Access” mentality by providing in section 78(3) that “No royalties shall be required for the

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<sup>36</sup> Section 3 of Forest Act of 2002.

<sup>37</sup> See Fui Tsikata et al, *supra* note .... at 289.

<sup>38</sup> *Ibid.* Similar models exist in the Mozambique’s Land Reform act of 1997 and the Namibia Communal Land Reform Act of 2002.

harvesting or extraction of forest produce within a village forest reserve or community forest reserve by the resident of the village or the members of a Group as the case may be unless such a requirement is specifically provided for any agreement under which they are managed". For a country whose population is dependent on biomass for 90 percent of its energy needs, this provision is understandable, but not having a pricing mechanism does little to infuse conservation ethic.

Moreover, the projections for food production, and now, the pressures or attractions of bio-fuel cultivation means that the demand for land will be intense. It is estimated that the demand for agricultural land on the continent would increase by 75 percent by 2025.<sup>39</sup> It is clear then that if land is not reformed in a way that assures certainty of title and decentralised control incorporating local people desertification will continue, greenhouse gas production increase and yet the carbon sinks provided by forests will be lost entirely.

Apart from South Africa, no African country has nuclear energy. Countries like Ghana and Egypt have atomic science research centres but there is no plan to develop nuclear energy for commercial purposes. Although the increase in the price of fossil fuel has generated some discussion of nuclear energy possibilities, the main sticking point remains the disposal of waste. And since African countries do not have the capacity for that there is little support for nuclear energy. Although solar energy is abundant on the continent, the technology and the funding is not available to tap this free, clean, infinite natural resource. The same can be said of wind energy. That leaves fossil fuel, biomass and hydro-electricity as sources for further energy in Africa.

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<sup>39</sup> With deforestation rate of 1 percent per year the pressure is only going to get worse. See Keith Openshaw, *Natural Resources: Population Growth and Sustainable Development in Africa* in Low eds, *supra* note .... at 113-122.

It is estimated that more than 500 million people in Africa will be without electric power in the next decade.<sup>40</sup> For a significant dent to be made in this circumstance, more than a quarter trillion dollars will be needed. The good news is that the continent has good stock of energy resources. In 2006, Africa had 7.9 percent of total world crude oil reserves and was producing 10 percent of world supplies.<sup>41</sup> The continent also produced 8 percent of world gas supplies and held 8.6 percent of reserves.<sup>42</sup> With the recent discoveries in Equatorial Guinea, Ghana, Chad and Sudan these estimates of reserves are likely to increase significantly. This is one area where the new energy dynamics have strong impact on Africa. The impact will be beneficial to the economies and the societies of the countries where these resources are located. As far as the continental climate is concerned the impact would be detrimental in the relevant countries and barely make a dent in the greenhouse gas emissions in the importing countries. Developing countries that produce oil are known to subsidise the domestic consumption of the fuel. This means that incentive to reduce consumption would not exist. At the same time, since demand for oil is inelastic, the price increases have to be sharp in order to reduce consumption and therefore adverse climate consequences.

### **The International Regime**

If human rights jurisprudence is ineffective in restraining climate change in Africa and if African governments are unable to enforce a rigorous regime of environmental protection, the question remains whether the International initiatives in the form of the UNFCCC and the Kyoto protocol make any difference?

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<sup>40</sup> . Fui Tsikata, et al, 279 (2007).

<sup>41</sup> IEA, World Proved Reserves of Oil and Natural Gas (2007).

<sup>42</sup> IEA, World Energy Outlook (2006), World Energy Consumption (July 2006).

There are several international treaties and other initiatives that have important relevance to energy and climate change in Africa, but, for the purposes of this work we will focus on the Kyoto Protocol and its founding UN Framework Convention on Climate Change.<sup>43</sup> The protocol was conceived of in 1992 at the time of the UNFCCC as an instrument infused with scientific information to implement the objectives of the convention. It formulated detailed trajectories aimed at containing or stabilising climate change using 1990 as the baseline.<sup>44</sup> Energy efficiency, protection and promotion of sinks, afforestation of previously deforested areas, sustainable agricultural practices, research into and use of technologies that reduce emissions and storage of what is emitted and the shift from dependence on fossil fuel to renewable sources of energy, are all measures prescribed to attain the goals of the UNFCCC and the Kyoto Protocol.<sup>45</sup> The Protocol also called for economic reforms that would remove distortions in the market, in particular, the removal of subsidies and tax incentives that support current but environmentally damaging production systems and lifestyles. For the purposes of this work, the protocol can be said to have three central themes; common but differentiated responsibilities, reduction of emissions and the promotion of sinks.

