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SOUTHERN VOICES:

Energy and Food Security in Sub-Saharan Africa: Global Crisis, Local Impacts

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I. Introduction

Agriculture plays a key role in Sub-Saharan Africa (SSA). The agricultural sector, which accounts for 30% of GDP, is an important source of export earnings and remains the major sector absorbing the growing labor force^[1]. 60% of the economically active population works in the agricultural sector. As a result, agriculture could be a driver for economic growth and poverty reduction. In the rural sector, on-farm activities continue to provide the main share of household incomes and most farm households grow staple foods and are self-sufficient. In spite of this central role, Sub-Saharan Africa's agricultural sector has not overcome its food supply challenges. The level of rural poverty is still alarming and the region has to cope with adverse agricultural policies initiated in the North. Meanwhile energy and food security issues have taken center stage in light of the recent food price spike.

Sub-Saharan Africa was hard hit by the global food crisis. Underlying causes of this food crisis include short-term and long-term factors. Rising demand in the large developing countries, especially for meat and dairy products, has resulted in an increased use of grains. On the supply side, investments in agriculture have been declining for more than two decades in developing countries while developed countries provided subsidies and trade protection to their farmers, thus further depressing world prices and discouraging investments and production in developing countries (Elliot, 2006). Recently, sharply rising energy prices raised production costs and also contributed to increasing the demand for alternative fuels. The emergence of bio-fuels as a commercially viable use of food grains and the link between energy and food prices may be worrisome given that energy prices have been volatile for decades. The sudden rise in some agricultural products (corn, wheat) has resulted from financial speculation (Timmer, 2009).

To promote the use of bio-fuels, the United States and the European Union have put in place tax and regulatory policies. They invoke the necessity to improve energy security by reducing their dependence on foreign sources of oil and reducing greenhouse emissions. Political mandates for the use of bio-fuels (ethanol, biodiesel) and subsidy provisions to bio-fuels producers and consumers explain the rapid growth of the bio-fuel industry in Europe and in the United States although the sharp increase in oil prices would certainly validate the commercial use of these alternative fuels. Nonetheless, some critics doubt there would be any significant contribution to the energy security and environmental goals set for these policies while their cost to taxpayers and the environment are certain (Elliott, 2008).

While developed countries' energy policy decisions have contributed to exacerbating the global food crisis and have directly impacted Africa, the energy crisis in Sub-Saharan Africa is differently shaped. Indeed, Africa is well endowed with a wide range of energy resources. Fossil energy resources are abundant but concentrated in few countries. Solar and wind energy are more evenly distributed and offer great economic potential if some conditions are met (technology maturity, capacity building, etc.). However, the majority of Sub-Saharan African countries, especially in rural areas, are characterized by a huge dependence on traditional biomass to satisfy their basic energy needs. Access to commercial energy is extremely low.

Although it is widely recognized that energy is fundamental to the development of Africa (fulfilment of basic needs, energy for agriculture, processing and education), policies do not seem to set clear priorities stemming from African needs. There are few initiatives undertaken or envisaged on the continent^[ii] for bio-fuel production from biomass (ethanol, bio-diesel). This might be a great opportunity for the continent to diversify energy sources. But these programmes are often weakened by land issues. Because participation of local stakeholders in the decision-making process is rarely secured, many of these projects are rejected by small scale producers who perceive these land allocations as part of the international land grab movement and as a result a threat to their livelihood.

Objectives

This paper seeks to analyze the food and energy crisis in Sub-Saharan Africa through the glasses of African stakeholders, using Ghana and Senegal as case studies. It will critically examine the extent to which agrarian political struggles have been provoked by the new land investment dynamics and their consequences on energy and food security. Using a political economy framework, we will address the following fundamental questions:

- What are the politics of the underlining policy processes involving land transactions?
- What are the impacts of new food and bio-fuel investments - who wins, who loses and why, and what are the real social, political and economic consequences of these processes on both local-level and national food and energy security issues?
- What forms of resistance exist? What are the issues that unite and divide key actors around land investments?

It has become imperative to look into these issues because there are currently concerns and agitations regarding the management and governance of all land investment deals: the processes for accessing land and making associated investments, issues of transparency, monitoring and accountability; that those materially affected should be appropriately consulted and agreements from consultations recorded and enforced and all projects should be viable in every sense, respect for the rule of law and industrial best practice reflected.

As there are now competing demands for land for production of food and energy, it is also imperative to examine how these competing demands can be best balanced to ensure the continuous provision of both commodities.

Methodology

This research relied primarily on a desk review. The collection of secondary data was used to: i) to review policies and programs on agrofuels; ii) identify the main actors of the biofuels value chain; iii) identify areas where biofuels investment experiments are ongoing; and iv) summarize findings of previous studies.

In addition to the desk review, investments sites were visited and key stakeholders (farmers and representatives of their organizations, government officials, rural council members) were interviewed to gather their views.

