AGROFUELS IN AFRICA –

THE IMPACTS ON LAND, FOOD AND FORESTS

CASE STUDIES FROM BENIN, TANZANIA, UGANDA AND ZAMBIA

BY THE
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African Biodiversity Network

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INTRODUCTION

Africa is at a crossroads of trying to reconcile the conservation of its vast cultural and natural heritage with the many and increasing needs of a growing population. Powerful external forces continue to divert the continent from solutions that come from within, as they push for the privatisation and industrialisation of land, knowledge and biodiversity all in the name of poverty alleviation. The push for agrofuels is the latest of these so-called "solutions" that is extensively promoted as an opportunity for Africa to develop energy security and alleviate poverty in rural areas.

The African Biodiversity Network (ABN) decided at a meeting in January in Kenya to investigate this new development, analyse its real and potential impact on biodiversity and livelihoods and develop strategies to deal with it.

As a first step, ABN supported research in four African countries (Benin, Tanzania, Uganda and Zambia) by four ABN partners, to establish the impact that new developments promoting large-scale agrofuels will have on the environment and livelihoods of African farmers and rural communities. At the same time GRAIN, an ABN partner in Africa also did research and analysis of the impact of agrofuels in Africa. This publication is a compilation of the work of these different partners, and further work on this issue will build on these findings. The four country studies were summarised for the purpose of this publication. At the end of the publication the reader will also find a response from a few ABN partners on the EU biofuels targets, setting out many of our concerns and urging people in the North to consider the impact their fuel needs will have on food security in the South.

Biofuels vs Agrofuels

It is important to use the appropriate terminology as words can disguise realities and lump benign and not so benign technologies together as we often see being done with Biotechnology and Genetic Engineering. Biofuels include the traditional use of biological materials for fuel, such as wood, dung, bagasse etc. Agrofuels however refer to the process of specifically growing crops on a large scale to produce fuels and we will follow the example set by social movements in Latin America to call this destructive process by its name: Agriculture for Fuels.

Agrofuels – why such an issue?

New large-scale agrofuels projects are mushrooming across Africa. Africa is being told that biofuels exports will be good for development, good for the economy, and good for the environment. There is a high level of enthusiasm for these new developments, as African governments hope that Agrofuels initiatives will lift their countries out of poverty by providing the fuels that Europe craves, while hoping it will improve energy security in Africa at the same time.

There have, however, been several warnings that agrofuels may bring more problems than they can solve. We have seen how palm oil plantations are leading to the destruction of the rainforest in Indonesia; how soya and sugar cane plantations are leading to the cutting down of the Amazon in Brazil; and grain prices around the world has escalated because of the 'ethanol effect'. At the same time the GM industry is positioning itself to ensure that agrofuels become an entry point into a continent that has so far mostly resisted GM crop commercialisation.

In addition, there are also serious questions about the actual energy and carbon savings from agrofuels. Some studies point out that agrofuel production actually uses more energy (through agriculture, processing, transport) than is contained in the final product. Other studies point out that the cutting down and burning of the forests and peatlands to make way for biofuel plantations, produces many times more carbon dioxide per gallon of biodiesel than the equivalent amount of fossil fuel.

Before Africa charges ahead with plans for biofuel plantations to take over her territory, her biodiversity, and her rural communities, Africa Biodiversity Network saw an urgent need to carry out research into socio-economic and environmental costs that agrofuels developments will have on the continent.

It is clear from our initial research that in the long term the cost will be too high and that in Africa it most likely will exacerbate

the impact of climate change and as a result deepen poverty. In the short term, farmers are already pushed off their land, prime land and forests are being cleared for the mass production of agrofuels for export and there is no doubt that the impact will be devastating to African communities but also to Africa's own energy security in the long term. Africa's most precious resources, its biodiversity, land and people are being exploited to export fuel to energy hungry countries – including the EU, US, China, India.

It is the ABN's position that Biodiversity and Livelihoods can no longer be considered of secondary importance to Climate Change, but must instead be integral to any successful Climate Change strategies.

Global biofuel developments are going to have a huge impact on the African continent. It is imperative that African voices from the rural communities most affected, are heard in these discussions.

It is now widely accepted that the solutions that Africa seeks already lie within its indigenous cultures and knowledge systems. The ABN is a network committed to unearthing and implementing African solutions to African problems and building solidarity on biodiversity and community rights issues on the continent.

We hope the evidence presented in these documents will stimulate thinking and help people in Africa as well as its friends in the North to resist this new drive for colonisation and find those solutions to the energy crisis and climate change that will be best for Africa and consequentially best for the Earth too.

Resources and further reading:

The June issue of Seedling produced by GRAIN is focusing on agrofuels (biofuels) providing in-depth analysis on the issues:
in English:
www.grain.org/go/agrofuels
in French:
www.grain.org/go/agrocarburants
in Spanish:
www.grain.org/go/agrocombustibles

In this Seedling, GRAIN has also listed their ten best resources on agrofuels.

Ten best resources on agrofuels
GRAIN

The volume of recent articles, papers and other materials on agrofuels can be overwhelming. Below we list some that we found particularly useful when preparing this Seedling.

1) Worldwatch Institute, "Biofuels for Transportation: Global Potential and Implications for Sustainable Agriculture and Energy in the 21st Century", 2007.
http://tinyurl.com/27fdjz
The first part of this paper, compiled by the Worldwatch Institute for the German government, gives a good overview of the current situation with agrofuels. It lists the countries that produce them, the different feedstocks, the different technologies and so on. It highlights what we see as the right economic, social and environmental issues, but its policy recommendations fall short of its own analysis.

2) Corporate Europe Observatory (CEO), "The EU's agrofuel folly: policy capture by corporate interests", Briefing paper, June 2007.
http://tinyurl.com/2decyx
An interesting piece analysing how the corporations set the agenda for agrofuel policy-making in the European Union, explaining who is who, and what the different corporate sectors are up to in Europe, highlighting their direct linkages with the European Commission and their lobbying capacity.

3) Biofuelwatch et al. "Agrofuels – towards a reality check in nine key areas", April 2007.
http://tinyurl.com/ypzxwu
A good paper highlighting agrofuel impacts in nine key areas, including discussions on climate change, GMOs, biodiversity, food security and rural development. Credibly backed up by scientific evidence.

4) C. Ford Runge and Benjamin Senauer, "How Biofuels Could Starve the Poor", Foreign Affairs, May-June 2007.
http://tinyurl.com/3c6dlt
Discusses the impact of agrofuels on food security, with a special focus on the role and impact of US policies.
5) FBOMS, "Agribusinesses and biofuels: an explosive mixture", Rio de Janeiro, 2006.
http://tinyurl.com/2fd3ds
A good publication from the Brazilian Forum of NGOs and Social Movements for

the Environment and Development, zooming in on the devastating impact of agrofuel plantations in Brazil.

6) World Rainforest Movement (WRM) Bulletin, 112, November 2006, special issue on biofuels.
http://tinyurl.com/2nb4y9
A compilation of different articles on the impact of agrofuel plantations, focusing on different issues in different parts of the world, with cases from Cameroon, Colombia, Indonesia and Malaysia.

7) Garten Rothkopf, "A Blueprint for Green Energy in the Americas", Inter-American Development Bank, 2007.
http://www.iadb.org/biofuels/
A massive blueprint study from the perspective of the Inter-American Development Bank. Highly positive about agrofuels, but with good information about the investment situation in different countries in the Americas, Europe, Asia and Africa.

8) Miguel Altieri and Elisabeth Bravo, "The ecological and social tragedy of crop-based biofuel production in the Americas", April 2007.
http://www.foodfirst.org/node/1662
A good piece, analysing the impact of agrofuels in North and South America. Good data on pollution and soil erosion for the main agrofuel crops.

9) David Noble, "The Corporate Climate Coup," ZNet, 8 May 2007:
http://tinyurl.com/yrs8jv
Excellent analysis of the corporate campaign that he says has "safely channelled fears over global warming into corporate-friendly agendas at the expense of any serious confrontations with corporate power". Noble, however, also claims, like Alexander Cockburn, that this corporate campaign has exaggerated the threat of man-made global warming, a claim that is challenged by George Monbiot and others in a lively debate on the ZNet website.
http://www.zmag.org/debatesglobalwarming.html

10) Grist Magazine, "Fill'er Up", 4 December 2006.
http://tinyurl.com/2r6k5m
A special web-based issue of the magazine edited by blogger Tom Philpott. While somewhat focused on the US, it provides excellent insight into the corporate lobby behind the agrofuel push and a good general background into the ethanol debate as well.

Websites:
1) http://www.biofuelwatch.org.uk
Biofuelwatch is currently one of the most active sites bringing together information on the problems with agrofuels. Their "sources" section provides a good list of further reading materials. They also run a list server that you can subscribe to.
2) http://biopact.com
A corporate agrofuel promotional website focusing on the relations between Europe and Africa.
3) http://ethablog.blogspot.com/
English language blog that provides news and analysis of the Brazilian ethanol industry from a business perspective. Also provides useful translations of local information.

The African Biodiversity Network (ABN)

The African Biodiversity Network is an informal network created to pioneer African-centred solutions to the sustainable management of biodiversity and protection of community rights. The ABN focuses on indigenous knowledge, agriculture and biodiversity related rights, policy and legislation. The network is pioneering culturally-centred approaches to social and environmental problems in Africa and sharing experiences, co-developing methodologies and creating a united African voice on the continent on these issues. ABN also nurtures alliances with like-minded others internationally.

The African Biodiversity Network (ABN) seeks to:

- Consolidate and expand an active and informed network of concerned Africans engaged in biodiversity issues on the ground.
- Increase local and national capacity in Africa to protect biodiversity and community rights, and promote sustainable ecological practices.
- Catalyse African civil society and government to take action that will protect and enhance biodiversity and local livelihoods.

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Biofuel case study: UGANDA

This is a summary of research undertaken by Timothy Byakola of Climate and Development Initiatives on the situation with agrofuels in Uganda. Contact details: acs@starcom.co.ug

The Ugandan government is broadly supportive of a range of agrofuel initiatives emerging in the country. The current crop of agrofuel initiatives and proposals range from NGO-led projects that encourage the integration of crops such as jatropha alongside current food production, in order to meet household energy needs; to outgrower schemes that will scale up current levels of sugar cane production for conversion into local electricity use; and entirely new large-scale initiatives that will mean conversion of forests and farmlands to exclusive agrofuel plantations.

Policy situation
Currently, there is no regulatory framework in which agrofuel developments must operate. Energy policy is broadly supportive of the aim of increasing biofuels, with the intention of reducing national dependence on imported petroleum.

The scaling-up of agrofuel production in Uganda is only just in its early stages. The Government has yet to set targets, identify the risks involved in changing land use over to agrofuels, or decide strategies to minimise these risks. Private companies, however, are nonetheless in the process of moving forward with their own agrofuel plans. Crucially, there is a lack of clarity at all levels about the difference in scale and impact between meeting local energy needs, and production for export.

In Uganda there is an apparent failure to recognise that by encouraging a favourable climate to agrofuels, foreign companies focused on export are likely to take over the direction of biofuel production. Rising global oil prices will determine the price of liquid biofuels in Uganda, pricing fuel out of the reach of the poor. The majority of Ugandans are likely to continue to face energy supply problems – with additional food insecurity.

Agrofuel initiatives
There are a number of initiatives proposing to use biomass for fuel in Uganda, and the most promising ones, with the least waste and negative impacts, use crop residues, gasification, and direct combustion.

Agrofuels, or liquid biofuels however, make up a large part of the picture, although developments are still in the early stages. A number of Ugandan-owned companies are hoping to build up biodiesel production, focusing on jatropha, castor beans and sunflower plants.

A USA-based company, DSK Limited has expressed its intentions to produce biodiesel in Uganda, but the company has not yet started its activities.

