Land grabbing for biofuels must stop

Download PDF

Document Tools

GRAIN | 21 February 2013 | Against the grain

Aerial photo of the lands taken by Addax Bioenergy for its sugar cane plantation in Sierra Leone. (Photo: Le Temps)

Zainab Kamara is one of several thousand farmers in Sierra Leone whose lands have been taken over by the Swiss company Addax Bioenergy for a 10,000 hectare sugar cane plantation to produce ethanol for export to Europe.

"Now I don't have a farm. Starvation is killing people. We have to buy rice to survive because we don't grow our own now," she says.1

In neighbouring Guinea, peasants are trying to understand how their government could have possibly signed off 700,000 ha of their lands to an Italian company to grow jatropha for biodiesel.2

On another continent, Guarani communities in Brazil are locked in battles of survival against companies that want their lands to produce ethanol from sugar cane.3 It's a similar story in Indonesia where the Malind and other indigenous peoples of West Papua are desperately fighting a massive project to convert their lands into sugar cane and oil palm plantations, and in Colombia, where Afro-Colombian communities are being pressured by paramilitaries to leave their lands to make way for oil palm plantations.4

Predictions are that global demand for biofuels will hit 172 billion litres by 2020, up from 81 billion litres in 2008.5 At current production levels, that would mean an additional 40 million hectares of land would have to be converted to growing crops for biofuel.6 Put another way, it would require 1096 land grabs the size of the Addax Bioenergy project in Sierra Leone.7

(Table 1 below provides a listing of 293 reported land grabs around the world between 2002 and 2012 – covering over 17 million hectares – where the stated intention of the investors is the production of biofuels. The data is also broken down by region. Download these spreadsheets.)

Landgrabs for biofuels

Table 1 – Land grabs for biofuels (Sources: ILC Land Matrix, Biofuels Digest, GF

Target Country	Company	Company Origin	Crop	Hectares	Source / Land Matrix Number	Notes
Angola	ENI	Italy	Oil palm	12000	GRAIN	
Angola	Atlantica Group	Portugal	Oil palm	5000	1101	
Angola	Quifel	Portugal	Oil seeds	10000	GRAIN	
Angola	Eurico Ferreira	Portugal	Sugar cane	30000	GRAIN	
Angola	Odebrecht	Brazil	Sugar cane	55000	GRAIN*	Biocom joir currently o planning to 25,000 (http://ango sweet-succ
Angola	Marubeni	Japan	Sugar cane	66000	BD	
Angola	Gleinol	Portugal		13000	1094	
Argentina	Agrogeneration	France	Crops	1700	GRAIN	
Argentina	Infinita Renovable	Spain	Rapeseed	50000	1062	
Benin	Agritech Holding	Singapore	Jatropha	93488	GRAIN*	http://www.a
Benin	Complant	China	Sugar cane	4800	1113	
Benin	Colethanol	Western multinationa	Sugar cane	100000	1120	Colethanol name of th

Europe is the central driver of land grabs for biofuels because it imports much of the raw materials it uses. Europe is also where the biggest increase in demand is expected to come from over the next decade.

The EU-27 mandate, a new proposal by the European Commission, sets a 2020 target for consumption of biofuels equivalent to more than 40 Mtoe (million tonnes oil equivalent). The supply of raw materials to produce this is being built by massively displacing people in the Global South and grabbing their lands.

Landgrabs for biofuels : Biofuels mandates

Table 2 – Biofuels mandates

Country	Mandate biodiesel	Mandate ethanol	Notes
Angola		0.1	
Argentina	0.07	0.05	September 2012. was scheduled to be increased to 10%
Australia	0.02	0.04	Only in New South Wales State.
Brazil	0.05	18-20%	Biodiesel mandate implemented in 2010 and plans are to increase biodiesel blend to 10% by 2014. Mandate for ethanol fluctuates based on sugar demand. In 2011 it was at 25%.
Canada	0.02	5-8%	Federal biodiesel mandate takes effect in 2012, but production is well below the mandate. The ethanol mandates vary according to provinces, but a national 5% mandate us being implemented.
			China has a 15% overall target for 2020, but

European companies and governments have tried to counter criticism by proposing various criteria for "sustainable biofuels". Most recently, in October 2012, the European Commission (EC) published a proposal to limit the contribution food crops can make towards the the EC's target for renewable energy in transportation. Under the new proposal, states can only count biofuels derived from food crops for half of the total target of 10 percent; the rest of the biofuel contribution has to come from non-food sources.