To conduct the semi-structured interviews, a research guide was created. It focused on three main areas: a) context of the project and its implementation; b) investment, consultation and land acquisition processes; and c) socioeconomic effects on local communities. Triangulation techniques were used to reduce potential bias effects. Where appropriate, focus groups were organized to further develop specific issues.

Additional meetings were set up with institutional organizations to cross-check the collected data and obtain additional information on the issue of agrofuels in Senegal and around the world.

II. THE SENEGAL CASE STUDY

The Senegalese context

The Senegalese energy sector relies heavily on oil imports to meet its energy needs, particularly for commercial power generation. For the past few years, oil price increases along with rapid urbanization and its corollary, the rise in energy demand have worsened this dependence. For instance, the fuel bill rose from 185 billion CFA francs in 2000 to 384 billion CFA francs in 2006 and to 623 billion CFA francs in 2008 (Dia et al, 2009). Budgetary constraints of

the national electricity company and the poor state of the power distribution infrastructure generated shortages in electricity. Consequently, the sector faced enormous difficulties in securing supplies to households, industry and other sectors. This resulted in frequent popular uprisings during 2009 and 2010 and threatened the country's economic growth.

Biomass and petroleum products account for 95% of total supplies. Firewood and charcoal are the two forms of biomass mainly used by rural and urban households as domestic fuel. The transport sector and industry depend on modern energy such as petroleum products. Alternative energy sources are marginal. The contribution of hydroelectric power is limited to Senegal's share in the production of the Manantali dam, about 10% of electricity production in Senegal. The solar and wind potential is considerable. However, facility costs are considered a major obstacle to the development of solar energy as a source of energy supply.

It is in this context of world energy crisis and inefficient domestic responses that prompted Senegalese authorities to enact new policy options centered on diversification of energy sources, in particular through the promotion of an important biofuel program centered on jatropha production (*Jatropha curcas* L.).

Jatropha curcas is a poisonous shrub-like tree that belongs to the spurge family, Euphorbiaceae. The plant is native to the American tropics and is resistant to a high degree of aridity making its cultivation widespread in the tropics and subtropical regions around the world. The tree produces seeds that are thought to contain between 27- 40% oil (Achten, 2007 et. al.) and can thus be processed to produce high-quality biodiesel that is suitable for use in standard diesel engines.

Overview of the biofuel program

The Senegalese strategy to promote biofuels is built around the following main points: i) develop bio-ethanol and biodiesel value chains in the short and medium term; ii) create a legislative and regulatory framework with sound incentives; iii) insure R&D organizations' involvement; iv) involve local farmers in energy crops; and v) tackle the food security challenge while cultivating bio energy crops (Mbaye, 2008).

To reduce its energy dependence, the government of Senegal launched a special 5-year jatropha national production program (2007-2012) and the objective was to produce 1.19 billion liters of crude jatropha oil, equivalent to 1.134 billion liters of refined oil to be used as biodiesel for vehicles as well as for power generation. The recommended strategy is to integrate the farming of *Jatropha curcas* in local farming systems (intercropping) to protect existing traditional agricultural activities that are essential for food security. Plantations in pure cultures (monoculture) are only considered in degraded lands. Each of the 321 rural communities is mandated to plant at least 1000 ha of jatropha.

It is expected that this program will create 100,000 direct employment opportunities especially in the rural areas and contribute to the diversification of revenue sources and the improvement of livelihoods for the most vulnerable populations. At the macro level, the program will reduce the energy bill and improve the country's international trade and balance of payment.

For the implementation of the biofuels program, a technical committee with different stakeholders is set up under the supervision of the Ministry of agriculture. The Senegalese Institute for Agricultural Research (ISRA) is responsible for the production of the needed plants.

Investments in biofuels, business models and land acquisition strategies

The rush to acquire land is one of the most visible outcomes of the biofuel program. There have been considerable new investments to expand jatropha cultivation throughout the country. Domestic and international investors took to the rural councils^[iii] in order to benefit from land allocations. In general, requests for land vary between 1,000 and 10,000 ha with some exceptionally high requests^[iv]. Below are some examples of land allocated to biofuel investors between 2008 and 2010:

- Afrique Energie has sought and obtained 11,000 ha of land in the Anambe river basin (South east of Senegal) of which a 1,000 ha are situated in the developed area for rice cultivation;
- Agro Africa whose investors are Americans and Norwegians asked for 100,000 ha of jatropha land, 10,000 ha are currently allocated in

- Kounkané rural community and 20,000 ha in Bonconto rural community;
- Agro Synergie sought and obtained 300 ha in each of the 4 rural communities of the district of Kounkané (South East of Senegal).
- Jatropha Technology farm, an Italian company requested 50,000 ha in the Nétéboulou rural community (Tambacounda, East of Senegal) and obtained 500 ha and a promise for expansion up to 50,000 ha by 2015.
- Société Boulonnerie Europe, an Italian company, aims to sow 10,000 ha of jatropha at Mbeude Dieng (near Merina Dakhar, north of Thies region).
- Durabilis, a Belgian foundation received an allocation of 5,000 ha for jatropha production in the rural community of Bokhol (north of Senegal).
- Plantations Vertes, a Spanish company was allocated 20,000ha in the rural community of Mbane (north of Senegal) for biofuel production.
- Senethanol/Senhuile, an Italian company received 20,000 ha in the rural community of Fanaye (north of Senegal).