Biodiversity
The most high-profile instance of proposed agrofuel developments in Uganda so far, has been the highly controversial plan to give away a third of Uganda's prime rainforest reserve, Mabira Forest, to be turned over for the production of sugar cane, for the production of electricity and ethanol. The initiative would involve the deforestation of 7,100 hectares of one of the key water catchment sources for the Nile River and Lake Victoria.

The initiative was put forward by Sugar Company of Uganda Ltd (SCOUL), the Ugandan subsidiary of an East African Indian company. President Yoweri Museveni was strongly supportive of the initiative. He initially dismissed environmental concerns and attempted to push the programme ahead, in spite of strong resistance.

To the communities around Mabira, the forest has been a source of livelihood for a large population. According to Kyobe Kaaso, the chairman of Najjembe village, Mabira is a source of herbal medicines, grazing land, craft raw material for women, timber, firewood and mushrooms. The resident Baganda tribe use certain trees in the forest for traditional worship. The communities fear that the give-away will deny people their rights and affect their livelihoods.

The give-away of 7100 hectares will reduce the water retention capacity of the watershed, and the subsequent reduction of waterflows to lakes and rivers in the

regions. Mabira Forest is the watershed for two rivers that contribute to the Nile, it protects Lake Victoria, and is an important absorber of pollution in a major industrial area. The forest represents millions of tonnes of carbon dioxide, and according to Uganda's National Forest Authority (NFA), the plan to log Mabira threatens 312 species of trees, 287 species of birds and 199 species of butterflies. In a study that was conducted in 2006, the NFA warned that the proposal to give away Mabira threatened rare monkeys and birds. Nine species found only in Mabira and surrounding forests - the Tit Hylia bird, six butterflies, a moth and a shrub used to treat malaria - risked extinction.

World Bank experts warn that the lower water levels in the Upper Nile and Lake Victoria will have dramatic consequences for livelihoods, agriculture, rainfall, and electricity production. The likely soil erosion, droughts, floods and landslides from the cutting down of the forest, cannot yet be quantified in economic terms, but will be yet more burden for the people and economy of Uganda to carry.

Mabira receives 62% of tourists visiting reserve forests. Tourism is the second largest foreign exchange earner for the country. The ecosystem and biodiversity of the forest has been estimated to have an economic value of USD 14 Million. The 7,100 hectares of forest have been calculated to hold 3,905,000 tonnes of carbon, which will be released if cut down. The loss of the forest is also likely to lead to gradual temperature increases.

Mabira forest is such an integral part of the nation's consciousness and pride, that the government encountered a high level of national resistance to the plan. In April 2007, a public demonstration march sparked off riots that resulted in several deaths and the arrest of a number of the campaign leaders.

In the ensuing public pressure from both within the country and from abroad, the cabinet and policy makers have been forced to re-visit the plan. The future of Mabira forest is still uncertain. However it appears that in this instance, massive public pressure may have served to protect a critical biodiversity habitat from the destructive pressures of biofuels.

The Kalangala and Bugala Islands have not been so lucky, however. Following public campaigns in 2007, the Government of Uganda halted plans by BIDCO company to cut down thousands of hectares of rainforest on 2 Lake Victoria islands for conversion into a palm oil plantation. This change of heart came after the clearing of over 6,000 hectares of natural forest on the islands. Bugala island is home to rare species of plants, monkeys and birds that conservationists say are crucial to the environment.

Food security

All sugar industries require land to expand their production. A study of expanding sugar cane area in Masindi district carried out by Mushiga and Klunne indicate that the expansion was realised at the cost of wooded areas and agricultural land (Mushiga 2001).

For example Joyce Bakegake, a resident of Kadekulu village, Nyabyeya parish, had been able to farm 6 acres of land and to collect firewood from the forest reserve. When the forest was converted into sugar cane growing, her family and others were left without adequate land and firewood (Mushiga 2001). With projected expansions in sugar cane production, many farmers like Joyce are likely to face similar challenges from new developments.

Other agrofuel developments in Uganda are still emerging. Biodiesel can be made from crops such as palm oil, maize, soya bean, and sunflower. The consequences of using crop material for the production of fuel is likely create food insecurity- especially in Uganda where such crops are mainly used for food.

Large producers are likely to take up fertile areas that would normally be best for food production. In most cases compensation for farmers would be minimal, making the farmers landless. Production of agrofuel feedstock could well turn out to be more profitable than food production, leading to pressures on farmers and large companies to increase production of agrofuel crops to the cost of food crops.

Conclusion

Overall, the future for agrofuels, food security and biodiversity in Uganda look uncertain. President Museveni's initial defiance of environmentalists' concerns

about Mabira Forest Reserve did not suggest that the government considered socio-economic and environmental concerns as relevant to biofuel policy. However, the cases of Mabira Forest and Kalangala and Bugala Islands have put Uganda into an uncomfortable international spotlight, from which the government may, perhaps, draw lessons.

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Biofuel case study: BENIN

This is a summary of research undertaken by Josea Doussou Bodjrenou of Nature-Tropicale on the situation with agrofuels in Benin. Contact details: ntongmu@yahoo.com

In Benin, almost from the outset, the discussion about new agrofuel developments has clearly been about production for export and maximising profit. Information about specific development plans, land targets, or deals with foreign companies and governments have been difficult to obtain. But all the signs indicate that millions of hectares of agricultural and forest land are to be turned over to agrofuel production for export, with no discussion or concern for the impacts that this will have on the Beninese, their food production and their environment.

Government policy
Plans for the development of an agrofuel industry in Benin have the strong backing of government, and make up a key part of the government's Agricultural Revival Programme for economic development.

Sugar cane is already used by industry to produce alcohol, and small-scale farmers in Benin already contribute to the production of some biofuels from their various household crops of cassava, cottonseed and peanut. These are integrated with current food production systems. The Benin government plans to scale up from household and small-scale production, to large-scale agrofuels production from these crops and others, in order to enter the international biofuels market.

It appears that there has been little consideration of how these developments will impact on food production, land security and biodiversity habitats. In fact, in spite of all these plans, targets and deals, there is a virtual vacuum of legislation in which these developments are going ahead.

Agrofuel initiatives
Benin's Agricultural Revival Programme will entail significant palm oil developments, as well as the scaling up of biodiesel from Jatropha, peanuts, and bioethanol from sugarcane, manioc and other crops.

The President's recent trip to Germany allowed a delegation from Benin to meet with various investors from Malaysia, China and Saudi Arabia to discuss the development of the agrofuel sector. Benin also has an agreement with Brazil concerning agrofuels, which has led to study trips and exchanges between the two countries.

Various industrial groups from Malaysia and South Africa have already made visits to Benin to assess the opportunities to grow biofuels. They have proposed the conversion of 300,000-400,000 hectares in the wetlands of the Southern Part of Benin, for production of palm oil.

A number of local companies also currently produce oil from crops, but many factories built in the 1970s have fallen into disrepair. The Indo-Benin corporation is now proposing to install new factories for ethanol production from cassava and sugar cane.

Some NGOs are also involved in promoting the production of jatropha for biofuel for export, claiming that such schemes will end poverty in Africa. Africa Culture's Bukatunu project is targeted at small-scale farmers, and is based on the supposed opportunities presented by the African Growth and Opportunity Act. AGOA is a controversial piece of legislation, developed and promoted by the United States, that seeks to liberalise trade between the US and Africa. Some have called it the "Africa Recolonisation Act."

National NGOs investing in agrofuels are already projecting that they will have 240,000 hectares jatropha in productionby 2012 .

Impact on biodiversity
Palm oil is native to the wetlands of Western Africa. The government aims to find 300,000-400,000 hectares of land in the humid Southern Benin areas of Oueme, Plateau, Atlantic, Mono, Couffo and Zou for palm oil plantations.

The government of Benin is not openly admitting that they will destroy any ecosystems for biofuel production. But it is obvious that by encouraging large-scale industries as well as small-scale farmers to find hundreds of thousands of hectares of land to grow agrofuels, expansion can only take place into the remaining wetlands, sacred and communal forests, fallow lands and rich biodiverse ecosystems in Southern Benin.

Food security and livelihoods.
The Southern zone of Benin, where the majority of the palm oil developments are targeted, hosts 50% of the country's population on only 7.7% of the national territory. This suggests that agrofuels will be competing with food production in the prime agricultural lands of Benin.

The agricultural revival strategy implemented by the Benin government and forming part of the IMF restructuring programme for Benin, will involve huge increases in land under cultivation, for both food crops and agrofuels. Much of the food crops will also be used for agrofuel production. Industrial companies will be supported to obtain land for these initiatives. Although policy is not clear on where, or from whom, this land is to come, it is likely that small scale farmers will be excluded where their interests conflict with industries.

Outgrower schemes in Benin, particularly with cotton and other export crops, have followed a predictable pattern. Agents from the industry attempt to convince illiterate small-scale farmers to adopt these new crops, while promising favourable outcomes and good sale prices. Persuaded to buy inputs such as seed and chemicals from the industry on credit, the farmers enter into debt with the company.

Once the crop has been grown, however, the reality turns out to be different. The industry pays lower rates than previously promised, and the farmer finds himself in debt with the same company, struggling to pay back the cost of the original inputs. There is no reason to suggest that the pattern with agrofuels will be any different.

In Northern Benin, in the Banikoara region, farmers abandoned production of food crops for cash crops: cotton and peanuts. Today, food insecurity is rife. Where once they fed themselves, the World Food Program (WFP) and the Catholic Relief Services now feed populations.

Looking at demographic growth rates in Benin, especially in urbanised areas, it is obvious that maintaining food supply will call for an increase in food crops, especially root crops. But it is clear that the production of biofuels will drive farmers to allocate less land to food crops, leading to food insecurity. Most of the population's purchasing power is very low, and the increase in food prices due to decreased stocks, will favour imports and distribution of poor quality foods, food aid dependency, and possibly GMOs.

Monocultures deceive communities
The large-scale production of agrofuels for exports requires large plantations of trees, sugar cane, maize, palm trees, and other products planted in monocultures. These plantations are already the number one cause of rural exodus and deforestation in the world.

There are already a number of palm tree monoculture plantations in the South of Benin, but these should only serve as a warning against future developments, due to the complications and difficulties experienced by communities attempting to sell their palm products. The community cooperatives that coordinate the palm sales with government have been plagued by a history of corruption and conflict. Into this scenario, private companies have stepped in, offering to buy the oil directly from the communities, at a higher price. But when the communities switched over, and gave their products to the industries, the companies failed to pay. Benin palm oil co-operatives found themselves in trouble, but without sympathy or help from government.