But the campaigns, negotiations and criticism have done little to staunch the continent's growing consumption of biofuels. The EU has made only symbolic gestures to add a green veneer to the brutal global land grab that has resulted.

Europe is still grabbing land for biofuels

In the world of biofuels, there are three markets that matter: the US, the EU and Brazil. Together they account for 80 percent of global biofuel consumption, and this is not predicted to change anytime soon.8 (see Box 1)

Of the three, the EU is the only one that relies heavily on imports of feedstock (crops brought to Europe for processing into biofuels) as well as food imports to replace European oilseeds that are diverted to biofuel production. In 2008, the EU imported around 41 percent of its biofuel feedstock needs.9

The latest EC proposal calls for biofuels based on food crops to account for five percent of its transport fuel consumption by 2020.10 Given the overall increase in transportation fuels that is expected within Europe, this will work out to 21 Mtoe (million tonnes oil equivalent) of biofuels, most of which will be biodiesel made from oilseed crops or palm oil.11 The oilseed crops used to make biodiesel in the EU produce between 0.8 to 1.2 toe biodiesel/ha. Taking 1 toe/ha as an average, this would mean that the EU would have to devote 21 million hectares to biofuel production to meet its 2020 demand at current yield levels. That's nearly double the total area planted to oilseeds in the EU in 2012 – more than the entire area of arable land in Italy and Spain combined.

No doubt the EU will have to source an increasing share of its biofuel crops from elsewhere to reach its targets.

Plantations, plantations, plantations

Cheap palm oil is the obvious substitute. Oil palm plantations in the tropics yield four times more biodiesel per hectare than European oilseed crops, and it would be possible to meet the EU's entire 2020 demand for food crop-based biofuel from 5.5 million ha of oil palm plantations.

Establishing these plantations, however, is no small undertaking. Malaysia's Sime Darby, the world's largest palm oil producer, has spent decades increasing the size of its plantations under production to nearly 500,000 ha. Importing palm oil to supply the EU's 2020 five percent target for food crop-based biofuels would be akin to creating a dozen new companies the size of Sime Darby.12

Box 1: Beyond the big three

There are currently biofuel mandates in at least 27 countries outside of the EU, Brazil and the US (see Table 2). If these mandates were realised, Biofuels Digest says the global biofuel market would balloon to 227 billion litres by 2020 — a significant climb from the OECD's prediction of 172 billion litres.

The mandates were a political response to a mixture of high oil prices, cash from foreign investors, and delusional hopes for crops like jatropha. But the political and economic rationale for the promotion of biofuels, which was always weak, has eroded further, and, for most governments in the South, policies to encourage domestic consumption of biofuels remain only on paper, with things not likely to change anytime soon. The Thai Minister of Foreign Affairs bluntly told his Gulf State counterparts that his country, one of the big emerging biofuel producers, would abandon biofuels if its oil exporting partners would "help to ensure the stability and affordability of energy prices."1

There is, however, a second tier of significant biofuel producers, with national production at or predicted to attain over one billion litres per year. They are: Argentina, Canada, China, Colombia, India, Indonesia, Malaysia, Philippines, and Thailand, and together they account for 18 percent of the global market for biofuels.

Some of these countries, especially Argentina, Indonesia and Malaysia, produce for both domestic and export markets, but their capacity for biofuel exports, as opposed to exports of biofuel crops, will remain limited because the policies of the big markets (EU, US, and Brazil) favour domestic production — and control over both domestic and imported supply by multinationals (see Box 3).

The big potential markets of China and India are limited by food security concerns. China has banned the further construction of ethanol plants that use grains and is exploring production of non-grain crops on marginal lands, with little success so far. India too is not touching its grain supply. Domestic ethanol targets focus on sugar cane, while biodiesel targets focus on jatropha, both of which have failed dramatically to produce much supply. In this context, companies from the two countries have been encouraged to look overseas at opportunities for biofuel production.