These large scale land acquisitions are symptomatic of the underlying business models. Most of the investors implement plantation models that allow full control over the jatropha production. This implies taking over smallholder farm lands and converting these farmers into agricultural laborers. In most cases, farmers are dispossessed from their most fertile lands without compensation. Where payments exist, they are extremely low. This is the case for instance of this farmer in Ourour (Center of Senegal) who leased his land for \$40 per ha for 99 years and is now employed as a guard in the farm.

In Ndogo Babacar (East of Senegal), the investor contracted directly with farmers who were asked to use their land traditionally devoted to cereals cultivation for intercropping. Although this business model does not require land allocation from the rural council and seems to leave control of the land to the farmer, it has disastrous consequences on food security, especially if farmers are not fully informed that intercropping is impossible beyond a couple of years, once the jatropha plant has fully developed. Farmers are paid to cultivate but they have little control if any on the jatropha crop.

It is widely believed that jatropha is cultivated in “marginal” lands and demands less water. As Francis et al., (2005) points out:

“Jatropha curcas is known to thrive on eroded lands, and to require only limited amounts of water, nutrients and capital inputs. This plant offers the option both to cultivate wastelands and to produce vegetable oil suitable for conversion to bio-diesel.”

Surprisingly, almost all jatropha projects in Senegal are located on arable lands and were located in water accessible sites. Jatropha projects are predominantly in the north of Senegal where irrigation is easier and in the south where the level of rainfall and the quality of land are more appropriate.

Investors take advantage of lower rural incomes to gain access to land resources. The prospects of employment opportunities for individual farmers and the promises of delivering social infrastructure such as schools, wells and health centers to the community are extremely attractive. Sometimes rural councils are reluctant to provide a positive response to foreign investors’ requests (example of Neteboulou, East of Senegal). In those rare cases, pressure from the population eager to work for temporary and low paid jobs is likely to determine the outcome. Unfortunately, very often, investors fail to deliver on their promises.

Investments, consultations and land acquisition processes

Accredited investors who need access to land for agricultural use have to follow a few steps to secure their business: i) find a suitable site for the project; ii) establish a contact with the President of the rural council and prepare a formal request to the rural council; iii) the rural council gives its authorization after investigation and positive report from its land committee; iv) this decision is approved by the administrative authority of the district (Sous-Préfet) before it is transmitted to the applicant; v) the investor can now compensate the former occupants and start its development work. In principle, these land allocation procedures to the benefit of investors are free of charge and do not necessitate any leasing cost. As long as the farming activity is pursued, the allocated land is guaranteed. The investor has also the possibility of regularization by lease for a minimum of 20 years, extensible to 30 years and renewable for 50 years. In this case, payments are channeled to the Treasury.

The above procedures in order to be efficient and fair require “prior and informed consent” of the main stakeholders, in particular smallholder farmers who are the primary users of the agricultural lands and whose livelihoods

depend directly from this land use. The rural council members whose decisions impact directly the local communities should be adequately consulted and informed about the full effects before initiating any process of land allocation. Several examples (investments in Neteboulou, Ndogo Babacar, Ourour, ...) show that rural council members and agricultural producers are exposed to the elusive employment benefits of the investment and the social infrastructure foreseen with almost no reference to the adverse effects of the intervention (revenue losses, environmental effects, conflicts, etc.) and the subsequent loss of livelihoods that derives from the diversion of their lands to new uses.

Land diversion to biofuels: effects on food security

Senegal depends on imports for more than 60% of its food needs. Food imports increased from 243 billion CFA francs in 1999 to 602 billion CFA in 2008 (ANSD, 2009). Rice, wheat and corn are the main imported products with respectively 131 billion, 63 billion and 12 billion CFA francs in 2010. Rice imports were estimated to amount to 651,000 tons to supplement the domestic production of only 398,000 tons. This food dependency is structural and is noticeable through the average annual growth of cereal production which is estimated to 2%, below the annual population growth of 2.7%. Low productivity is another dominant characteristic of the agricultural sector and explains why 60% of the Senegalese active populations who make a living within this sector are unable to cover the consumption needs of the 12 million inhabitants of the country.

Under these circumstances, land diversion from cereal to biofuels production could have serious consequences for local communities. In many cases, farmers are encouraged to use intercropping but they do not apply the efficient spacing between lines. As a result, some farmers have lost up to 60% of their cereal production without securing their jatropha output. Where pure jatropha production is implemented, the available land can rarely satisfy the extremely high demands. Thus, forests are often cleared to allow for jatropha production. Sometimes, forest authorities do intervene in time to stop these aggressive moves that violate the forest code and undermine local communities' fate as forests are important sources of livelihoods for these communities.