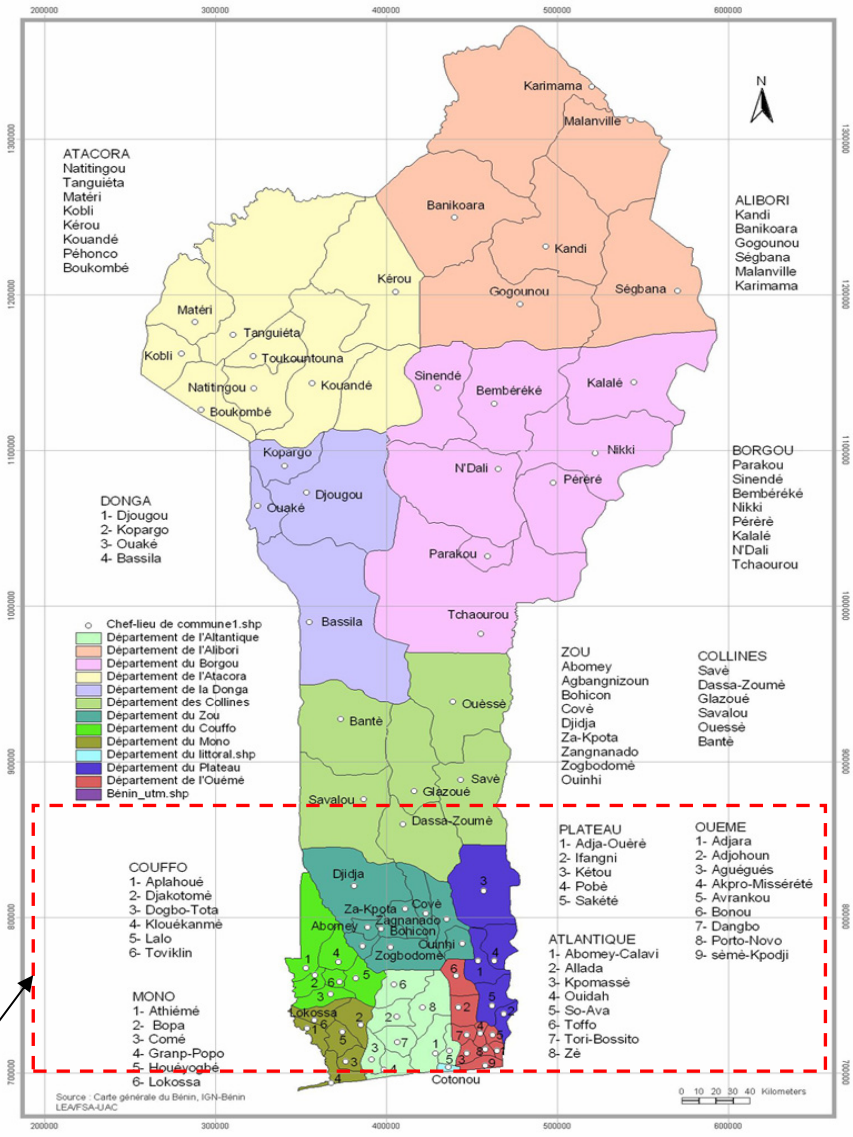
Maximising profits for export
Benin differs from some of the other countries in Africa, in that the discussion about biofuels has barely touched on the idea of meeting national energy security needs. Instead, the government is clear

that this is about maximising profits for both state-owned and private companies. However, those profits are unlikely to filter down to the rural poor of Benin.

The areas of land that are being talked about are enormous. Although it is not easy to know what portion of the proposed new land in the agricultural revival programme will be for agrofuels, it is planned that 3 million hectares of new land will be found for the scheme by 2011.

The scale of the plans for biofuel production in Benin leave no room for doubt that enormous pressures will threaten the food security, land rights, and ecological habitats of the Beninese. In a country already struggling to cope with the exploitation and poverty brought about by a focus on cotton production for export, a large-scale conversion to agrofuels can only exacerbate the problems facing Benin's rural poor.

Administrative Map of the Republic of Benin



Zones interested in the production of palm oil in South Benin

Biofuel case study: TANZANIA

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In Tanzania, there is much talk about the potential for biofuel production to meet national energy requirements, and large areas of the country are being identified and evaluated for its potential to grow crops for agrofuel production, particularly sugar cane. But analysts have pointed out the discrepancy between the government's stated aim of using biofuels to bring energy to the rural poor, and the policy of evicting them from their lands in order to do so.

While a number of NGOs work with farming communities, particularly women, to integrate jatropha production, processing and use for mainly soap and oil, , these projects are not what is being pushed. Biofuel production is heading for the model of large-scale, monoculture production.

It is here that policies become contradictory, between production for domestic use or for export. Several foreign-owned companies are investing in agrofuel developments in Tanzania, within a context of support from international development agencies, such as the EU Energy Initiative (EUEI), the World Bank, USAID and DFID. It is quite clear that much of the talk about meeting domestic energy needs is intended to open the door to enable large-scale projects to establish themselves in Tanzania, and to target the lucrative international market.

Agrofuel production for export has significant implications for Tanzanians. and will not allow for crops like jatropha to be integrated into small-scale food production. Export production demands efficiency, economies of scale, and profit maximisation, often through the squeezing of farmers. Huge changes in land use and land ownership are scheduled, meaning that fuel will be grown instead of food, and small-scale farmers will be pushed off their lands to make way for enormous, privatised plantations.

Climate change has made itself felt in Tanzania in recent years, with increasing occurrence of drought. The government has been forced to import increasing amounts of food aid in the face of these conditions. NGOs in Tanzania ask themselves why, then, the government is not focusing on increasing agricultural production in the most irrigated and fertile areas of land, but instead looking to displace food production and precious water resources for production of agrofuels for export.

Agrofuels policy
There is currently no biofuel policy or legislation to govern its direction and production in Tanzania. Under the guidance of the Ministry of Energy and Minerals, a Biofuels Task Force was established in April 2006 to promote development of the sector and develop legislation to stimulate use of biofuels, following a study on Liquid Biofuels for Transportation in Tanzania.

The goals of the task force include designing biofuels policies and regulations, identifying areas for production, setting up incentives for local and foreign investors, and designing finance options such as capital allowances and tax breaks. They are also promoting research and development, establishing demonstration facilities and encouraging the sale of flex-fuel vehicles that can run on pure vegetable oils.

It is possible that targets may be set for biofuel blends in transport fuel, with ethanol 10% volume (E10), and biodiesel 20% by volume (B20). Projected targets would require 26.7 million litres of ethanol for E10 by 2010, and 138 million litres of biodiesel for B20 in 2010.

Agrofuel initiatives
Several international investors are looking at the most fertile areas with good rainfall and access to rivers, particularly for sugar cane and palm oil.

Ethanol production from sugar cane appears to be high on the government's agenda, and the Biofuels task force has been working to identify several large regions that can attract investment in agrofuels, including Ruipa, Ikongo, Mahurungu-Mtwara, Usangu plains, Malagarasi, Kilosa, Babati and Hanang

Threats to land, livelihoods, food security, biodiversity and water
A Swedish company is looking to identify 400,000 hectares of land in Tanzania to turn over to sugar plantation. One area identified

so far is the Wami Basin, a vast area in the alluvial flood and delta plain of the Wami River and its distributaries as it enters the Indian Ocean. This area has good access to water, and is currently used for rice production, by thousands of small-scale farmers. Should the proposed plantation go ahead, then at least 1,000 rice farmers will be evicted.

In Kigoma, also an area with good access to fresh water, a proposed palm oil biodiesel project by Malaysian and Indonesian investors will involve cultivation of 8,000 hectares of oil palm using a combination of plantations and out growers. It must be noted that oil palm requires major investment, and the trees can live for 30 years or more. Any farmers entering into contracts to plant and grow palm trees may be forced to sign away use of their land for many decades to come.

D1 Oils Tanzania Ltd, a Tanzanian subsidiary of the UK company D1 Oils, is also a large-scale investor into Jatropha and sunflower for biodiesel production. The company plans to use out growers and to have biodiesel processing stations in every district in Tanzania.

A German investor, PROKON, has begun a 10,000 hectare Jatropha out grower programme in Mpanda district, Southwest Tanzania. The first harvest is expected this year, and an oil mill is planned in Mpanda to process the crop. The oil willl supply both the Tanzanian and the German market.

Diligent Energy Systems, a Dutch company, has branches in Tanzania and Colombia. Dilligent offers consultancy services to farmers on Jatropha growing, and has collection points for Jatropha in Babati, Engaruka, Chalinze, Pangani and Singida. Diligent is to receive a large area of land for Jatropha production in Handeni. Farmers in Hanendi currently grow a diversity of food crops, including maize and beans.

Sun biofuels is a UK-based international company planning to plant Jatropha on 18,000 hectares in Lindi region. Farmers who currently grow cassava, rice and maize will be encouraged instead to become Jatropha out growers.

In addition, a US-UK group, a Malaysian group and a US-based venture fund are currently exploring more than 100,000 hectares for palm oil production.

In order to attract more investors, the government of Tanzania have analysed many fertile regions of Tanzania. These regions are the ones with the best access to water, and are therefore usually the areas where farmers are already growing food.

In Ruipa, investment in the areas of land identified with potential for sugar cane production, would lead to the eviction of over 1,000 rice farmers. In Ikongo and Mahurungu-Mtwara, cane growing would displace small-scale rice and maize growers.

The Usangu Plains, another area identified for potential sugarcane production, have already seen the government's willingness to accommodate large investors over the interests of small farmers. 1,000 rice farmers were recently displaced from their land to make way for a large plantation. The plantation has cut off the surrounding communities' access to the river, leading to disputes over water. There are reports that the displaced farmers are now living in miserable conditions, with little or no means of making their livelihoods or growing food.

Kilosa, a rice growing area, and Babati/ Hanang, where maize and wheat are grown, have also been identified with potential for out grower sugar cane programmes.

A Tanzanian NGO that promotes biodiesel production, FELISA, already grows palm oil in Kigoma region. FELISA has been assisting the government to identify further areas for potential investment, and has identified an additional 60,000 hectares of land to biofuel production. This may lead to farmer evictions, but FELISA claim their plans are justified because the land is government owned, highlighting the insecurity of many Tanzanian farmers who do not have land tenure.

Malagarasi is a huge area in the West of Tanzania in the Kigoma region. Close to the Congo, it is home to a wealth of biodiversity and forest, including chimpanzees. Malagarasi has been left alone with little investment into infrastructure and agriculture for many years. Unfortunately, the high rainfall and high temperatures that make it such a biodiversity hotspot are also the ideal

conditions for new developments in palm oil and sugar production.

Conclusion
The Tanzanian government is evidently committed to fast-tracking agrofuel initiatives, and switching over vast areas of land to sugar cane, palm oil and jatropha. The most fertile lands, with best access to water are being targeted, even though these lands are already used for food production by small-scale farmers.

Any talk of biofuel production for local energy consumption is undermined by the obvious intent of international investors to target foreign markets, where rising global oil prices will determine high prices for agrofuels. Also, there are no plans to invest in infrastructure in Tanzania to process agrofuels for local use.

Many of Tanzania's rice producing areas may be sacrificed to agrofuels, as well as food production in maize, wheat, beans and cassava. The government appears to have few qualms about evicting farmers from their only means of livelihood and food production. Tanzania's water sources, so critical for food production, especially in times of climate change, will also be diverted to fuel production, and are likely to cause increased conflicts over access to water.

With Tanzania routinely dependent on imported food aid as drought occurs with increasing frequency, the policy of producing fuel for export instead of food for Tanzanians, will deepen poverty and food insecurity in Tanzania in the years to come.

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Biofuel case study: ZAMBIA

This is a summary of research undertaken by Matongo Mundia, a consultant, and commissioned by Clement Chipokolo, formerly of PELUM-Zambia. Contact details: chipokoloc@lycos.com

The development of a biofuel industry in Zambia is still in its infancy, and as with many other countries in the region, the Zambian government has indicated its support and endorsement for the production of biofuels. The government has yet to develop policy and legislations for the industry. Some private biofuel companies are also working through NGOs in Zambia, many of whom so far have been broadly supportive of the strategy to increase energy security through biofuel developments.

As on the rest of the continent, much of the drive for biofuel developments in Zambia comes from talk of achieving energy security and supporting social and economic development. However, there seems to be a lack of clarity over whether investment and targets are aimed at production of biofuels for the Zambian market or for export. It seems that companies such as D1 Oils may be promoting biofuels as a domestic energy strategy, in order to open the door to amenable legislation, while really intending to focus biofuel production on the export market.

The likelihood that biofuel production will ultimately be targeted at export markets, and fail to benefit Zambians, is supported by the fact that Zambia has no biofuel refining facilities and D1 Oils are building a refinery in Durban, South Africa. Unless new and extensive refining facilities are set up in Zambia soon, biofuels will almost certainly be refined abroad. Once the product has left the country, the greater buying power of the European consumer will undoubtedly prevail.