One of the main Chinese companies involved in the development of biofuel production overseas is the China National Complete Import and Export Corporation Group (COMPLANT). It functioned as a foreign-aid office for China until 1993, and while it now trades on the Shenzhen Stock Exchange, its controlling shareholder is the State Development & Investment Corporation, the largest state-owned investment holding company in China.

In 2010, COMPLANT subsidiary Hua Lien International announced plans to establish a joint venture with COMPLANT and the US$5-billion China-Africa Development Fund to set up ethanol projects in various African countries. The three companies plan to launch the venture in Benin and roll out to other countries in the coming years.

The venture will draw on COMPLANT's numerous recent investments in sugar cane and cassava production, including an 18,000-ha sugar cane plantation in Jamaica, a proposed 4,800 ha sugar cane and cassava venture in Benin, a 1,320-ha sugar cane plantation and factory in Sierra Leone, where in 2006 it also announced plans to expand its holdings to 8,100 ha to begin production of cassava, and a massive 500,000 million tonne per year sugar and ethanol joint venture with Kenana Sugar in Sudan along the White Nile. In Madagascar, COMPLANT has been running the SUCOMA sugar factory since 1997 and, in 2008, under a twenty-year management contract, it took over the state-owned sugar refinery SUCOCOMA, giving it control over 10,000 ha for sugar cane production. COMPLANT and the China Development Bank are also involved in the construction of a controversial large-scale sugar refinery and plantation in the northeastern Afar region of Ethiopia.

1 Statement of ACD Coordinator by His Excellency Mr. Surapong Tovichakchaikul, Minister of Foreign Affairs of the Kingdom of Thailand, at the Asia Cooperation Dialogue Ministerial Meeting, Kuwait City, 14 October 2012

Oil palms only grow in tropical areas near the equator, greatly limiting where expansion can take place.13 Indonesia continues to be a main area of expansion, with two thirds of new plantations being carved out of rain forests.

A more recent target for expansion is in the forests and agricultural lands of West and Central Africa. Sime Darby is pursuing the development of plantations on a massive 220,000 ha concession in Liberia that will displace thousands of people from their lands and water sources. Fifteen thousand people were affected by just the initial clearing of 10,000 ha14, and local communities are now vowing to stop the company from entering their lands.15

Landgrabs for biofuels : Jatropha

Table 3 - Land grabs for jatropha, 2002-2012

Target Country	Company	Company origin	Hectares
Benin	Agritec		93488
Brazil	Biogreen Oil B.V.	Netherlands	40000
Brazil	BioFuel Projects International B.V (BFP International)	Netherlands	5000
Burkina Faso	Biocarburant SA (MBSA)	Netherlands	1000
Cambodia	Heng Heap Investment	Cambodia	7000
Cambodia	NTC Jacam	Cambodia	500
Cambodia	Fortuna Plantation	Malaysia	7955

Jatropha

Europe's 2020 five percent mandate for food crop-based biofuels would generate enough demand to support the construction of at least 100 oil palm plantations the size of the Olam project.

Soybeans are the other major crop imported into the EU for biofuels. Most of any added production for 2020 would likely come from Argentina and other countries in the Southern Cone of Latin America. But soybean plantations are not nearly as productive as oil palm, producing only

0.31 toe/ha of biodiesel.17 To satisfy the EU's 2020 five percent target for food crop-based biofuels from soybeans alone would require the planting of nearly 70 million ha in Latin America. And Brazil has a 2014 biodiesel mandate of its own, which would require 10 million hectares of soybean production.18 To put this in perspective, Brazil and Argentina currently have a total of around 45 million hectares planted with soybeans.

Then there's the question of the other five percent. The EC's new rules state that this must come from non-food crops.19 Most of these non-food crop options, however, are still a long way from large-scale commercial production and are unlikely to be ready by 2020 (See Box 2). One of the few economically viable options that could meet the supply needs of the EC directive is jatropha.