Another source of concern is the arbitrage between employment opportunities and agricultural production. Widespread poverty in rural areas and the prospects of securing needed revenues through temporary jobs within jatropha farms have led many farmers to abandon their production activities or at least diminish the areas traditionally devoted to cereal production. Unfortunately, when the jatropha project management fails to respect its promises (services delivered but not paid; contract termination without prior notice...), the food security consequences within the household are often critical. Several farmers in the East of Senegal (Neteboulou, Ndogo Babacar) have reported being victims of investors who convinced them to commit their land and labor but left without notice and relocated their operations to another part of the territory.

III. THE GHANA CASE STUDY

The Bio-energy initiative in Ghana: Background of the Program

The energy policies in Ghana are shaped by the vision to develop an energy economy that ensures reliable supply of high quality services for all sectors of the economy. Pursuant to this vision, the government introduced a policy document entitled: Energy for Poverty Alleviation and Economic Growth: Policy Framework, Programs and Projects. Beyond this broad-based energy sector policy, Ghana cannot boost of a policy or regulatory framework nor can it boost of a strategy made exclusively for the promotion and development of bio-energy, except for a draft national biofuels policy that is now awaiting parliamentary approval. This notwithstanding, there are presently many applicable laws and projects addressing environmental issues in Ghana. The government of Ghana supports both bio-energy and environmental projects. A case in point was a Jatropha Implementation workshop organized by the Ministry of Local Government, Rural Development and Environment in 2006.

Ghana is blessed with so many plant resources such as oil palm, maize, sugar cane, cassava, coconut, groundnut, sheanut and jatropha which can be exploited and processed into ethanol and biodiesel. However, the country places much emphasis on the development of jatropha plants as the preferred feedstock for bio-energy production due in part to the favorable climate for the farming of the plant.

Government support for small-scale initiatives in the local biofuel industry have included the creation of a fund of 15 billion cedis (USD 1.6 million) for the development of *Jatropha curcas* plantations across Ghana (COMPLETE-Ghana, 2008). Of this amount, about 3 billion cedis (about USD 320,000) has been allocated for the production of seeds and seedlings whilst the remaining 12 billion cedis (about USD 1,280,000) has been made available at the Banks for organizations interested in the production of biodiesel through the cultivation of *Jatropha* (ibid.). In addition, it made available seeds for the farming of 2,500 ha of land in 2006 and further promised to expand the scale to 5,000 ha in 2007. Beyond these, a World Bank sponsored development intervention known as the Community Based Rural Development Project (CBRDP) also made a financial commitment of USD 5 million for the rehabilitation of degraded ecosystems through the cultivation of *Jatropha* which is said to have a positive impact on soil erosion.

Though the country has no biofuels policy as yet, a *Jatropha* National Program has been established and aims at the development of about 1 million hectares of *Jatropha* plantations by 2014 with the sole objective of achieving the following benefits among others:

- Production of crude *Jatropha* oil and biodiesel to replace fossil diesel and avoid the Emissions of Green House Gases (GHGs)
- Production of fertilizer to support local agriculture
- Job creation through the maintenance of *Jatropha* farms and the reaping of physic nuts for sale leading to the creation of wealth and the reduction of poverty in local communities
- Soil conservation and erosion control and
- Biodiversity protection

Ghana's *Jatropha* National Program is the initiative of Anuanom Industrial Projects Limited. A wholly private entity, this company pioneered the exploitation of *Jatropha curcas* in Ghana on a commercial scale as feedstock for the production of biodiesel and organic fertilizer from press-cake and fruit compost. The program subsequently enjoyed the support of all the local government authorities in the country. It subsequently established a National *Jatropha* Project Planning Committee with a number of sub-committees that are mandated to run the project in Ghana. To date, all the structures remain ineffective.

Of Thump Prints and Promises:

Exposing the hoax in land acquisition strategies in Ghana

In a developing country such as Ghana, biofuel production involves the use of productive land contrary to claims that unoccupied idle land and for that matter, non-fertile lands are secured for production. Subsequently, there has been a mad rush for vast tracts of rich agricultural lands for the commercial cultivation of *Jatropha* as feedstock for biofuel production in Ghana with Food Security Ghana (FSG) particularly reporting, based on extrapolation on figures on Ghana provided by the World Facts Book, that more than 37%^[v] of Ghana-agricultural land have been acquired for the commercial cultivation of *Jatropha* (2011). Translating into a total arable land mass of about 769,000 ha, this vast piece of land has been acquired by companies such as Agroils (Italy), Galten Global Alternative Energy (Israel), Gold Star Farms (Ghana), *Jatropha* Africa (UK/Ghan), BioFuel Africa (Norway), ScanFuel (Norway) and Kimminic Corporation (Canada) for the plantation of *Jatropha* (ibid.).