Government policy
The Fifth National Development Plan (FNDP) was launched by President Levy Mwanawasa in January 2007, identifying energy as a major factor for the social and economic development of Zambia. The programme includes the objective of facilitating development of the biofuels industry through the promotion of biofuel use. The biofuel sector is fairly new in Zambia, and up till now has been championed by the private sector.

The Biofuels Association of Zambia (BAZ) has been lobbying the government for incentives to help the industry to flourish, such as minimum biofuel blends for all consumers, and the provision of incentives to unlock capital for the development of the industry.

Agrofuel initiatives
The industry will primarily seek to produce biodiesel and kerosene using *Jatropha curcas* (referred to simply as jatropha) as the plant

of choice. For bioethanol the feedstock crops of choice are sugar cane, sweet sorghum and cassava.

Among the big companies involved are D1 Oils and Marli Investments. In 2005, Marli Investments indicated that they were planning to invest US$16million in Zambian agrofuel projects.

D1 Oils is only interested in Jatropha for biodiesel, and has already started signing contracts with farmers, as well as working though NGOs in the Southern region of the country. D1 Oils has 45,000 hectares under cultivation in Shikabeta chiefdom in Chongwe district. Other projects underway are 15,000 hectares in Kasama, in Northern Province and 600 hectares in Solwezi, North Western Province. Other jatropha developments being undertaken by D1 in Zambia include those Lumwana area, the Ntambo Chiefdom, and the Mumena Chiefdom in the North Western Province; the Mpezeni Chiefdom Community in the Eastern province; the Hope Development Institute in the Northern province; and the Nkumbula community in the Southern province.

Many of the projects are being undertaken on an out-grower basis whereby D1 Africa provides the seedlings and everything needed. As of March 2006 7?, D1 Africa had planted over 4,900 hectares of jatropha.

Out grower schemes

"*This jatropha reminds me of cotton. Many years ago when Dunavant came here, they promised that if we grew cotton, we would be paid lots of money. We stopped growing our maize to make more money from cotton. But when the time to sell it came we were paid very little. We went hungry because we had neglected growing our traditional crop maize*."
Josam Ndaabona, Small Scale Farmer, Choma.

D1 Oils and Marli Investments are the main drivers of biofuel production in Zambia. They are largely looking to produce biofuels through out grower schemes.

A look at Marli Investment's contract for out growers reveals that the arrangement is based on a loan system transferring control over production from the farmer to the company without guaranteeing a market for the farmers. . In this 30-year contract, Marli Investments agree to loan the farmer the money to buy seed and chemicals, while levying additional costs for obligatory membership, statutory contributions and deductions, as well as management, extension services and licensing services. The farmers are expected to pay for all of these, as well as replacing any trees that die, to their own cost. Marli are able to determine both the price of the seeds and services, as well as the price at which they buy back the product. Out growers are not permitted to sell to any other company, nor can anyone else in their household grow Jatropha for sale to any other company.

This arrangement limits the options and control available to farmers, and forces them to deal with the company entirely on Marli Investment's terms. There are also questions over the rights of the farmer to opt out of the 30 year contract. It is unclear who would own the land planted with Marli Investment's jatropha trees.

The advantage that food crops have over cash crops is that even where the companies involved in purchasing the crop offer very low prices, they can at least keep most of the crop for their own consumption. Equally, food crops can be sold to any one interested. For cash crops under contract farming, only the company involved can be sold the crop. If, for whatever reason, the farmer does not earn enough money from the cash crop, they will not be able to purchase food. This then introduces household food insecurity.

Out grower schemes in Zambia have a history of keeping farmers at a disadvantage. According to the findings of a Catholic Centre for Justice Development and Peace (CCJDP) study on an out grower scheme programme in 2006, there are severe weaknesses within the programme. The study concludes that 'for the majority of the farmers involved in growing tobacco and cotton, the out grower scheme programme has perpetuated poverty and in some cases even increased the poverty situation (CCJDP, 2006).

Land rights

There are serious questions in Zambia about land availability for conversion to agrofuel production, and the impact it will have on farmers, food production, forested areas and indigenous peoples.

The Lands Act of 1995, provides for the conversion of customary tenure to leasehold tenure, and many investors have already used this provision to expropriate land for investment purposes. The government of Zambia has intimated that they want to adopt a market oriented land policy, and the new draft land policy also looks to be taking these strategies forward.

This may have severe implications for peasants and small-scale farmers, as many of them occupy customary land. Farmers on customary land are likely to be vulnerable to expulsion should corporations seek to privatise these areas for conversion to agrofuel plantations.

According to the Biofuel Association of Zambia, projections for set targets add up to 184,420 hectares devoted to biofuels by 2015.

There are signs, however, that investors are not having it all their own way. On the 31st May 2007, The Post attributed the following disclosure to President Mwanawasa:

"Government was monitoring the discussions on production of biofuel from such plants as jatropha. He said his government declined to offer 10,000 hectares of land to an investor in Mpika because of the potential of mass degradation and displacement of indigenous people."

Food production

In addition to fears that outgrower schemes that focus on Jatropha will reduce the number of farmers growing food crops, ethanol production is also likely to divert resources from food crops. The Ministry of Energy and Water Development has talked of the potential use of sugar cane and sweet sorghum in biofuel production. Maize, cassava and sweet potatoes are also staple food crops that may be used in biofuel production.

Land and labour, being the most important factors of production for both agrofuels crops and food, are inelastic resources. The introduction of agrofuels crops will therefore mean reduction or diversion of these resources from growing food by small and medium scale farmers. This then means that the agrofuels industry will ultimately affect both household and national food security one way or the other.

One certainty is that Jatropha will compete for land with food crops. In the case of D1 Oils, the approach is to engage small-scale farmers to grow the plant for the company. What this means is that whereas the land belongs to the farmers, the crop does not. Implicitly, the farmers will lose control of their land to the company that owns the crop. Jatropha is said to be productive for 30-50 years and for all that time, except for the first three years when it can be intercropped, the land under Jatropha production will have to be exclusively used for growing jatropha and hence under the control of the biofuels company.

The other indication, at least for D1 Oils contracted farmers, is that prime, arable agricultural land will be used for growing Jatropha. There is clearly no discrimination on where the plant should or should not be grown

Biodiversity

66% of Zambia's landmass is comprised of woodlands and forests, some of which are of special importance such as those in the river headwaters (catchment areas), forest reserves and game parks. Only about 26% of Zambian woodlands and forests could be used for further agricultural productivity such as crops for agrofuels. However, even without clearing more forests for agriculture, Zambia is already experiencing very high levels of deforestation.

In a recent statement, Copperbelt Province Minister Mr. Mwansa Mbulakulima intimated that a de-gazzeted forest reserve will be given to investors (*The Post,* 4th May 2007). It is not yet public knowledge whether this give-away will go towards biofuel production, or to other industry developments. However, this indicates that biofuel developments leading to deforestation will not find many obstacles from local or national government.

The new scramble for Africa

GRAIN

Africa, with its large land area and cheap labour, is an obvious target for agrofuel developers. As one European agrofuel lobby group likes to point out, just 15 African countries – nicknamed the "Green Opec" (see map at end of this article) – have a combined arable land base larger than India available for agrofuel crop production.[1]And already millions of hectares of the continent's so-called "fallow" lands have been surveyed and allocated for agrofuels.

Corporations and energy-hungry countries are pouring money into Africa for agrofuel crop production, fuelling a land rush reminiscent of Europe's initial colonial expansion. Joining the foreign invasion are Africa's governments and business elites. Pushed to the sidelines, some groups are speaking out about the devastation all this will cause to people's livelihoods, but it is difficult to hear them over the clatter about Africa's great opportunity to capitalise on the world's energy and environmental crises.

When it comes to agrofuels, the road to Africa is paved with diplomats. A daily parade of foreign politicians stalks the continent negotiating agrofuel deals wherever possible. Europe, Japan and the US are, of course, very active, working their agrofuel interests into the various multilateral and bilateral aid, trade or investment agreements they have on the go with African countries. But the so-called emerging global powers are also busy on the continent: Brazil, largely by way of the state-owned oil company Petrobrás, has cut deals for ethanol imports and technology transfer with a range of African countries, from
Senegal to Nigeria, Mozambique to Angola;[2] India has recently pledged US$250 million to a West African Biofuels Fund; and China has cemented a long-term cassava supply channel from Nigeria for its domestic ethanol distilleries. Add to this some trilateral agreements too, like the partnership that the UK and Brazil have formed with Mozambique.

What all of this handshaking among government people is really about is ensuring access to a steady supply of energy, both oil and agrofuels, which, of course, will be managed by the corporations.[3] And things are moving quickly in this direction. Corporations are already carving out areas for agrofuel feedstock production, and existing agro-industries and plantations are being expanded.[4] Early in 2007, for instance, the Tanzanian government disclosed that they were negotiating with 11 foreign companies for investment in agrofuels crop production in the country.[5]

Amid this flurry of foreign investment, there are losers as well as winners. Several local African entrepreneurs trying to jump on the bandwagon are struggling to make a go of it.[6] The Ghanaian company Biodiesel One recently had to shut down its 12,000-hectare jatropha operation and lay off its workers because it could not find the financial backing to continue.[7] The other local

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[1] A. Wade, "Africa Over a Barrel", *Washington Post*, 28 October 2006.

http://tinyurl.com/ssw8x

[2] "Brazilian Company to build ethanol plant in Africa", *The Ethanol Producer*.
http://tinyurl.com/yuloyt

[3] "Africa Forges Energy Partnership with Europe"
http://tinyurl.com/yrzpkf

[4] See "Cameroon: Oil palm plantations fostered by new biofuel market harm local livelihoods", World Rainforest Movement.
http://tinyurl.com/259zhn

[5] The companies include Felisa (in Kigoma region); Amma (in Tanga region); Diligent Tanzania Limited (in Arusha); Procon, Diadem (in Rukwa region) and CEPA (in Morogoro).
http://tinyurl.com/ysba4k

[6] For more information about biofuel projects in West Africa, see: Gbosségnon Christophe Gandonou, "Situation des biocarburants en Afrique de l'ouest"

[7] http://tinyurl.com/2448ow

biodiesel company in Ghana, Anuanom Industrial Bio Products, faces similar financial problems, and its early efforts to tie up with foreign investors nearly destroyed the company.[8] So both companies are pushing the government hard to bail them out. In December 2006, the government pledged about US$2 million to support large-scale jatropha cultivation in the centre of the country, with over US$300,000 going directly to Anuanom. The government also announced plans to build a paved road into the area and appealed to local chiefs and landowners to make their lands available for the project.[9] Anuanom's owner, Ghanaian industrialist Onua Amoah, has been acquiring lands for plantations in the area in partnership with 2008 presidential candidate Kwabena Frimpong-Boateng and other local elites.[10]

Table with examples of corporate investments:

-Viscount Energy (China) - memorandum of understanding with the Ebonyi state government to establish a US$80-million ethanol factory in Nigeria using both cassava and sugar cane.
-21st Century Energy (USA) - plans to invest up to US$130 million over the next five years in the production of ethanol from sugar cane, maize and sweet sorghum, and later to manufacture biodiesel from cottonseed and cashew nut residues in Cote d'Ivoire[11]
-Bioenergy International (Switzerland) - plans to set up a 93,000 hectare jatropha plantation with a biodiesel refinery and an electrification plant in Kenya[12]
-Sun Biofuels (UK) - in association with the Tanzania Investment Centre (TIC), has acquired 18,000 hectares of top-quality agricultural lands for jatropha production.[13]
-AlcoGroup (Belgium) bought South Africa's NCP Alcohols, Africa's largest producer of fermentation ethanol, in 2001
-MagIndustries (Canada) - acquired a 68,000 hectare eucalyptus forestry plantation and is constructing a 500,000-tonne-per-year wood-chipping plant near the port city of Pointe-Noire in the Republic of Congo. The wood chips will be shipped to Europe for use as biomass
-Aurantia (Spain) - is investing in oil palm plantations and possibly four biodiesel refineries in the Republic of Congo
-Dagris (France) - is investing in the development of biodiesel production from cottonseed oil in Burkina Faso through its local oil processor SN Citec
-SOCAPALM and Socfinal (Belgian) plans to expand its 30,000-hectare oil-palm plantation in Cameroon, but forest communities are resisting.