Jatropha's new life

Jatropha went through an investment boom in the mid-2000s. It was portrayed as a miracle crop that could be grown on marginal lands with few inputs to produce plenty of oil for biofuels. Many companies and government programmes were launched, but the reality soon sunk in. It turned out the crop was like any other commodity crop – high yields, at least high enough to make the big projects economical, required lots of water, decent soils and the use of plenty of fertilisers.20

Box 2: No alternative to first-generation biofuels in sight

Biofuels were expected to help reduce greenhouse gas (GHG) emissions from transportation, and this justification is built into many of the mandates. But, so far, this isn't happening. The GHG savings derived from the first generation of biofuels disappear when the indirect land use changes that occur from the production of the biofuel crops are factored in.1

Hopes that biofuels will make a significant contribution to reducing GHG emissions now rest in the development of second or third generation biofuels that will be more carbon neutral and not compete with food crops for land. Both the EU and the US have various incentives and subsidies built into their biofuels policies and mandates that are supposed to stimulate the development of these advanced biofuels.

Cellulosic ethanol made from feedstocks like grasses, wood chips or straw was supposed to be the first advanced biofuel on stream by now. But companies have failed to find an efficient and affordable way to break down the cellulosic material for large-scale production. As a result, the US Environmental Protection Agency has had to repeatedly waive its mandate for the use of cellulosic ethanol, which was 500 million gallons in 2012 and will be 1 billion gallons in 2013, because of a lack of supply. In a likely sign of things to come, British Petroleum cancelled its plans to construct the world's largest cellulosic ethanol plant in October 2012.2 US companies are instead turning to imports of sugar cane ethanol from Brazil, since it qualifies as "advanced biofuel" under US regulations.

At this point, the only success in producing advanced biofuels on a commercial scale is with a technique known as lipids hydroprocessing that produces diesel and jet fuels. But the factories using this technique depend on animal fats, which would present major supply constraints if there was a further scaling up, and palm oil, which does little to resolve first generation issues. Several large facilities for producing biobutanol, another "advanced biofuel", are set to come on stream, but these too depend on first generation biofuel crops, such as grains.3 Other alternatives, such as micro algae, are still far too untested and expensive to be ready for mass commercial production before 2020.4

For the foreseeable future, the big biofuel markets will continue to be supplied with first generation biofuels, offering little if any GHG emissions reductions and generating all kinds of problems for the food supply and rural communities.

1 UNEP, "Towards sustainable production and use of resources: Assessing biofuels," 2009 (pdf)

2 Kevin Bullis, "BP Plant Cancellation Darkens Cellulosic Ethanol's Future," MIT Technology Review, 2 November 2012

3 Tristan Brown, "Summer 2012 State Of The Advanced Biofuels Industry: Hydrocarbons Lead The Way," Seeking Alpha, 13 August 2012

4 IEA Bioenergy Task 40 Sustainable International Bioenergy Trade, "The potential role of biofuels in commercial air tranport- biojet- fuel," September 2012

By December 2012, there were over 130 land grabs for jatropha production registered around the world, adding up to over nine million hectares (see Table 3).

Many of these projects seemed unlikely to ever get off the ground. But the EC's new proposal could change that by establishing a massive new market for biofuel from non-food crops, meaning jatropha would not have to compete against more productive alternatives such as oil palm.

In the jungles of Gabon, Singapore-based Olam plans to spend US$236 million clearing 50,000 ha of forest for an oil palm plantation within a 300,000 ha concession that it was provided by the government.16How much land would be required to satisfy the half of the EU's 2020 mandate set aside for non-food crops? It's hard to give a precise figure, because yields for jatropha vary widely according to growing conditions. But if we use the data from Brazil, where jatropha is grown on managed plantations and the yields are relatively high (at 1.01 toe/ha), 21 million hectares would be required.21 This figure could easily double if production targeted less fertile lands, as the crop's promoters promise they will.

Jatropha has not lived up to its exaggerated promise, but the next generation of biofuels are yet to be developed. (Photo: CIFOR)

The wave of land grabs for jatropha over the past six or so years has been obscene, especially in Africa: 235,000 ha in Ghana, 700,000 ha in Guinea, 550,000 ha in Kenya, and the list goes on (see Table 3). The EC proposals could easily set the stage for a second wave of land grabs of equal size, with greater impacts on the ground as the new projects are more likely to move into the production phase.

And people stand to lose more than just their land in the process. Jatropha needs plenty of water to produce decent yields. The available studies say the crop needs anywhere between 3,213 litres of water to 778,025 litres of water to produce one litre of biodiesel. In comparison, producing a kilo of wheat requires about 1,000 litres of water.22

For the communities that lose their lands and access to water because of land grabs for biofuels, it does not matter whether those lands are planted with food crops like soybeans or non-food crops like jatropha.