In a presentation during a World Bank conference on Land Policy and Administration in 2010, Ghana's Ministry of Food and Agriculture openly admitted that on the whole "Ghana remained food insecure as it is self-sufficient only in roots and tubers but generally deficient in cereals where it produces 51% of its needs, 60% of its fish requirements, 50% of its requirements meat and less than 30% of the raw materials needed for agro-based industries. The output of vegetables such as tomatoes and onions, the most widely used, is rather erratic and vacillates between scarcity, sufficiency and surplus depending on the vagaries of the weather" (Ahoi, 2010:2). In spite of Ghana's food insecurity, the government has been busy allocating and supervising the handing over of the very valuable livelihood asset on which the lives and well-being of most Ghanaians is based. According to the government over 20 companies from around the world, including China, Brazil, Germany, Italy, The Netherlands and Norway, are acquiring land in Ghana to produce biofuels mainly *Jatropha* and sugarcane (ibid.). The huge foreign interests in agricultural lands in Ghana is driven by the relative political stability of the country, land availability, good soil types and probably, the lack of regulation on acquisitions as reported by the Food Security Policy Advocacy Network

Examples of land allocated reportedly for biofuel investments include the following:

- 23,700 ha of Ghanaian land by Biofuel Africa Limited (Norway) in Northern Ghana for jatropha plantation. The company has already about 660 ha of land under plantation.
- 400,000 ha of land acquired by ScanFuels (Norway) in the Asante Akim North Municipality of the Ashanti Region. Of this, 60% of the total acquired land is for the cultivation of jatropha as feedstock for Biofuels production.
- 120,000 ha of land by Jatropha Africa (UK/ Ghana) for jatropha farming.
- 105,000 ha already under jatropha cultivation. Of this, 10,000 is already under cultivation by Agroils (Italy).
- 100,000 ha acquired by Galten Global Alternative Energy (Israel) for jatropha plantation.
- 14,000 ha acquired by Golden Star Farms (Ghana) for jatropha cultivation.
- 13,000 ha also acquired by Kimminic corporation of Canada for the commercial cultivation of jatropha in Ghana.
- Qatar is also said to be interested in acquiring about 50,000 ha of farm land in Ghana for the production of food as reported by the Vice President of Ghana.

Regrettably, most of these large-scale land deals have occurred within the last decade in Northern Ghana where the incidence of illiteracy, food insecurity and poverty is highest. Northern Ghana has become particularly prone to these land investments because rural livelihoods is generally tenuous where agriculture accounts for more than 90% of household incomes and employs more than 70% of the population in the region (GSGDA, 2010). Consistent with the patterns of land holding in Ghana for agricultural productivity, a significant portion of agricultural production is by small-holders at the subsistence level, reliant on seasonal rainfall which is unpredictable and sporadic. Environmental and weather challenges combined with the very low educational attainment levels motivate indigenous people to migrate to southern Ghana for non-existent jobs. These factors make Northern Ghana vulnerable to large-scale biofuel investments and account for the present mad rush for the region's lands.

Similar to the business model employed in Senegal, most of the deals in Ghana are premised on their potential to generate direct benefits to the host communities in the form of transforming rural agrarian economies by boosting farm productivity, employment creation, infrastructure development, technology and skills transfer, higher state revenues and rural development.

In what could be described as unauthorized biofuel developments in Ghana, it has been discovered that the Norwegian company, Scanfuel is operating what is currently known to be the largest Jatropha plantations in Ghana without the permission and consent of the central and local governments, and the local people who are directly affected by the operations of the company. Their modus operandi is typically to deceive the land owners by raising their hopes to temporarily win their support and by enticing the villagers with the promise of jobs and income. It takes the following course as described and revealed by Nyari (2008):

"The imaginations of a few influential leaders in the community are captured. They are told about prospects for the community due to the project and they were swayed with promises of positions in the company or with monetary inducements. The idea is that these people do the necessary "footwork" in the villages where they spread the word about job opportunities. A document is then prepared, essentially a contract, to lease the land to the company. In the event of problems the developer can press their claim by enforcing the 'contract' or agreement. When the legality of the process is not adequately scrutinized, the developers have their way but, subject to proper scrutiny, it emerges these contracts are not legally binding as they have not gone through the correct legal channels."

This is what happened in this particular case in the Alipe area in Northern Ghana where the chief confirmed that he was made to "thumb printed" a document in the company of the Assemblyman of the area which had been brought to his palace by the "white people" but he did not confirm its contents. The acquisition of this vast piece of land by the company has already forced the inhabitants of about seven villages that depend on the land for their livelihoods, to migrate to Tamale, the regional capital of the Northern Region of Ghana in search of non-existent jobs. To add assault to injury, 23,700 ha of

land was taken away from their owners without adequate restitution or viable alternatives. This finding has been buttressed by a research report published by IRIN (2009) which quoted the CEO of Biofuels Africa Ltd as follows: "We don't pay compensation...We gave the farmers two options: To stay and farm their crops alongside the jatropha or leave to other more fertile lands we had provided for them". Generally symptomatic of the mode of operations of the company in Ghana, a local chief of one of the settler farmer communities whose land has been taken over by the company confirmed these findings; stressing that at best, Biofuels Africa Ltd offered to pay GH¢1 per acre (about USD 0.7) of land to the farmers whose land it was taking over^[vi].