[8] "Fraud office question Ghana Bio Diesel", Alexander's Gas & Oil Connections, 2 December 2004. http://tinyurl.com/ywjnwv
[9] http://tinyurl.com/28t37p
[10] "Wanted – an administrator for Ghana", Hi Ghana, 7 June 2007. http://tinyurl.com/293cvh
[11] http://tinyurl.com/29uolk
[12] http://tinyurl.com/2dkunz
[13] http://tinyurl.com/27emzb

Nigeria – new commodity, same story

It is not only the global energy companies that are investing heavily in agrofuels. Corporations from many different sectors are jumping in and fashioning the agrofuels boom to further their own interests. Nigeria has gone along uncritically with this approach and has adopted policies that fit in with corporate strategies and do nothing to satisfy the real needs of the country.

If the government were really concerned with the country's energy needs, it would restructure its oil industry. Nigeria is the largest oil producer in Africa, and oil provides 95 per cent of government revenues. But multinational oil companies are in control, so Nigerian refineries do not produce enough refined oil to supply domestic needs, and the country imports 70 per cent of its fuel.[14] Instead of tackling this problem, the government is now moving into agrofuels, under the pretext that this will increase the country's energy security, though there is no indication that this will actually happen.

The country has clinched a deal with Brazil to import ethanol in exchange for technical expertise so that Nigeria can start implementing its 10 per cent ethanol blend policy even before local ethanol manufacturers come on stream. The prime area for expanding sugar cane (estimated to cover an area of some 400,000 hectares) is along the Niger and Benue rivers, where irrigation is possible. Cassava, too, is poised for major industrial development. For years neglected by industry, it has now emerged as a major feedstock, with considerable investment going into the development of genetically engineered varieties more suited for agrofuels production, with, for instance, increased starch content.[15] Rather than improving energy security, biofuels will create a new problem of food insecurity, for the price of the national staples, cassava and palm oil, will almost certainly rise substantially when agrofuel production is under way.

It has also been reported that the state-owned oil-trading company, BOST, has offered to purchase all the biodiesel produced in Ghana, giving the local companies a much-needed guaranteed market.[16] But the smell of potential profits is drawing foreign investors into the country. UK-based D1 Oils is setting up a fully owned subsidiary, and Israeli investors have been looking into the construction of a biodiesel factory in the central region. Canada-based, A1 Biofuels and its local partner, Sahel Biofuels Development Company, based in Niger, who are preparing sites for large-scale jatropha plantations across the Sahel region of West Africa, say they plan to construct a biodiesel refinery in Ghana too, with a capacity of 25 million litres per year.

Far more serious in its social impact is the drive by the Eastern Cape government to make 3 million hectares of "underutilised" and fertile communal land available for agrofuel investments. One such project involves the planting of 70,000 hectares of canola for export by German investors. Rural communities use this land in several ways, including grazing, and it makes a considerable contribution to their livelihood. South Africa has a long history of expropriating

[14] G. Rothkopf, "A Blueprint for Green Energy in the Americas", prepared for the Inter-American Development Bank, 2006.
http://www.iadb.org/biofuels/

[15] Researchers from Ohio State University developed transgenic cassava with starch yields up 2.6 times, which makes cassava a "super crop" when it comes to both CO_2 fixation and carbohydrate production, the feedstock for ethanol. See, for example, U. Ihemere *et al.* "Genetic modification of cassava for enhanced starch production", *Plant Biotechnology Journal* 4 (4), 2006: 453–65. For the recently turned down application to the South African government for cassava field trials, see:
www.biosafetyafrica.net

[16] "BOST agrees to buy local biodiesel", Daily Graphic.
http://tinyurl.com/2xbbe4

rural communities or restructuring land use in a way that impoverishes them. This new scheme for taking land away and using it to plant crops for export is, unfortunately, just more of the same.

Massive protests in Uganda over agrofuel projects

Timothy Byakola

In the face of intense opposition within the country, the Ugandan government was forced in late May 2007 to cancel plans to convert thousands of hectares of rainforest on an island in Lake Victoria into an oil-palm plantation. A few days earlier, President Museveni had also suspended negotiations to give a large chunk of one of the country's last protected mainland forests to a sugar-cane company owned by Ugandan Asians. This decision followed massive demonstrations against the proposal in April 2007 in the Ugandan capital, Kampala, which degenerated into an ugly race riot. Several Asian shops were ransacked. Two protesters were killed and an Asian man was stoned to death.

The conflicts have brought into the open the simmering conflict over whether or not the country's rapidly diminishing natural resources should be used to generate energy. When Uganda gained independence in 1962, 20 per cent of the country was forested; today the proportion has dropped to 7 per cent. President Museveni is a strong defender of agrofuels, arguing that Uganda has "an urgent need to industrialise our very backward but rich country in terms of natural resources and raw materials. Our backwardness is on account of the absence of industries." Nor does the government believe that industrial development causes serious environmental damage. Before the government backtracked, Jessica Eriyo, the environment minister, had said that, through clearing land for farming and gathering firewood, poor Ugandans were destroying each year five times the amount of forest than would be lost to the sugar project.

But many Ugandans disagree. In a country like Uganda, the environment remains the only asset that poor people in rural areas have. There is, indeed, a very intricate relationship between local livelihoods and the health of key ecological systems – water, forests and wetlands. But private investors (most of whom are supported by extensive political patronage) are busy eating into this asset base under the pretext of helping the country to industrialise. Citizens feel let down by their own government and have now risen up to defend their source of life.

Take the two forest areas in question. The Mabira forest, where the sugar-cane plantation was to be located, covers 32,000 hectares and is home to hundreds of tree species, rare monkeys and the prized Tit-hylia bird. Moreover, the forest is located on the watershed of two tributaries of the River Nile. Felling such a large area could disrupt local rainfall. Bugula Island in Lake Victoria, where the oil-palm plantation is planned, is also home to rare species of plants, monkeys and birds. In November 2006 five senior directors at the national Forest Authority resigned in protest over the sale of the island's reserve to an Asian-owned oil company, Bidco. Bidco has already planted 4,000 hectares on Bugula, but it needs another 2,500 hectares.

Investors have persuaded the Ugandan government to believe that the development of a big agrofuel industry would solve the country's crippling energy problems, which have brought many companies close to bankruptcy because of severe fluctuations in energy supply. But there is little or no evidence that the planned agrofuels would be used in this way. Local people lack the technology to make use of this energy, and the government and the investors themselves are making very little effort to develop the local market for these fashionable new fuels. We believe that the domestic market is simply not important to the investors. The draft bio-energy strategy talks a lot about the need for government support to increase production but falls strangely silent on how to develop the local market. Our suspicion is therefore that this fuel is for export.

There is something else that leads us to believe that agrofuels may, in part, be a smokescreen for the investors' real agenda, which is to obtain land. The agrofuels sector, which is only a few years old, is almost entirely unregulated. In the confusion investors are obtaining large chunks of

land for nominal fees. One ministry of energy official confided in an off-the-record briefing: "It is possible that the whole thing is being abused by night-flyers, since the right hand doesn't know what the left is doing." By the time the government wakes up to what is happening, many more of the country's precious natural resources will have been destroyed.

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Wake-up Call for South Africa

Both the fledgling agrofuel industry and the South African government had a rude awakening this year, when their dream of instant success proved to be clearly just that: a dream. Agrofuels manufacturers have realised that they cannot depend on a market surplus of maize for their supply of feedstock, and will have to contract farmers to grow exclusively for the industry. It is to be hoped that the government has also discovered that, despite its earlier protestations to the contrary, biofuels do indeed affect local food security.

On paper, the South African initiative seemed to make sense. The country had surplus maize and sugar, so it appeared that these crops could become the main feedstocks for ethanol production without affecting food security.[17] Moreover, it seemed that the initiative would benefit the local economy, with the creation of 55,000 new jobs. So agrofuels became one of the priorities of the government's Accelerated Growth Initiative (ASGI-SA). The Industrial Development Corporation and the Central Energy Fund announced plans to invest US$437 million in five biofuels projects, and South African commercial maize farmers invested in a new company, Ethanol Africa, which announced to loud fanfare that they would be emulating the success of US farmers and building eight ethanol plants in the main maize-producing area.

Some analysts, however, were sceptical from the beginning about this venture's chances of success. They pointed out that:

- South Africa does not have a large in-built surplus of yellow maize to be used for ethanol[18]
- Maize prices depend on the global market and are linked to the oil market; both these markets have been volatile
- In the US both the farmers and the ethanol refineries are subsidised
- Prospects for obtaining a positive energy balance from ethanol production were not good. (They pointed out that, on average, South Africa obtains a yield of around 4 tonnes per hectare from its dry-land maize, while in the USA the yield is at least double this. If US farmers obtained only the modest energy-to-output gain of 1:1.3, it seemed unlikely that the South African farmers, with their much lower yields, could produce any positive energy gain at all).

Even sooner than they expected, the sceptics were proved right. This year South Africa is running a deficit in its maize production, instead of the expected surplus. In only the last six months the

[17] Government strategy predicts a 5% average rise in food prices; the predicted rise in maize prices is only 7.6% between 2006 and 2015, as quoted in Draft Biofuels Strategy and Engineering News, 20 October 2006. www.engineeringnews.co.za

[18] The ethanol industry has been told to use only yellow maize, to ensure that there is no competition with white maize, a staple food, but nothing prevents farmers from switching from food to fuel varieties.

"ethanol effect" (that is, the extra demand from the ethanol producers), combined with a drought in Southern Africa, have caused maize prices to skyrocket, with a percentage increase four times the level predicted in the Biofuels Strategy. As maize is the country's staple food, the poor are suffering most. As always in these crises, there are winners: some commercial farmers have benefited, as the very high prices have compensated for their low yields.[19]

This case clearly illustrates that, even if African governments say that agrofuels must not be allowed to compromise food security, in deregulated markets competition between food and fuel is inevitable. Corporations can ensure supply by either owning the land or contracting farmers to grow exclusively for them, but it is far harder for governments to prevent the agrofuels industry from affecting food security.

In the meantime the first ethanol plant, which is to be built at Bothaville in the northern Free State, has not progressed, apparently because the necessary R1-billion investment has not yet been raised (R7.1 = US$1) . Ethanol Africa's justification is that investors are waiting to see whether the government will subsidise the industry. The obvious question to put to the government is why the agrofuel industry should be given a competitive advantage when farmers are not subsidised and the social and environmental impacts will certainly be negative.[20] Even the farmers who invested the initial R14 million must be having second thoughts. They are learning that the price of ethanol is directly related to the price of crude oil, which is not always low enough to make ethanol viable.[21]

Land for fuel, not for farmers

There are a number of NGO-led, small-scale biofuel projects in Africa, some of them going back quite some time, that typically produce both oil for local use and soap. Agrofuel advocates like to talk about these feel-good initiatives, but the current agrofuels boom has little to do with small-scale agriculture.

"Southern Africa has the potential to be the Middle East of biofuels",[22] said Andrew Owens, CEO of the UK's Greenergy at an agrofuels meeting in Cape Town. But to achieve this, he added, governments needed to standardise agrofuels policies across the region and work together to achieve economies of scale so that the industry would become competitive.[23] At the same meeting the managing director of SA Biodiesel rejected the "backyard production" of agrofuels and argued for tax breaks and large-scale production.

