

Blue-NG: Opening up a new agrofuel market for power generation in the UK

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Who is behind Blue NG and what are their plans:

Blue NG is a joint venture between National Grid's subsidiary NG Blue Power and technology start up company 2OC. 2OC calls itself "the geo-pressure company", however Blue NG's proposals for power stations in the UK so far would make no use of geo-pressure.

Blue NG is planning to build the UK's first vegetable oil (agrofuel) power plants. In June 2008, they were granted qualified permission to build a 19.5 MW plant in Beckton, Newham LBC, East London. They have now applied to build a further 18.5 MW plant in Southall, Ealing LBC, West London. Chair of Blue NG is Lord Oxburgh, previously non-executive Director of Shell and then of biofuel company D1 Oils. Blue NG advised Ofgem of plans for 8 such power plants, and they have made media statements about 43 and possibly more.

Blue NG classes their plants as CHP plants, or 'combined heat and intelligent power'. However there are no current published plans to provide any heat to other properties. The Beckton and Southall plans are to provide electricity only.

How much vegetable oil will Blue NG burn and where will it come from?

The Southall plant, for example, will burn around 76,000 litres of vegetable oil per day to supply 18 MW of electricity. If the eight plants planned by Blue NG in their 'pilot programme' go ahead, they would use up approximately 8% of the rapeseed oil produced in the UK – that is if only rapeseed oil was used.

Blue NG has said they would try and use domestic or even local rapeseed oil, although they do not rule out imports, provided that those are certified by 'internationally recognised certification schemes'. They have not made any binding commitment to not use palm oil. When Biofuelwatch asked the company if they would issue a written guarantee that they would not burn palm oil, Blue NG refused/failed to provide this.

At the moment, the only 'internationally recognised certification scheme' for imported biofuel feedstock is the Roundtable for Sustainable Palm Oil (RSPO). This has been strongly criticised for certifying palm oil from companies responsible for deforestation and peatland destruction, for decimating biodiversity (including orangutan populations) and for violating the rights of communities, including indigenous peoples. According to Greenpeace: "deforestation, deep peat conversion, land disputes and illegal practices continue to occur in the plantation estates owned by a company that is RSPO certified for part of its operations."¹ Walhi, Friends of the Earth Indonesia, has warned: "RSPO is designed to legitimate the continuous expansion of the palm oil industry, but any model that includes the conversion of natural habitats into large-scale monoculture plantations will never be sustainable."² and a declaration signed by 256 organisations condemns the RSPO for "greenwashing" inherently unsustainable oil palm plantations and practices by palm oil companies.³ Certification schemes for soya and other feedstocks are also being developed, and have been criticised on the same grounds.⁴

Blue NG has said for nearly a year that they are developing a 'sustainable sourcing' policy with NGOs, however, the only statement which they have developed is so vague that it would not rule out any type of feedstock from any country.⁵

Could they realistically run their plants on UK rapeseed oil?

This depends on vegetable oil prices and on the annual UK rapeseed harvest, which is vulnerable to severe weather, which is expected to worsen due to climate change. Palm oil is always considerably cheaper than rapeseed oil – that price relationship has hardly changed, despite extreme price fluctuations. When vegetable oil prices are low and there is a big

rapeseed harvest, it may well be possible for Blue NG to use just that. However, this will not always be the case. According to the United Nations Food and Agriculture Organisations, 60-70% of European rapeseed oil is now used for biofuel.⁶ A US government report shows that demand for biofuels is the main driver for the EU vegetable oil market.⁷ This means that when the oil prices rises, so will the price of vegetable oil.

Recent developments in Germany show what this means for companies burning vegetable oil for power: In Germany, this industry has received substantial subsidies. In 2007, palm oil burning for heat and power produced 1.3 billion kWh in 2007, and it accounted for the great majority of vegetable oil use in that sector. Feedstock production required around 180,000 of oil palm plantations.⁸ There is anecdotal evidence that many of the German installations were built with the intention of burning rapeseed oil, however price rises made this uneconomic.