The contribution of biofuel companies to the loss of farming land by the indigenous people has consequently become the most visible manifestation of land investments in Ghana. Confirming this fact, a World Bank sponsored study on the impact of corporate land grabbing in Ghana has implicated the biofuel corporations in the country as it noted that "the most direct and immediate impact of biofuels relate to land loss" (Schoneveld et al., 2010). It identified some 70 households from three communities which were involuntarily removed from their lands, without any form of compensation after the 2008 growing season and concluded that "in all the plantations assessed, households were required to relinquish landholdings for the purpose of plantation development at best, an annual compensation package of US\$ 1 per acre" (ibid.). These findings corroborate Steinar Kolnes' statement that BioFuel Africa Ltd does not pay any compensation for their land investments.

Investments, consultations and land acquisition processes

There is no homogenous system of land tenure in Ghana as the majority of lands in Ghana are in customary ownership. Customary ownership of land occurs "where the right to use or to dispose of use-rights over land rest neither on the exercise of force, nor on the evidence of rights guaranteed by government statute, but on the fact that they are recognized as legitimate by the community, the rules governing the acquisition and transmission of these rights being usually explicitly and generally known, though not normally recorded formally in writing (Larbi, 2008: 2 & Bower, 1993 cited in Ahoi, 2010: 3). Even with this system, there are still regional peculiarities on the culture and land acquisition and ownership in terms of population densities, land ownership structures and land acquisition requirements.

Regardless of this challenge, anybody with interest in any piece of land for commercial use is required to engage the traditional owners of the land as the first step in the acquisition process. After they have inquired on its availability, they are subsequently required to seek approval of the lease of the facility by obtaining various clearance permits from all requisite departments of the lands commission, the Environmental Protection Agency, the Local Government Authorities and the Registrar-Generals' Department among several government institutions. It is only after going through all these procedures that operations can commence and upon appropriately compensating the land owners that interest in the facility is said to be legally secured. The entire process is long and winding and can sometimes take up to two years to complete (Larbi, 2008).

However, due to the laxity that presently characterizes the regulation of acquisitions in Ghana various foreign interests and the length of time needed in completing the process, some potential land investors have taken advantage of these loopholes in the system and negotiated various land investments in the country in secrecy; with no regard for due process. A close look at the various land investments negotiated in Ghana by Biofuel Africa Ltd clearly underscores this point. An example is their acquisition of the 4000,000 ha of land in the Asante Akim North Municipality and the 23,700 ha in Alipe in Northern Ghana where both the Chief Executives of both Local Government Administrative Units and officials of Ghana's Lands Commission and the Environmental Protection Agency, when interviewed, argued that the entry of ScanFuel and BioFuel Africa Ltd into the areas was both facilitated by deceit as the local authority had no prior knowledge of such land deals and investments (Nyari, 2008).

The foregoing demonstrates the fact that the very process of acquiring lands in the country is inherently political as these deals are not only negotiated in secrecy but such lands are similarly sold or leased out at extremely give-away prices without the prior knowledge and consent of the rural folks whose very livelihoods depend on their land resources. In situations where the consent of these local people is secured in the negotiation and acquisition process, elusive promises of jobs on the plantations, incomes, social amenities and a better

future often lure communities to give away their lands for the commercial production of ethanol and biodiesel, only to regret for such actions in the future as the loss of land deprive them of the safety-net function that asset fulfils.

Land diversion to biofuels: effects on food security

Agriculture remains Ghana's most important economic sector, employing more than half of the population on a formal and informal basis and accounting for almost half of GDP and export earnings GPRS I (2003-2005) & GPRS II (2006-2009). The sector contributes close to 30 percent of GDP and constitutes the largest source of employment for Ghanaians; employing more than half of the total labor force - roughly 49 percent of men and 51 percent of women (GSGDA, 2010). Eighty percent of agriculture is conducted by smallholder farmers with an average of 1.2 hectares who produce food and cash crops (METASIP, 2009). Despite being an agrarian economy, the country is only self-sufficient in roots and tubers but remains deficient in cereals where it produces 51% of its needs, 60% of its fish requirements, 50% of its meat requirements and less than 30% of the raw materials needed for agro-based industries (Ahoi, 2010). The output of vegetables such as tomatoes and onions, the most widely used, is rather erratic and vacillates between scarcity, sufficiency and glut depending on the vagaries of the weather (ibid.). As a result, it relies a 100% and 52% respectively on the imports of wheat and rice for domestic consumption (Ghana FTF, 2011). Ghana's import bill for wheat for MY 2010/2011 was estimated at Ghc 1.25 million, translating into 350,000 MT in volume in 2010/2011.