As a result, the money being invested in agrofuels in Africa is focused around large-scale plantation agriculture, tightly integrated into transnational corporate networks.[24] And, as in any other sector of agribusiness, corporate profit with agrofuel crops is best assured when these plantations are on the most fertile lands, close to major transportation routes.[25] Millions of small farmers still occupy these lands, however, and they have become the main obstacle in the path of the agrofuel rush. It is becoming clear that, whenever agrofuels are on the agenda, the pressure on farmers to leave their land intensifies.

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[19] "Biofuel Production and the threat to South Africa's Food Security", *Wahenga Brief*, No. 11, April 2007. http://tinyurl.com/2okcgx

[20] Ibid.

[21] Vic de Klerk, "Who's fuelling who? Mealies are not a viable fuel source", Finweek, 9 March 2006. http://tinyurl.com/2klp33

[22] Biofuels Markets in Africa Conference proceedings. http://tinyurl.com/28h825

[23] Ibid.

[24] "Combustion or Consumption? Balancing food and biofuel production", IRIN, 25 April 2007. http://tinyurl.com/2xewqx

[25] L Strydom, "Biofuels 2006: How is the global value chain shaping up?" Eco world, 30 December 2006. http://tinyurl.com/2qyb3v

In Tanzania, the prime minister is fast-tracking agrofuels to accommodate a Swedish investor looking for 400,000 hectares in the Wami Basin, one of the country's major wetlands, to plant sugar cane for ethanol. The project will inevitably displace local small-scale rice farmers.[26] In Liberia, a UK company, Equatorial Biofuels, acquired Liberian Forest Products (LFP), which holds management agreements and permits covering over 700,000 hectares of land for the cultivation of oil palms. In Ethiopia, where land pressure is high, over 1 million hectares are being granted to agrofuel corporations to grow mainly jatropha, a potentially invasive species that is being introduced on a large scale without proper environmental impact assessments (*see* Ethiopia box).

A Southern African Development Community (SADC) agrofuel feasibility study warns against small-scale projects, claiming that they will affect standards. In addition, it also recommends that agrofuel legislation and seed regulations be standardised throughout the region, and calls for the provision of soft loans and measures to accelerate free trade in order to "open up new land".[27] It seems that agribusiness and biotechnology companies are taking advantage of the agrofuels craze to push through a wide range of changes in the trade and farming regulatory set-up that will favour their interests.

It is often argued that, even if corporations come to dominate the agrofuels market, there will still be space for poor farmers to reap some benefits. It is claimed, in particular, that jatropha will grow in marginal conditions and thus be a suitable crop for poor families. But even this seems very unlikely (*see* article on jatropha on page 94) The truth is that the agrofuels boom in Africa is not about rural development and improving the living standards of poor farmers. On the contrary, it is about foreign companies taking over the land: by striking deals with government officials and lobbying for legal protection, subsidies and tax breaks; by acquiring scarce fertile land and water rights; by coercing farmers into becoming cheap labour on their own land; by introducing new crops in large-scale plantations; by introducing GM crops through this backdoor; by displacing people and biodiversity-based systems; and by enslaving Africa even more to the global market. Land grabbing on an unprecedented scale is on the march in Africa.

Ethiopia – setting the scene for fuel-induced famine.

The agrofuel industry is very active in Ethiopia, and the government is doing all it can to attract foreign investment. The most popular crop is jatropha, followed by castor beans and some palm oil in the coffee-growing regions, all of which are to be used to produce biodiesel. There are also moves afoot to establish an ethanol industry and to introduce new, specially bred varieties of sorghum, maize and sunflower. These would, the companies claim, reduce the country's dependence on foreign food aid and strengthen the food security of rural communities.[28] Pressure on land is intense, as the population is growing and 85 per cent of the country's inhabitants still depend on the land for their livelihoods. Few families have secure land titles, which is one reason why it is fairly easy for foreign companies to acquire land.

The German company Flora Ecopower is investing 671 million birr (US$77 million) in the Oromia Regional State, and has negotiated the purchase of over 13,000 hectares of land in the Fadis and Miks woredas (districts) of the East Hararghe zone for the production of biodiesel. Key to its strategy is control over the full production chain, and it has signed an agreement with the regional farmers' association by which 700 farmers are each ceding two hectares of land for a period of five years.[29] According to press reports, the farmers do not mind relinquishing their land, as they welcome the investment in their region.[30] After production had started and forest land had been cleared, however, it was realised that 12,000 hectares (87 per cent) of the land

[26] Abdallah Mkindi, Envirocare, Tanzania, personal communication.
[27] Namibian Agronomic Board, "National Bio-oil Energy Roadmap", August 2006.
[28] www.floraecopower.com
[29] Ibid.
[30] W. Zenenbe, "German Co Invests Half Bln Birr Plus on Bio-Fuel", Addis Fortune, 9 April 2007. http://tinyurl.com/2lp7mt

granted fell within the boundary of the Babile Elephant Sanctuary. Environmental organisations have protested and also pointed out that the land allocation was unlawful and that no environmental impact assessment was done.[31] A subsequent investigation into the incident has confirmed this, and also revealed that the communities in the area are unhappy with both the development and the negative impact that the forest clearing is having on the elephants.[32] The situation has become increasingly politicised, and it seems that neither the Federal nor the Oromia regional government plan any immediate steps to undo the damage done to this vital ecosystem, which is home to rare, endangered elephants.

Another company, Sun Biofuels, has signed a lease agreement with the Benshangul Gumuz Regional State government for 80,000 hectares of land. It has also purchased 80 per cent of the National Biodiesel Corporation of Ethiopia as part of its programme to strengthen its presence in Ethiopia prior to investing in the whole of East Africa. It is reported to have helped to draft the Ethiopian Biofuels Strategy, which establishes the country's overall agrofuels programme.[33] The company is carrying out land surveys, and planning with the government which areas should be devoted to agrofuels.

There are now a number of foreign agrofuel companies operating in Ethiopia. Officially 196,000 hectares of land have been granted but, if one counts land under negotiation, the total increases to 1.15 million hectares. Ethiopia has identified 17.2 million hectares as suitable for jatropha, of which 1.7 million, located in the Borena, Bale and Arsi zones, are regarded as highly suitable. These areas have annual rainfall of 900–1300 mm.

Company	***Ownership***	***Land granted and under negotiation (in hectares)***
Sun BioFuel	*UK*	*80,000 Benishangul-Gumuz* *5,000 in SNNP with plans to expand* *200,000 in Tigray* *40,000 in Amhara*
Becco Biofuels	*US*	*35,000 in Amaro Kelo*
Hovev Agriculture Ltd	*Israel*	*40,000 granted, expanding to 400,000*
Flora Ecopower	*Germany*	*13,700 in East Hararghe, expanding to 200,000*
The National Biodiesel Corporation (NBC),	*Germany & US*	*90,000 in jatropha and other oil plants*
LHB	*Israel*	*100,000 in jatropha in Oromiya*

The Ethiopian government's strategy clearly recognises that the local population depends on areas in the lowlands that are not permanently settled, for grazing, crop-growing and the collection of forest products, and urges that the local population should not be denied access to their traditional land use rights.[34] It stresses the importance of food security, recognising that more than 4 million people suffer from food insecurity, and says that their welfare must not be compromised by the agrofuel industry. But in reality, this is already happening: although there is growing population pressure on the land and farmers are struggling to make ends meet, vast tracts of land are now being granted to foreign companies to produce energy for export to Europe.

[31] W. Zenebe, "Bio-diesel Project Encroaching on Elephant Sanctuary", Addis Fortune, 27 May 2007. http://tinyurl.com/2oa3w3
[32] Gebremedhine Birega, personal communication, 18 June 2007.
[33] http://tinyurl.com/27emzb
[34] Ethiopian Government, strategy documents.

Agrofuels to improve Africa's energy security?

If the supposed benefits of agrofuels for Africa's small farmers are already proving illusory, what about their contribution to the continent's energy security? Is it not the case that agrofuel production will help the economies of African countries by reducing their reliance on costly fossil fuels?

The problem is that agrofuels are already being defined as a global commodity, to be traded on the world market, and such commodities are controlled by the local elites in alliance with multinational companies, and access to them is limited to those that can afford them. Oil is a case in point. It is now widely recognised that the large oil reserves found in some parts of Africa did not provide the countries involved with energy security nor bring benefits to the mass of their populations.[35] Take the case of Nigeria. It is a leading oil exporter, but biomass, mainly firewood, still meets the energy needs of up to 91 per cent of the country's households. It is still a poor country, with 71 per cent of the population living on less than US$1 dollar a day, and the people in the Niger delta, the oil-producing region, are the poorest of all.[36] Nigeria is now planning a huge expansion of large cassava plantations for agrofuel production. But, just as in the case of oil, it is extremely unlikely that agrofuels will improve either the country's energy security or the welfare of its people. The agrofuels boom is being driven by the government's desire to increase export earnings, mainly through the export of cassava and sugar cane for agrofuels (*see* box on Nigeria on page 94).

It will almost certainly be a similar story with Africa's non-oil-producing countries, which are now talking so enthusiastically about the potential of agrofuels to solve their energy needs. In these countries, oil imports are a crippling expense, consuming up to 50 per cent of export earnings. A rise in world oil prices has a huge impact on their growth rates. These countries are now assuming that by growing agrofuels they will have their own fuel and so lessen their exposure to fluctuating oil prices. But this will not be the case. The reality is that, just as in the case of oil and all other global commodities, the market will fix the price of agrofuels. The country of origin will have little control, especially if ownership of the whole value chain is in the hands of international companies. The production of agrofuels will not guarantee cheap fuel to the local population.

In principle, there is a great deal of scope in Africa for renewable energies, but the local governments are not drawing up adequate policies for the sector, and are doing little to attract investment into it. Biomass already accounts, on average, for 59 per cent of energy consumption (with a much higher percentage in most sub-Saharan countries), most of it from firewood, but also from cow dung and other locally available resources.[37] A lot of these activities are currently not sustainable, and pressure on biomass will increase with population growth, so national investment to improve these practices and provide alternatives would seem to be of the highest priority. However, the reality is that government expenditure on renewable energy in Africa has consistently declined. Ethiopia, for example, quadrupled its investment in oil exploration and tripled its investment in electricity in the 1990s, but expenditure on alternative energy decreased from about 1 per cent to 0.1 per cent of total investment.[38]

It is the same story for most of Africa, and the situation is likely to get worse. One venture to export biomass in the form of processed woodchips is already under way and, with the second generation of agrofuel crops, the region will start producing wood-based cellulosic biofuels. These initiatives will drive up the price of wood and charcoal, limit people's access to the forests, and lead to the further depletion of Africa's poor soils.

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[35] Up to 50 million metric tons of refined product - or 78% of the annual consumption of the 48 sub-Saharan countries in Africa - is expected to be added to the world market by 2010. See:
http://tinyurl.com/2w8vdk

[36] http://tinyurl.com/2vrbw3

[37] S. Karekezi *et al.*, *Renewables in Africa*, AFREPREN, February 2007.
www.afrepren.org

[38] Ibid.