In recognition of the fact that developed countries have contributed more to climate change, they are to provide financial, technological and technical assistance to developing countries.<sup>46</sup> Developing countries are also allowed more flexibility in the implementation of efforts to deal with climate change. A premise for this flexibility is

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<sup>43</sup> The UNFCCC is reported in 31 ILM 848 (1992) and the Kyoto Protocol is reported in 37 ILM 22 (1998).

<sup>44</sup> Article 3 of the Kyoto Protocol.

<sup>45</sup> Article 2 of the Kyoto Protocol.

<sup>46</sup> Section 4(7) of the UN FCCC, 31 ILM 848 (1992). In 2003, of the 27.5 billion tons of carbon dioxide global emissions, the US emitted 21 percent, China 15 percent, Japan 4.5 percent. In per capita terms, the US had 19.9 tons, Australia and Canada 18 tons each, Nigeria 0.42, Zambia 0.19, Tanzania 0.1 and Chad 0.01. See African Constitutions located at [www.africa.upenn.edu/Govern Political](http://www.africa.upenn.edu/Govern_Political) Last visited 20/08/08.

the recognition that developing countries would increase their share of emissions as they develop. The special circumstances of oil import and export dependent countries are to be taken into account in regard to actions to limit green house gas emissions. This is conundrum. If developing countries continue to emit more atmospheric gases in proportion to economic and social development aspirations, which aspirations are not different from those of currently developed countries, any gains made in greenhouse gas emissions in the developed countries will be offset by emissions from developing countries. For African countries, the conservation and enhancement of carbon sinks would be of more immediate profit. This is why debt for nature financial schemes, shift from use of biomass to bio-diesel as Zambia, Mali and Ghana have started with the jatropha curcas, should take priority position.<sup>47</sup> As far as economic policy reforms are concerned, African countries are heavily dependent on the International Financial institutions, particularly the IMF and the World Bank, and the parameters of their policies under-gird the current production and consumption patterns. Promotion of existing export, often mono commodity economies, including timber, mineral resources and fossil fuel, the liquidation of industries, heavy reliance on imports, increased taxes including taxes on less polluting sources of energy, and dependence on agriculture. In practice, these economic policies are counter-productive to efforts to stabilize and manage climate change.

Perhaps, it is in recognition of these limitations and the inter-connection of the climates of the world that the Kyoto Protocol invented the Clean Development Mechanism (CDM). The term CDM is not defined but described in article 12 of the Kyoto Protocol and its purposes stated. It is an avenue to help developed countries meet their emission restrictions and reduction, while at the same time, enable

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<sup>47</sup> UNDESA, Small Scale Production and Use of Liquid Bio-fuels in Sub-Saharan Africa: Perspectives for Sustainable Development (Background Paper No. 2 DESA/DSD/2007/2).

developing countries to pursue sustainable development not only at the macro level but also at the micro level. In simple terms, an entity from the developed world locates or undertakes a project in a developing country that reduces emission or creates a carbon sink, and in return the entity gets credit for its emissions at its home country. Although participation in the mechanism is voluntary, money from the certified projects are to be used in part to assist developing countries in adapting to climate change. Where necessary, the CDM is to help arrange funding for certified activities related to a CDM project. To date there are under 20 CDM projects in Africa.<sup>48</sup> About half are located in South Africa, 7 in Algeria and 1 in Nigeria.<sup>49</sup> It is quite clear that apart from South Africa, there is not much interest in developing CDM projects in sub-Saharan Africa.

It is not hard to determine the reasons for this lopsided interest in Africa. Politics and governance are real worries for all with any interest in Africa. Although many of the 54 countries on the continent are stable, there is anxiety that given the unwillingness of African political leaders to exit office, even the most stable of countries could easily snap.<sup>50</sup> With preoccupation with staying in power at all costs, environment, CDM, etc, are down the list of priorities. What this also means is that, rules about business, bureaucratic procedures and business ethics are often non-existent or compromised. It is noteworthy that almost all the CDM projects in Africa are in the conventional energy sector. This is an area that is crucial to the world economy and, more importantly, has a regime of its own in fossil fuel exporting developing countries. The sector is often isolated from the crucible of politics

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<sup>48</sup> Fui Tsikata, et al, *supra* note ... at 282.

<sup>49</sup> *Ibid.*

<sup>50</sup> See JOHN GHAZVINIAN, *UNTAPPED: THE SCRAMBLE FOR AFRICA'S OIL* 13 (2007).

although its returns feed political corruption.<sup>51</sup> It is also a sector that is dominated by large multinational corporations with integrated self-contained operations.<sup>52</sup> The interest of narrow minded politicians and large oil corporations coincide, and that is not a cause for optimism that any significant inroads would be made in the climate change discourse in Africa.

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<sup>51</sup> JOHN GHAZVINIAN, *supra* note ... at 14. see generally, RICARDO DE OLIVEIRA, *supra* note

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<sup>52</sup> Described as the 'enclave industry'. *Ibid.*