Similar to the Senegalese situation, the current shortfall in the production of major food crops, and hence the over reliance on foreign imports to supplement output in major crops in Ghana is a derivative of many factors: the over-reliance on rain-fed agriculture and low level and relatively inefficient irrigated agriculture; low level of mechanization in production and processing; high post-harvest losses as a result of poor post-harvest management; low level and ineffective agricultural finance; poor extension services as a result of several institutional and structural inefficiencies; lack of ready markets and processing; low performing breeds of livestock; poor feeding of livestock; high cost of feed for poultry and poor livestock housing and husbandry management. Given such a precarious outlook in the sector, the current large-scale acquisitions and investments in land by foreign companies for the production of biofuel has the propensity to threaten the security of food supplies in the country.

Ghana is particularly susceptible to food insecurity resulting from these land investments because of the high preference for production of agrofuels from a non-edible crop such as jatropha which is said to be dangerous to the environment and hence, poses a threat to agriculture. Beyond this, jatropha cultivation is also competing directly with food crops for fertile land; threatening food supplies in poor communities and pushing up the cost of available food. Farmers who switch to the cultivation of bio-energy crops stand the risk of being less able to feed their families and communities; thereby heightening the food insecurity situation of the country. In like manner, demand for agrofuels has the potential to threaten food supplies away from consumers and towards production for fuel, like in the case of crops such as cassava, peanuts, sweet sorghum and maize.

IV. Where do the European Union and the United States stand on energy and food security issues? Are there viable alternatives?

The current narrative in the US and the European Union is that green energy is the future; it is absolutely wonderful and should be promoted with state or federal funds. The craze for land investments in green energy has subsequently been premised on the need to secure the sustainable energy supplies of these countries in the face of the dwindling stocks of current energy sources coupled with the rising cost of crude oil whilst helping to stem the tide of global warming. Regardless however of these hypothesized benefits, there are certain adverse socio-economic, environmental and technical consequences related to the cultivation of these first generation crops used as feedstock in developing countries that the the policy community in the investor countries need to be aware of. These include the food versus fuel debate; loss of land and livelihoods; loss of biodiversity; deforestation and soil erosion and the negative impact of biofuel cultivation on water resources.

These negative effects of green energy on the economy of developing countries have subsequently sparked huge confrontations between agricultural investors and local people whose lands have been acquired for

these agricultural investments. Such confrontations have sometimes resulted in the loss of investments on the part of foreign investors. The potential for these green energy initiatives to drive conflicts in developing countries, with far reaching consequences on the global political economy, is something that should be of significant interest to policymakers in the global north. Likewise, the large-scale production of biofuels threatens food security of a large part of the population. Therefore, this production trend contains germs likely to trigger more intense migratory movements towards Europe and the United States with very few possibilities to avert them.

In an increasingly globalized world, the impacts of the expansion of biofuel markets on developing countries' food and land markets will definitely go beyond the developing world and will generate consequences detrimental to consumers globally. The current energy policies in the north fail to address real issues such as the over-consumption of oil in the developed world. The United States policies aimed at fostering energy security and increasing farmers' income, notwithstanding their internal positive impacts, have had serious negative consequences on food prices and food security around the world.

Revising the U.S. targets and giving greater attention to the excess demand for energy is certainly an avenue worth undertaking. Enhancing energy efficiency standards may contribute significantly to the demand for energy. More responsible policies would factor in the need to advance rural livelihoods in the developing world and thus to create additional markets and opportunities for European and American investors. In this light, policymakers in the north should draft new policies that would increase opportunities for their southern partners to achieve food security via a sustainable production of food.

V. Conclusions and recommendations

Lately, the United States and the European Union have promoted biofuels as a means to achieve energy security. U.S. energy policies setting targets for agrofuel consumption, and European biofuel directive setting a target of agrofuels in the total transport fuel mix, are likely to constitute an engine for increased agricultural foreign direct investments in agrofuels in Sub-Saharan Africa. The choice of the plantation business model with its large scale land mobilization, the foreign destination of the output to satisfy non African energy demands and the diversion of lands previously used for food production are different reasons that might generate serious consequences for farmers and their families in Sub-Saharan Africa.

African governments compete for needed investments and provide incentives that are extremely attractive to investors. In the case of biofuels investments, little is done to control potential abuses on the local communities. Investors deal directly with rural council members despite clear asymmetric information and power imbalances between these two partners. Even when contracts are signed, farmers have little power to react to breaches to these contracts.

The following recommendations are made:

To African governments:

1. African governments should insure that any investment decision be preceded by a "prior and informed consent" of the local communities. This includes potential impacts on their rights to land, on their food security and on their livelihoods.
2. National policies aimed at promoting biofuels production should be guided by the need not to endanger food production
3. Governments should promote business models that pose little threats to farmers' lands such a nucleus estate with smallholder outgrowers.