Ultimately, however, even if Blue NG were to succeed in only using rapeseed oil, they would do so in a market where the demand for UK rapeseed oil already greatly outstrips supplies.⁹ It would thus have to lead to displacement which, as discussed below, will translate into global oil palm expansion.

What are the likely impacts of biofuel use by Blue NG:

Blue NG state that they will endeavour to source UK rapeseed oil, however they keep open the possibility of using other feedstock, subject to international certification schemes. At present, international certification only exists in respect of palm oil, however discussions are under way to certify soya (the single biggest contributor to UK biodiesel at present) and jatropha (a feedstock initially mentioned by Blue NG). The likely impacts of rapeseed oil use are therefore discussed in most detail, whereas palm oil, soybean oil and jatropha oil impacts are discussed more briefly. Expansion of tropical and sub-tropical vegetable oils may also be an indirect result of increased use of rapeseed oil for bioenergy, as explained below.

Rapeseed oil:

Greenhouse gas emissions:

A 2007 study by chemistry Nobel laureate Paul Crutzen and others suggested that the use of rapeseed biodiesel was associated with 70% more greenhouse gas emissions than the use of equivalent amounts of mineral diesel, due to nitrous oxide emissions from synthetic fertiliser use.¹⁰ Nitrous oxide is nearly 300 times as powerful a greenhouse gas as carbon dioxide. It is true that the greenhouse gas balances of biodiesel tend to be worse than those of crude vegetable oil, which Blue NG will be using, due to the energy required for the refining process. However, this is not relevant to Crutzen's findings: He did not look at any of the greenhouse gas emissions associated with producing biodiesel, only at nitrous oxide and fertiliser use. Furthermore, he compared biofuels to mineral diesel, which emits more carbon dioxide than an equivalent quantity of natural gas. If rapeseed oil is used in power plants instead of natural gas, the increase in greenhouse gas emissions would be even greater.

Furthermore, substantial emissions occur due to soil carbon losses and the removal of natural vegetation. Across the 15 original EU member states, set-asides, which had accounted for 10% of all farmland were abolished in October 2007. As a result, the area of unploughed farmland in the UK has been reduced from 500,000 to just under 160,000 hectares.¹¹ Blue NG claims that their plans rely significantly on formerly set-aside land. Given that most of that land has already been converted, claims that 500,000 hectares are 'available' are clearly wrong. There are no studies to show what the carbon emissions caused by the conversion in particular of long-term set aside land are, but they will be significant. The European Commission's Joint Research Council stated in 2006:

"We already warned that increase of arable area would cause loss of soil organic carbon from grassland or forest: we assume it will not be allowed."¹² Yet such an increase in arable area has already happened for biofuels and is favoured by Blue NG. A study which looked at US corn ethanol found that converting land which had been set aside for 15 years to corn ethanol

production results in a 'carbon debt' of 48 years, i.e. for 48 years, that corn ethanol would be worse for the climate than using fossil fuels.¹³

Biodiversity:

The expansion of intensively farmed monocultures in Europe, most recently through the abolition of set-aside land, is responsible for massive biodiversity losses, and a further increase in farmland to produce rapeseed oil will exacerbate the situation.

UK populations of farmland birds fell by over 50% between 1970 and the 1990s, then stabilised, and have been declining further in 2005.¹⁴ A similar long-term decline in farmland birds has been observed across the EU.¹⁵ The conversion of set-aside land is expected to seriously worsen the situation. For example, winter stubble in England has declined by 80% since 2007, yet many already declining bird species depend on winter stubble for their survival.¹⁶

Insects and wildflowers are also in decline and likely to suffer further from the abolition of set-asides and the conversion of extensively farmed land to monocultures, including for oilseed rape. According to a 2006 study, hundreds of sites surveyed in Britain and in the Netherlands have seen bee diversity declines by over 80% since 1980, with many bee species declining or extinct. The number of different species of pollination-dependent wildflowers has declined by 70% in the UK.¹⁷

Water:

BirdLife International has warned: "what we are seeing is a big drive towards intensification which will put huge strains on the environment. One of the most important issues will be water quality. We are already facing very severe ground water and river pollution problems in Europe's most heavily cultivated regions."¹⁸

According to the European Environment Agency: "The consequences of the intensification of biofuel production are thus increasing pressures on soil, water and biodiversity."¹⁹

Indirect impacts:

The most recent annual report by the European Environment Agency sums up the situation: "In Europe we could produce biodiesel from rapeseed oil in a sustainable manner, but less rapeseed oil would be available for food production inside and outside Europe.