No room for "sustainable" biofuels

In the face of growing criticism of biofuels, the EC and European biofuel companies are making a show of regulating the market and dressing up biofuels as "sustainable". Under the EC Directive, biofuels must comply with sustainability criteria approved by the EC in order to count towards

mandatory national renewable energy targets or to receive government support.

To date, the EC has approved 12 voluntary schemes from bodies such as the Roundtable on Responsible Soy and the Roundtable on Sustainable Palm Oil — two corporate dominated bodies committed to the expansion of monocultures of soybean and oil palm respectively.23 This points to how narrow the criteria for sustainability criteria are. There is nothing in the EC guidelines about social impacts and, when it comes to environmental impacts, only direct land use changes such as the clearing of forests are considered, with no consideration given to the indirect land use changes that occur when agricultural lands and water sources are affected by the production of biofuel crops.24 One study looking at indirect land use changes from biofuels concluded that the EU's biofuel targets will result in the conversion of up to seven million hectares of natural ecosystems into agricultural production.25

Biofuel plantations in Guatemala use much of the available water for irrigation. (Photo: Richard Perry/The New York Times)

Despite the reports and studies commissioned by the EC itself that show the importance of indirect land use changes in understanding the impacts of biofuels, the EC decided to drop indirect land use changes from its October 2012 proposal and put off action to 2017 when it promises to review the scientific evidence.26

The debate around "sustainability" should not obscure the simple reality that it is not possible to develop enough biofuel crops to meet today's targets without displacing communities, undercutting food production and chopping down forests. Tacking a "sustainable" tag onto some of the supply does nothing to change this overall equation.

Box 3: European companies export land grabs, import profits

Europe's biofuel future is on full display in Rotterdam. The continent's largest port is the central conduit for much of the agricultural commodities and transport fuels that European companies source from around the globe. Around a third of all palm oil imports into the EU passes through Rotterdam.1 No surprise then that this is where the biggest names in the European biofuel industry are setting up shop.

Leading the charge is Neste Oil, the state-owned Finnish oil company. It finished construction of a renewable diesel plant in Rotterdam in 2011 that will churn out over 900 million litres a year, using palm oil for at least 50 percent of its raw materials. The renewable diesel plant is the world's second largest, only slightly smaller than Neste Oil's plant in Singapore, which also converts palm oil to diesel for export to Europe.

Next door to Neste Oil's Rotterdam operation is a massive ethanol plant owned by the Spanish energy company Abengoa. In recent years, it has invested heavily in ethanol production in Europe, the US, Brazil, and, most recently, Uruguay. Its Rotterdam plant is the hub connecting the company's global production to the European market, where ethanol imports are on the rise. In 2009, one third of the ethanol imported through Rotterdam came from Brazil.

Swiss-based Glencore, Europe's second largest agricultural commodities trading house, owns two biodiesel plants in Rotterdam, with a combined capacity of 740 million litres per year. Rotterdam is the main port of entry for soy-based biodiesel and Glencore, through a joint venture with two of Argentina's top soybean crushers, is the largest producer and exporter of biodiesel from Argentina, the main source of European soy-based biodiesel imports.2

The presence of Glencore, which not only trades agricultural commodities but also produces them on its own farms in Eastern Europe, South America and Australia, highlights the importance of vertical integration within the industry. Europe's biofuel companies are increasingly looking for full control over production, right down to the crops. Shell and BP, for instance, have spent hundreds of millions of euros buying up sugar cane plantations and mills in Brazil to produce ethanol. French commodities giant Louis Dreyfus is also buying up farmland and sugar plantations in South America to feed its ethanol and biodiesel plants.

As European biofuel demand fuels a global race for control over areas of cheap production of biofuel crops, so far that race is being won by Europeans, often with financial backing from European governments. European companies are responsible for a third of all the biofuel land grabs that have been reported since 2002 (see Table 1).

One of these companies is Tozzi Renewable Energy. On 16 November 2012, representatives of nine villages held a press conference in the city of Antananarivo, Madagascar to denounce the Italian company for taking away their lands as part of a 100,000 ha jatropha plantation that the company is constructing.