To policymakers and donors in the United States:

1. The United States and the European Union policies on biofuels should include at least mitigation strategies for their consequences on developing countries' most vulnerable populations. At best, the U.S. and the EU should consider ending current and projected targets and subsidies for biofuels.
2. Current responses to energy issues donot account for local needs. Yet there are huge energy needs that when met, would contribute to growth and increased well-being for local communities. Thus, donors and policymakers should collaborate to promote energy technologies adapted to local conditions.
3. Beyond biofuel solutions, West Africa countries may find it more beneficial to invest in alternative renewable energy sources such solar and wind

energy. These technologies are still costly and beyond the reach of most rural populations. There is need to initiate and push for a wide support for more research and funding that would rapidly reduce the costs of these technologies and make them accessible.

4. Support can be provided to research institutions in SSA to develop biofuel crops that require less land and use fewer resources, such as water, than current biofuel crops do. This is where donors can provide support for the generation of renewable fuels from algae which can make use of unprofitable land and waste water from different industries. Investments in algae as an alternative fuel crop does not affect the land or freshwater needed to produce current food and fuel crops and hence does not raise the challenges stated above.
5. Not all biofuel investment programs perform equally in terms of their impact on energy security, the environment, climate and ecosystems. With this in mind, the policy community can contribute to securing the energy and food security situation in both donor and recipient countries by enacting and enforcing appropriate federal, state or even regional legislation that would seek to shift the biofuel program away from the use of food crops (corn etc.) to renewable energy with the use of algae and other non-poisonous crops as feedstock.

Prospective Agricultural and Rural Initiative (IPAR)

IPAR is a Think Tank that emerged from the willingness of women and men to offer agricultural and rural sector stakeholders a framework of research, prospective thinking and inclusive dialogue. IPAR is accepted as association with public interest in August 2008 after a long process of institutional building. IPAR is comprised of four organs: the general assembly, the board, the scientific committee and the executive secretariat. IPAR brings together a diverse membership, including researchers, university lecturers, policy-makers, parliamentarians, leaders of farmers' organizations, and civil society representatives. The vision of IPAR is to be a strong institution with strategic and prospective analysis able to influence, at national and sub-regional levels, agricultural and rural policies, as well as the process of economic and rural transformations. IPAR mission is to contribute to the social and economic development of Senegal and the sub-region through the creation of a space for exchange and debate sustained by a strategic and prospective research dealing with the concerns of the policy decision makers and the rural population and its connections with urban population. The main research themes of IPAR, as defined in its 2015 strategic plan, are connected to (i) demography, employment and migrations, (ii) performance of agriculture, (iii) land and other natural resources management, (iv) public policies and (v) other emerging interesting topics of interest. So far IPAR gathers about 40 members and has at its disposal an executive secretariat consisting of a team of 3 researchers and 3 administrative staff. In case of need and depending on the project implemented, IPAR will hire on a temporary-basis some experts who are members of IPAR as well as some interns. The main donor of IPAR is IDRC with some additional partnerships with the World Bank, GRET/EU and AFD.

Ghana Center for Democratic Development (CDD-Ghana)

CDD-Ghana was established in 1998 as one of a new breed active Think Tanks across Africa to nurture and encourage a global pool of local knowledge and experts to address the aforementioned development challenges confronting Ghana and the African continent at large. CDD-Ghana is an independent and non-partisan non-governmental research-based and policy-oriented institute. The Center's corporate mission is to promote democracy, good governance and economic openness in Ghana in particular, and Africa in general. Its vision is a free, peaceful and well governed society based on the rule of law, justice, integrity in public administration and equal opportunities for all in Ghana and Africa. It pursues these twin corporate philosophies through high-quality policy research, technical analyses and widely disseminated publications and documentation. It also organizes roundtables, seminars and conferences, issue press statements, and engages in extensive networking with relevant state and non-state stakeholders to inform and educate, to foster public and policy-maker awareness, and to support advocacy and stimulate policy reform on a broad range of democracy, governance and economic issues. Its core values are non-partisanship, independence, integrity, accountability, objectivity and equal opportunity.

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[i] Sub-Saharan Africa (SSA) has seen its population increasing from 226 million in 1960 to 867 million in 2010 and is expected to reach 1.76 billion in 2050. The yearly cohort of new economically active population is around 10 million people and in the next fifteen years, SSA economies will have to absorb 330 million youth into the labor market.

[ii] Malawi, Mali, Kenya, Senegal, Tanzania, and Zimbabwe, etc., have initiated such projects

[iii] Rural lands are under the public domain but are managed by rural councils.

[iv] Senegal has 3.8 million hectares of arable land or 20% of the land area, of which 2.5 million hectares under cultivation.

[v] Food Security Ghana general news of 30th March, 2011.

[vi]Ghana Business News of 23rd February, 2010. Available at <http://www.ghanabusinessnews.com/2010/02/23/scanfue!%e2%80%99s-ghana-jatropha-plantation-wipes-out-settlements-farms/>

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