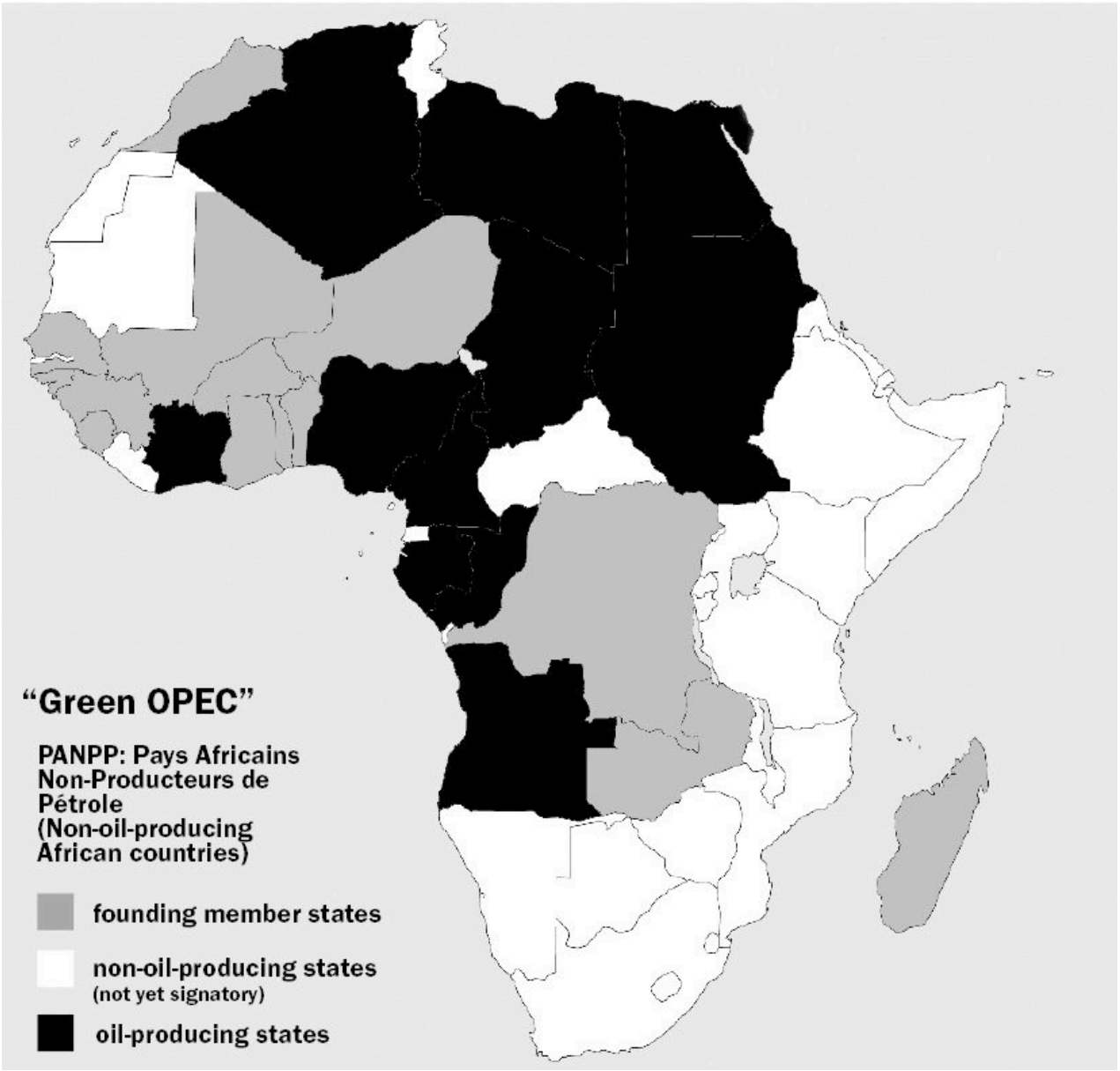
Africa is also the continent that will most seriously be hurt by another development caused by the agrofuel hype: increased food prices. Prices of several of the world's staple foods are already on the rise as countries are diverting their land from food crops to fuel crops. The FAO estimates that the cereal import bill of low income, food-deficit countries – many of them in Africa – will increase by about one quarter this season as a direct result of the "ethanol effect".[39]

Resistance is growing

People are starting to realise what the agrofuels boom is doing to their livelihoods, and resistance is growing. Farmers in northern Ghana have rejected jatropha as an agrofuel, mainly because they fear being tied down by fickle markets, and because of its toxicity, which limits its use.[40] In South Africa, civil society has rejected the government's proposal to use tribal and communally owned land in the Eastern Cape for agrofuels.[41] Analysts are warning that maize for ethanol is not viable and that the shortage of arable land is a critical issue for South Africa.[42] In Uganda, civil unrest erupted after the government granted a permit to a company owned by East African Indians to exploit the Mabira forest to plant sugar cane for agrofuels, and the government has now backed down (*see* Uganda box on page 94). The African Biodiversity Network has severely criticised the UK for setting targets for biofuels that will sacrifice Africa's land, forests and food to satisfy the UK's vast energy requirements.[43]

To sum up, agrofuels will not improve the lot of the mass of African people for various reasons. First, the poor simply cannot afford them because they do not have money to buy energy, but rely on wood, charcoal and dung. Secondly, it makes no sense for rural families to replace their sustainable and food-secure agricultural systems and forests with foreign-owned industrial plantations and in the process become cheap and dispensable labour. Thirdly, the privatisation of the land that is the source of Africa's wealth will undermine any chance that African countries have of determining their own future.

[39] FAO, "Crop Prospects and Food Situation" No. 3, May 2007.
http://tinyurl.com/2kswxw
[40] http://tinyurl.com/2on3ou
[41] "Rural communities express dismay: land grabs fuelled by biofuels strategy", Report of Civil Society Workshop on SA Biofuels Strategy, Durban, 5 March 2007, p. 2.
http://tinyurl.com/3cetb5
[42] G. Morris, "Strong land use policy is key to developing South African biofuels", Biofuel Review, 10 April 2007.
http://tinyurl.com/36futn
[43] http://tinyurl.com/2kfjwz


"Green OPEC"
PANPP: Pays Africains Non-Producteurs de Pétrole (Non-oil-producing African countries)
founding member states
non-oil-producing states (not yet signatory)
oil-producing states

Response to
Public Consultation Exercise
Energy and Transport Directorate-General, European Commission
On Biofuel issues in the new legislation on the promotion of renewable energy

June 2007

Africa Biodiversity Network, Kenya
Melca Mahiber, Ethiopia
Envirocare, Tanzania
Climate and Development Initiative, Uganda

Nature Tropicale, Benin

An African Response to EU Biofuels Targets

This document is a response from African Non-Governmental Organisations (NGOs). We are significant stakeholders in the outcomes of the European Commission's Public Consultation exercise on biofuel issues in the promotion of renewable energy.

Our organisations are concerned with issues of agriculture, biodiversity, food security, livelihoods, climate change, traditional cultures and indigenous rights in Africa. We feel that the targets of the EU legislation are likely to impact on those whose concerns we represent, namely those of rural and indigenous communities in Africa – those communities who are typically unable to participate in these distant discussions about subjects that will dramatically affect their lives.

We therefore thank the European Commission Energy and Transport Directorate-General, and other stakeholders, for considering our position, and treating our comments with the consideration and seriousness that we believe they deserve.

African Biofuels to Meet EU Targets

We have serious concerns about the implications of the EU's Biofuels Targets. Our concerns are that by increasing biofuel targets for the EU (where there is limited available land), these targets will need to be met by imports. These imported biofuels are likely to come, in large part, from Africa.

In order to meet the biofuel needs of the EU the conversion of land to provide the scale of biofuel crops required, is likely to significantly influence land use policies, and to have negative socio-economic and environmental impacts.

Numerous biofuel initiatives are already expanding and proliferating in African countries, suggesting that this is just the beginning of a massive trend. Recent biofuel developments include those in South Africa, Zambia, Uganda, Tanzania, Benin, Ethiopia, Kenya and Ghana, among other countries.

South Africa

There has been no discussion within these countries about the likely impact on rural communities, or on food security. The exception to this is South Africa, where a Biofuels Strategy provoked a strong response from farmers organisations, rural communities and NGOs, objecting to "land grabs" of communal and tribal land, where rural farming communities have been forced to sign over their land for a pittance for industrial plantations of

oilseed rape, maize and soya. (Please see annexe document "*Rural communities express dismay: 'Land Grabs fuelled by Biofuels Strategy'*".)

Uganda

A process to degazette Uganda's natural forest land, Mabira Forest Reserve, for the expansion of sugar cane plantations has sparked off public riots that have resulted in several deaths. These developments come in part from sugar companies' strategies to diversify into the lucrative bioethanol market.

Mabira Forest is the watershed for two rivers that contribute to the Nile, it protects Lake Victoria, and is an important absorber of pollution in a major industrial area. The forest represents millions of tonnes of carbon dioxide, and according to Uganda's National Forest Authority (NFA), the plan to log Mabira threatens 312 species of trees, 287 species of birds and 199 species of butterflies. Nine species found only in Mabira and nearby forests risk going extinct.

World Bank experts warn that cutting the forest will lower the water levels in the Upper Nile and Lake Victoria. This will have dramatic consequences for livelihoods, agriculture, rainfall, and electricity production. The likely soil erosion, droughts, floods and landslides from the cutting down of the forest, cannot yet be quantified in economic terms, but will be yet more burden for the people and economy of Uganda to carry.

Further biofuels developments on the Kalangala Islands in Uganda have led to large areas of tropical forest being cut down to make way for palm oil plantations for biodiesel.

Benin

In Benin, government plans are underway to develop large areas of wetlands for palm oil plantations. According to Wetlands International, the destruction and burning of the South East Asian Peatlands in Indonesia and Malaysia for palm oil plantations, is responsible for 8% of global CO2 emissions.

The Benin government plans to scale up from household and small-scale production, to large-scale biofuels production from cotton seed, cane sugar, manioc, sorghum, maize, soya and ground nut, in order to enter the international biofuels market. However, the government and actors have failed to take into account any considerations of the socio-economic and environmental impacts of this strategy, for example how farmers are to accommodate increased competition for their land and food crops.

Tanzania

In Tanzania, plans to place numerous and extensive areas under biofuel cultivation, include sugar plantations in the Wami river basin, displacing small-scale rice farmers.

Question 1 ***"How should a biofuel sustainability system be designed?"***

There <u>is no satisfactory sustainable biofuel system possible, on the scale required</u>. In effect, there is not enough land at current consumption rates to provide for the European Union's energy needs. Policy makers in both the developed and developing worlds should look for solutions which are inherently sustainable, such as wind and solar energy, rather than trying to make biofuels sustainable, which we know are neither sustainable nor energy efficient. There are currently no internationally agreed definitions of "sustainable biofuels", and even if there were, any certification schemes might be argued to be illegal barriers to trade.

However "sustainable biofuels" come to be defined, there can only be a limited amount that can ever be genuinely sustainable. To meet projected targets, biofuel production will be inherently unsustainable, due to the necessary changes in land use and food supplies that will result from providing enough biofuels to meet increased targets.

In an African context, we believe that the only genuinely “sustainable biofuels” will be those that involve crops that can be integrated into current farming practices, and do not displace or compete with any land or food crops. From our perspective, the only sustainable biofuels can be those that are produced for household, local or domestic use, in order to meet the energy needs of the poor. To us, the production of large-scale biofuel crops for export will inevitably displace our agriculture, and therefore cannot be sustainable.

In order to meet the biofuel needs of the EU, the conversion of land to provide the scale of biofuel crops required, is likely to significantly influence land use policies, and to have negative socio-economic and environmental impacts.

Studies show that biofuels are not sustainable or viable energy wise or land wise. See the studies:

LESSON FOR AFRICA? BIOFUELS ARE NOT ENERGY EFFICIENT AND DO NOT BENEFIT THE LOCAL FARMERS

In a study done by Pimentel and Patzek at Ivy League University Cornell in 2005 demonstrated that turning plants, such as corn, soybeans and sunflowers into fuel uses much more energy than the resulting ethanol or biodiesel generates. "There is just no energy benefit to using plant biomass for liquid fuel," said Pimentel, professor of ecology and agriculture at Cornell. "These strategies are not sustainable." Biofuels are a self-defeating strategy, the numbers show: “Ethanol production using corn grain required 29% more fossil energy than the ethanol fuel produced. Ethanol production using switchgrass required 50% more fossil energy than the ethanol fuel produced. Ethanol production using wood biomass required 57% more fossil energy than the ethanol fuel produced. Biodiesel production using soybean required 27% more fossil energy than the biodiesel fuel produced (Note, the energy yield from soy oil per hectare is far lower than the ethanol yield from corn). Biodiesel production using sunflower required 118% more fossil energy than the biodiesel fuel produced.” Pimentel outlines that the US government spends more than $3 billion a year to subsidize ethanol production when it **does not provide a net-energy balance or gain and is neither a renewable energy source nor an economical fuel**. The vast majority of the **subsidies do not go to farmers but to large ethanol-producing corporations**.