"We small peasants are forced to leave because men armed with guns have come to throw us off our lands," they told reporters.3

1 MVO Palm Oil Fact Sheet (pdf)

2 Judith Taylor, "EU biodiesel producers eye growing Argentina exports,' ICIS.com, 13 October 2009; "Vicentin and Glencore build a new biodiesel plant in Santa Fe," Cronista.com, 23 January, 2008.

3 "Soutenons les eleveurs et leur patrimoine contre l'accaparement de vastes surfaces de terres par la société Tozzi Green à Madagascar," TANY, 28 November 2012

Choosing fuel over food

Beyond the land grabs, another nasty consequence of the surging demand for biofuels has generated more attention: its impact on food prices. Biofuels eat up over a third of coarse grain production in the US, the world's largest exporter, and 80 percent of oilseed production in the EU, the world's second largest importer. This is part of the reason why global stocks of these crops are at record lows. The United Nations Food and Agriculture Organization (FAO) calls biofuels "the largest source of new demand for agricultural production in the past decade" and says that they represent a new "market fundamental" affecting prices for all cereals."

With food prices once again soaring, high-level agencies like the FAO and the Organisation for Economic Cooperation and Development are now calling for an end to regulations that require biofuels be blended into transport fuels, known as mandates. So too are corporate heavyweights from the food industry who compete for crops with biofuels producers.

"[Using biofuels] was well intentioned at the time, but when you have better information then you have to be coherent," says Paul Bulcke, the CEO of Nestlé. "We say no food for fuel."

Best estimates are that demand for food will increase by 70-100 percent by 2050.27 The world will have to meet this new demand under much more difficult circumstances. Already the amount of arable land per capita has decreased from 0.41 to 0.21 hectares since 1960, and this land is increasingly degraded, with around 25 percent of the world's agricultural land now classified as highly degraded. Climate change will make things worse, pushing the total "drought disaster affected" areas of the world from a current 15.4 percent of global cropland to 44 percent by

2100.

It will also be harder to increase yield from the available lands. The FAO says that previous increases in global agricultural production are not sustainable and predicts that growth will slow by a third over the next decade. Other studies suggest that with climate change, world agricultural production could dramatically decrease – by 15 to 25 percent![28]

Water too is a major problem. Agriculture accounts for 70 percent of global water consumption. But the depletion of water sources and competition from other uses, such as industry and urbanisation, will reduce agriculture's share to 45 percent by 2050. It will be hard enough to squeeze out the food production required to feed the planet under these conditions.

Add current biofuel targets to the mix, and you have a recipe for mass hunger. Consider the Addax example: this one sugar cane project will use 26 percent of Sierra Leone's largest river's flow during the driest months, February to April. Now multiply that by a thousand.

The political and economic rationale for the biofuel boom was always weak: policies like the EC mandate were a political response to high oil prices, available capital, and exaggerated hopes for crops like jatropha (See Box 1). Biofuels were also promoted as a way to reduce greenhouse gas emissions, but current biofuel production fails to achieve reductions and next-generation sources remain a distant reality. (See Box 2)

Using the world's precious farm lands and water sources for the production of fuels for cars is plainly irresponsible. All the more so since these lands are often home to the very rural communities whose food systems provide the world with the models we need to reverse the environmental crisis that our addiction to fossil fuels has generated. These communities and the food systems they sustain are not renewable.

A couple of simple actions can make a huge difference, particularly in the EU: drop the efforts to "regulate" biofuels and instead kill the mandates and subsidies to the industry. Without these crutches, demand for biofuels will shrink significantly, and that will take away some of the pressure on lands and water that rural communities are facing across the planet.

Going Further

Bread for All, "Land grabbing: the dark side of 'sustainable' investments", November 2011 (pdf)

Anders Dahlbeck, "Fuel for thought: Addressing the social impacts of EU biofuels policies," 25 April 2012

FOE, ActionAid, Greenpeace, Oxfam, Save the Children, RSPB, "Joint recommendations on the EC proposal on Indirect Land Use Change (ILUC) from biofuels," www.foe.co.uk/resource/briefing_notes/iluc_recommendations.pdf

Winfridus Overbeek, Markus Kröger and Julien-François Gerber, "An overview of industrial tree plantations in the global South. Conflicts, trends and resistance struggles," EJOLT, June 2012

Les Levidow, "EU criteria for sustainable biofuels: Accounting for carbon, depoliticising plunder," Geoforum 44 (2013) 211–223.