The gap is likely to be filled in part by palm oil. However, this would result in the loss of rainforest, as trees in countries such as Indonesia are felled to facilitate the extra palm crops."²⁰ In other words, using rapeseed oil for biofuels is responsible for oil palm expansion across Asia, Latin America and Asia.

The EU has been a net importer of both rapeseed oil and soybean oil since 2005, i.e. since the current biofuel boom took off. The UK was previously a net exporter of rapeseed oil but this has also changed recently, and net imports of rapeseed oil were 8,000 tonnes in 2008/09, despite a record area under oilseed rape and relatively high yields.²¹ Oilseed rape should not be grown in more than one in four rotations, otherwise it becomes vulnerable to disease. The potential for increasing rapeseed oil production is thus limited – and this year, acreage has actually fallen by around 12% compared to the previous year.

Blue NG is thus trying to increase an already unsustainable demand to vegetable oil in general and for rapeseed oil in particular. They are talking about "sustainable biofuels" at the same time as the EU has just introduced a mandatory 10% target for 'renewable energy use' in transport which is widely seen as primarily a biofuel target. According to the European Environment Agency, that target cannot be met from European soils.²² It will require imports, and if companies such as Blue NG use additional vegetable oil for power production, this has to translate into more imports, regardless of the type of vegetable oil Blue NG uses.

Palm oil and soybean oil:

Both palm oil and soya are responsible for large-scale destruction of rainforests and other biodiverse ecosystems, for accelerated climate change, the displacement of communities,

including indigenous peoples, the destruction of food sovereignty and high levels of dangerous agro-toxins being used. Palm oil and soybean monocultures deplete and poison soils and freshwater. For more information about the impacts, see www.biofuelwatch.org.uk/docs/17-11-2008-ENGLISH-RSPOInternational-Declaration.pdf and <http://www.lasojamata.org/node/110> .

Jatropha oil:

Jatropha is a toxic shrub which is being promoted as a biofuel crop which can grow on poor soils, with little water and would not displace food production. Governments in India, Tanzania, Burma, Ghana and many other countries are promoting the conversion of vast areas of land to jatropha plantations. However, there is no experience with producing jatropha oil from monocultures and only small quantities of jatropha oil are being produced and traded at present. Many plantings have failed and it has become clear that producing commercial yields does require fertile soil and sufficient water, contrary to claims which have been made. Moreover, jatropha is an invasive weed and thus a major threat to biodiversity.²³ Lord Oxburgh, then of D1 Oils and now Chair of Blue NG, had originally promised that D1 Oils would commence commercial production of jatropha oil in 2007²⁴, yet by 2008 they were only producing very small quantities of 1,000 tonnes. Nonetheless, jatropha expansion is already linked to the displacement of large numbers of communities, and the destruction of their livelihoods and food production. A 2007 declaration by Indian farmers, social movements and NGO's warned: "It [jatropha] takes over lands which are core to the food sovereignty of several families, falsely considering them "waste", and converts them to monoculture plantations which are susceptible to all the problems of industrial agriculture."²⁵ The reality of jatropha in Chhattisgarh, India has recently been described: jatropha saplings with visibly stunted growth behind barbed wires indicate that something has gone wrong somewhere... [in one village] A herd of cattle was let loose on the standing crops and then jatropha saplings were planted. 'They used bulldozers to destroy our crops and the land,' said Ajit Ekka, wife of Paul Routray, whose family survived on two and-a-half acres of agricultural land."²⁶

What are the likely impacts of vegetable oil burning on UK communities?