“Ethanol Production Using Corn, Switchgrass, and Wood; Biodiesel Production Using Soybean and Sunflower” David Pimentel and Tad W. Patzek Natural Resources research Volume 14, Number 1, March 2005 pp 65-76

BIOFUELS AND THE DESTRUCTION OF GOOD CARBON SINKS AND REQUIRE TO MUCH LAND TO BE SUSTAINABLE

In the article by MacKinnon released on the 4th of April 2007 in the Guardian, he announces the disasters linked to biofuels. He says: “The numbers are damning. Within 15 years 98% of the rainforests of Indonesia and Malaysia will be gone.” He explains that forests are being torn down in the rush to boost palm oil production at the detriment of efficient carbon sinks. He quotes Willie Smits: "When you look closely the areas where companies are getting permission for oil palm plantations are those of high-conservation forest,” Smits set up SarVision, a satellite mapping service that charts the rainforest's decline. "What they're really doing is stealing the timber because they get to clear it before they plant. But the timber's all they want; hit and run with no intention of ever planting. It's a conspiracy." Researchers from the Dutch pressure group Wetlands International found that as much as **half the space created for new palm oil plantations was cleared by draining and burning peat-land, sending huge amounts of carbon dioxide into the atmosphere.**

“The sodden peat of central Kalimantan acts as a vast organic sponge that stores huge amounts of carbon. But as it dries while being drained for plantation, or by roads being cut through to remove timber, it releases the stored carbon. In Indonesia alone, **the peat**

releases 600m tones of carbon a year. Worse, it is often set alight to speed clearing, adding to the CO2 from the huge forest fires that blanket much of south-east Asia in haze. Estimates say **Indonesia's fires generate 1,400m tones of carbon dioxide each year,** pushing it to the world's third-largest producer of CO2 from 26th, if both factors are considered**"**

"Palm oil: the biofuel of the future driving an ecological disaster now" Ian MacKinnon in Kalimantan Wednesday April 4, 2007

If the UK is serious about mitigation GLOBAL climate change in an effective way, it should consider the emissions it is responsible for as a nation, especially (in) directly encouraging biofuel use abroad. The UK should stop its development and usage of biofuels or include the emissions in its targets if it wants to bring real change.

Question 2: ***"How should overall effects on land use be monitored?"***

We must consider the risks involved in the effects on the land. There will be effects on the land, whether we monitor them or not. Thus, we must not encourage the development of biofuels (sustainable or not) if we are serious about protecting land.

Large-scale biofuels developments elsewhere in the world also hold valuable lessons: The destruction of the Brazilian Amazon and Pantanal for soya and sugar cane plantations; the appalling conditions, sometimes comparable to slavery, of many sugar cane plantations in Brazil; the destruction of the Indonesian rainforests for palm oil; the rising price of grain in Mexico due to its consumption for US ethanol, leading to hunger and riots. We believe we have every reason to expect similar developments in Africa.

The issue of climate change is serious, and we in Africa know this more than most. We agree that action by industry and transport in the EU is necessary. However, we urge you to consider the socio-economic and environmental impacts that a large-scale promotion of biofuels will have on Africa.

The Stern Report commissioned by the UK government last year, states that 25% of global CO2 emissions come from deforestation. Therefore any biofuels projects that accelerate deforestation must not be allowed to pass themselves off as environmental solutions to climate change. Forests maintain water cycles and climates, both locally and globally. They are the home to the world's diversity of species and the reference point for thousands of indigenous cultures and livelihoods around the world.

The biodiversity and livelihoods of Africans should not be considered expendable for the cause of climate change solutions. The examples that we cite here from Africa and elsewhere in the world are likely to be just the beginning of growing and accelerating trends. These trends will put serious pressure on African communities to change the crops they grow, their access to land, food and forests, while our wilderness and forest areas are sacrificed. If Africa is to attempt to meet the vast energy requirements of the EU, then these impacts will be enormous.

We need to make sure we are aiming for NO land-use changes. In effect, the best way to absorb the excess GHGs in the atmosphere at the moment is through the best carbon sinks – the indigenous forest systems already existing. The best carbon sinks are being destroyed for biofuel plantations. We note that "sustainability" is not only about carbon. Biodiversity and livelihoods issues are central to these discussions too, and must not be compromised

The government should continue to emphasize the importance of forests, encourage the preservation of old forests and biodiversity. We must focus not only on CO2 emissions but make sure that the mitigation efforts do not aggravate already deteriorating situations. The earth already possesses the best natural sinks which contain and absorb CO2. Their destruction can never be replaced to their full capacity. In effect the studies show the value of

biodiversity and old forests is CRUCIAL and ESSENTIAL to the mitigation of climate change and MUSTN'T be risked for the development of biofuels:

OLD FORESTS
The study done by Zhou et al in December 2006 in SCIENCE outlined that old growth forests (at least 100 years old) may store far more carbon than believed or expected. In effect it was shown that a 400-year-old forest in southern China increased its organic carbon concentration in the top 20 centimeters of the soil from about 1.4% to 2.35% between 1979 and 2003.

"Old-Growth Forests Can Accumulate Carbon in Soils," G. Zhou, et al., Science, 1 December 2006, Vol. 314, No. 5804, p. 1417.

BIODIVERSITY

The studies done by Tilman confirm the link between high biodiversity and both the stability and productivity in terms of biomass and carbon turnover of terrestrial ecosystems. The importance of biodiversity is an issue of preservation, and also an issue of better carbon sinks.

Tilman, D. & Downing, J. A. Nature 367,363–365 (1994).
Tilman, D., Wedfin, D. & Knops, J. Nature379,718–720 (1996)

Studies from Nature show "To the extent that loss of plant biodiversity in the real world means a reduction in the ability of ecosystems to fix CO2, we also tentatively conclude that the loss of diversity may reduce the ability of terrestrial ecosystems to absorb anthropogenic CO2".http://www.wrm.org.uy/bulletin/39/research1.html

The studies show how biofuels and biodiversity will compete with each other. We must make sure we maintain the sinks and ecosystems we have to avoid aggravating the climate change situation. In effect, various other reports show that "Biofuels are bad news for biodiversity" http://gristmill.grist.org/story/2006/6/12/103838/376 12 June 2006
An that Biofuel policy will give negligible carbon cuts
http://www.edie.net/news/news_story.asp?id=11549 7th June 2006

DYNAMIC RELATIONSHIPS BETWEEN BIODIVERSTITY, LARGE FORESTS AND CLIMATE CHANGE
The study done by Webb et al in the "Proceedings of the Royal Society" show that biodiversity and preservation of existing forests is the key to better climate change mitigation but that in order to withstand the impacts of the changes already happening, the forests need to be preserved on a large scale. The recommendations of the study are that it will be profitable to promote forest conservation programs by emphasizing possible climatic as well as biodiversity benefits. This study emphasizes the dynamic relationship between climate change forest conservation and the feedbacks they have on each other.

"Coincident scales of forest feedback on climate and conservation in a diversity hot spot"
Thomas J. Webb, Kevin J. Gaston, Lee Hannah and F. Ian Woodward
The Royal Society 16 November 2005

Question 3: *"How should the use of second-generation biofuels be encouraged?"*

If second generation biofuels entail Genetically Modified Organisms we would like to recommend exercising extreme caution. For example we hear that the UK government's is considering allowing Genetically Modified (GM) crops to be considered "sustainable". That would be an entirely unacceptable proposition. We feel strongly that any crop calling itself "sustainable" cannot include GM.

With the exception of South Africa, no African countries have commercialized GM crops. This is due to the serious concerns that African farmers and governments have about the impacts of patented seeds, crops that only function in association with specific chemicals, and the high risk of GM cross-pollination and contamination of local crops. Over the years, Africa has remained GM-free in the face of strong international pressure to accept GM crops. Unfortunately, biofuels may provide the entry point for GM crops into our continent, overriding the interests of African farmers and the environment.

We would also be extremely wary about any use of GM micro-organisms in the production of biofuels, due to their ability to rapidly mutate, exchange DNA and reproduce, and the difficulties in containment.

Question 4: ***What further action is needed to make it possible to achieve a 10% biofuel share?***

Biofuel (agrofuel) consumption and production must be stopped, not encouraged. The risks for the environment and its inhabitants are too great. By producing and consuming biofuel from agricultural crops, we are contributing negatively to the mitigation of climate change. We cannot promote or condone biofuel use if our object is being green or sustainable. Biofuels are neither green, nor sustainable. They use more energy to make it than they produces, they risk destroying and opening up carbon sinks such as forests and biodiverse ecosystems and last but not least it will cause great chaos it producing countries.

If we are able to take lessons from countries already having experienced the development of biofuels, we need to acknowledge that development of new energy sources overseas will have irreparable damage on the global climate. Using other countries to grow the EU's biofuels will increase their per capita emissions when the actual users are in the West. The best way to avoid this situation is to stop the development of the industry. If not, developing countries will bear the double burden of food competition and increased emissions (which are not even their own).

Articles and studies have been released showing that: "Growing demand for biofuels" 'could lead to food shortages' in the Telegraph 19th April 2007. Various other sources including "the Scotsman", "the Globalist" and "Euractiv" are concerned for their own food resources. According to the BBC, the USA is experiencing the same kind of competition between food and fuel http://news.bbc.co.uk/1/hi/business/6481029.stm. If even in developed countries people struggling to buy food, it is completely unreasonable to ask developing countries, some which are technically "hungry" to for go eating for our energy demand.

What we do recommend, are sustainable agriculture practices, biodiversity and forest preservation in countries at risk of becoming biofuel producers. We need to recognize that they comport some of best sinks (old forests and biodiversity). If our challenge is mitigating climate change effectively, we must do so in the best way possible which remains preserving indigenous methods and biodiversity which exist on the field and have been shown to be the most "carbon neutral" and invest in renewable energy sources such as wind and solar power sources.

Summary and Conclusion

- We ask you to consider the impacts that raising EU biofuels targets will have on African rural communities, remembering the scale of land that will be required to meet your energy needs.

- In particular, we are extremely concerned about pressures for changes in ownership of land and privatization. The land for large-scale biofuel production must come from

somewhere, whether from small farmers' land, communal land or conservation areas. There is no free land in any of our countries, so communities will inevitably be displaced and denied of their land, territories and natural resources.

- To reduce climate change, we remind policy makers that climate change is not just about carbon dioxide as an indicator. Biodiversity and livelihoods issues must be considered as part of any successful climate change strategy, or you face unacceptably high costs that render the strategies counter-productive.

- There will be a limit to the amount of agricultural biofuels that can be produced in a genuinely sustainable manner. Beyond a certain amount, the necessary changes in land use will inevitably bring about harmful socio-economic and environmental impacts.

- We fear that definitions of "sustainable biofuels" will be based on decisions of political convenience, and not on science or socio-economic expertise. We therefore advise against placing too much trust in the term "sustainable biofuels" and expecting that the EU's extensive biofuel demands can be met sustainably.

- Furthermore, if trade considerations ultimately prevent the EU from requiring "sustainable biofuel" standards anyway, then raising biofuel targets will mean that you are knowingly signing away our rights, lands and communities.

- We ask you to refrain from increasing the EU's biofuel targets as a quick-fix replacement to fossil fuels. Instead we urge the EU government to consider solutions that can increase localization and energy efficiency, to support genuinely renewable options, and to reduce unnecessary transport, industry and packaging.

Sincerely,

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