ETC Group, "Who Will Control the Green Economy?", December 2011

Oxfam, "The hunger grains: The fight is on. Time to scrap EU biofuel mandates," September 2012

Les Amis de la Terre & Basta! "Live or drive, a choice has to be made: A case study of Sime Darby operations in Liberia," 2012 (pdf)

---

1 Interview with Joan Baxter at the Farmers' Conference organized by Green Scenery and the Sierra Leone Right to Food Network, Freetown, April 2012.

2 Tommaso Ebhardt & Lauren van der Westhuizen, "Italian Investor's Biofuel Project Sparks Kenyan Opposition," Bloomberg, 4 August 2010

3 Survival international, "US food giant Bunge accused over biofuel 'tainted with Indian blood'," 14 November 2012

4 Down To Earth Indonesia, "The Land of Papua: A continuing struggle for land and livelihoods," 16 November 2011

5 OECD

6 According to UNEP, 35.7 million ha were used for biofuel production in 2008. UNEP predicts a somewhat higher figure of 80 million ha by 2020, an increase of 44.3 million ha over 2008, and some studies go as high as 116 million ha by 2020, and even 1,668 million ha by 2050. See UNEP, "Towards sustainable production and use of resources: assessing biofuels," 2009 (pdf)

7 The Addax project intends to produce 83 million litres of ethanol for export per year on 10,000 ha of land.

8 OECD, Agriculture Outlook 2011-2020

9 Calculations are based on data provided in Oxfam, Hunger Grains

10 It could be higher than 5%. The EC proposal is only for what member countries can count towards the 10% target. It doesn't establish a ceiling for a biofuel production or consumption from food crops.

11 Final Energy Demand EU-25, Mtoe: Transport: 1990- 273.6; 2000- 333.1; 2010- 388.6; 2020- 428.5; 2030- 449.8 (Source PRIMES, ACE).

12 Sime Darby had 472,156 ha of mature oil palm plantations under production.

13 UNEP, "Oil Palm Plantations," 2011 (pdf)

14 Basta Mag & Amis de la Terre, "Live or drive, a choice has to be made: A case study of Sime Darby operations in Liberia," December 2012 (pdf)

15 http://farmlandgrab.org/post/view/21381

16 Olam's submission of Summary Report and Planning to the RSPO (pdf)

17 Data is from Brazil. See: David M. Lapola et al., "Indirect land-use changes can overcome carbon savings from biofuels in Brazil," PNAS, January 2010

18 David M. Lapola et al., "Indirect land-use changes can overcome carbon savings from biofuels in Brazil," PNAS, January 2010

19 Member states can't count biofuels or liquids made from "cereal and other starch-rich crops, sugars and oil crops" towards more than 5% of the targets.

20 NPR, "How A Biofuel Dream Called Jatropha Came Crashing Down," 21 August 2012

21 David M. Lapola et al., "Indirect land-use changes can overcome carbon savings from biofuels in Brazil," PNAS, January 2010

22 IEA Bioenergy Task 40 Sustainable International Bioenergy Trade, "The potential role of biofuels in commercial air transport- biojetfuel," September 2012

23 http://ec.europa.eu/energy/renewables/biofuels/sustainability_schemes_en.htm

24 The European Commission is, however, required to report every two years on the social sustainability of its biofuels policies based on the effects/damages that have already taken place. See: Anders Dahlbeck, "Fuel for thought: Addressing the social impacts of EU biofuels policies," 25 April 2012

25 FOEI, Greenpeace, Bird Life International, and others, "Driving to destruction: The impacts of Europe's biofuel plans on carbon emissions and land," November 2010

26 Suppliers are required to report indirect land use change emissions, but the emissions data are not considered when determining whether a particular biofuel feedstock meets the EC's sustainability criteria. The main impact assessment study commissioned by the EU on the impacts of indirect land use changes from biofuels can be found here.

27 Potsdam Institute for Climate Impact Research and Climate Analytics, "Turn Down the Heat: Why a 4°C Warmer World Must be Avoided", a report for the World Bank, November 2012.

28 See data in GRAIN, "The international food system and the climate crisis," October 2009