In Germany, there has been growing concern over air pollution and nuisance caused by noise and smell from vegetable oil CHP plants. On 9th April 2008, a court revoked the planning permission granted for a palm oil CHP plant in St Ingbert, Saarland, which had been in operation since 2006, due to noise and air quality impacts.²⁷

The Local Authorities Coordinators of Regulatory Services (LACORS) recently expressed concerns about NOx and fine particle emissions from burning some biodiesel, compared to standard diesel.²⁸ It is vegetable oil burning in general, rather than just as biodiesel, which is associated with increased NOx levels. NOx and its derivatives have been linked to increases in lung disease, including asthma.²⁹ Furthermore, there are concerns that the proposed plants might result in increased fine particle emissions, including of PM 10 and PM 2.5, both directly through biomass burning and through chemical reactions of NOx. PM 2.5 is a fine particle which is known to penetrate into the deepest part of the lungs and believed to cross the air-blood barrier in the lungs. It is associated with premature death from heart and lung disease, cardiac arrhythmias, heart attacks, asthma attacks and bronchitis.³⁰ There is further evidence linking high levels of PM 2.5 to an increased incidence in Sudden Infant Death Syndrome.³¹ There appears to be insufficient evidence to show that the proposed plants will not emit particulates including PM 2.5 at unsafe levels.

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3 www.biofuelwatch.org.uk/docs/17-11-2008-ENGLISH-RSPOInternational-Declaration.pdf

4 International Declaration: For the third time we reject the fallacy of responsible soy, April 2008, <http://www.lasojamata.org/node/110>

5 www.blue-ng.com/Blue-NG_CommitmentToBiomassSustainability031008.pdf

6 www.fao.org/es/ESC/en/15/120/index.html

7 USDA/FAS Gains report, 2008, www.fas.usda.gov/gainfiles/200806/146294804.pdf

8 Monitoring zur Wirkung des Erneuerbare-Energien-Gesetzes (EEG) auf die Stromerzeugung aus Biomasse
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9 Estimating the environmentally compatible bioenergy potential from agriculture, European Environment Agency,
2008, http://www.eea.europa.eu/publications/technical_report_2007_12

10 N2O release from agro-biofuel production negates global warming reduction by replacing fossil fuels', Paul Crutzen
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11 <https://statistics.defra.gov.uk/esg/ace/research/pdf/observatory13.pdf>

12 Wells-to-Wheels Report 2006, JRC-IES

13 Land clearing and the biofuel carbon debt, Joseph Fargione et al, 7 February 2008 / 10.1126/science.1152747

14 <https://statistics.defra.gov.uk/esg/ace/pdf/de5.pdf>

15 www.birdlife.org/news/news/2007/06/europe_bird_declines.html

16 <https://statistics.defra.gov.uk/esg/ace/research/pdf/BD1639%20Sid5%20rev7.pdf>

17 Parallel Declines in Pollinators and Insect-Pollinated Plants in Britain and the Netherlands
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18 <http://news.bbc.co.uk/1/hi/world/europe/7538102.stm>

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20 www.eea.europa.eu/publications/signals-2009/

21 www.hgca.com/cms_publications.template_prospects_html/2/2/Publications/Publication/ProspectsPreview.msp?pid=5796&pageTitle=Six%20Months%20UK%20Trade%20Data

22 www.eea.europa.eu/highlights/suspend-10-percent-biofuels-target-says-eeas-scientific-advisory-body

23 The Weedy Truth About Biofuels, Australian Invasive Species Council,
www.invasives.org.au/downloads/isc_biofuels_revised_mar08.pdf

24 http://news.nationalgeographic.com/news/2008/04/080421-biofuels_2.html

25 Fuelling concerns, December 2007, <http://tech.groups.yahoo.com/group/biofuelwatch/message/1553>

26 Colonising the Commons: It's Jatropha Now!, Souparna Lahiri, Mausam, 2008,
www.thecornerhouse.org.uk/pdf/document/Mausam_July-Sept2008.pdf

27 www.ngo-online.de/ganze_nachricht.php?Nr=17711 (Note that the court judgment has since become binding.)

28 www.lga.gov.uk/lga/core/page.do?pageId=466789

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