From Agrofuels to Biochar

Why does the agrofuel industry exist?

In 2008, Canada, approved C$ 2.5 billion subsidies over seven years for biofuels and a 5% ethanol blending obligation is due to come into force this September, with a further 2% biodiesel obligation also due in 2012. In the US, government subsidies for biofuels amount to US$5.5 – 7.3 billion per year (C$ 5.7-7.66) and the Renewable Fuel Standard mandates the use of 36 billion gallons of biofuels by 2022. Biofuels eat up 80% of all 'renewable energy' subsidies in the US.

The European Union, in 2008, approved a 10% "mandatory renewable energy target for road transport" which is also a biofuel blending obligation. In 2006, annual EU biofuel subsidies were an estimated 3.01 billion Euros (C$ 4.06 billion).[1]

The answer to the question "Why does the agrofuel industry exist" is very simple: It exists because of massive subsidies, blending obligations and other incentives, primarily in North America and the EU. Without state support, agrofuels are by and large not economically viable. The agrofuel market is thus an entirely artificial market.

This leaves the question: Why have governments chosen to pour billions of dollars and major government resources into creating and maintaining an agrofuels market?

Strong and successful industry lobbying has played a key role. Corporate Europe Observatory has documented details of how the European Commission set up a series of industry-dominated 'advisory bodies' and invited them to propose policies which have then become Commission and, in many cases, EU policies. In the US, analyists have suggested that the 'Iowa caucus' has made it impossible for presidential candidates ***not*** to embrace corn ethanol, given the strong corn ethanol lobby in that state [2]. And then there's been the pro-agrofuel lobby from oil companies and car manufacturers, the 25x25 alliance, led by agribusiness and forestry industry groups, which has succeeded in turning the climate debate into little more than a debate over how to turn the most crops and trees into energy and gain access to subsidies and carbon credits.

Meantime, in Canada, an executive director of the Canadian Renewable Fuels Association was appointed as Stephen Harper's Director of Communications. During the debate on biofuel targets, Agriculture Minister Gerry Ritz praised "the camaraderie at the CRFA event" and called them "a tremendous organisation" [3]. The CRFA represents a corporate convergence of big-oil, big-agribusiness/biotech and car manufacturers – a reflection on the global corporate alliances which have formed and now dominate the agrofuel industry [4].

There is little doubt: Governments are insisting on continuing with and even extending massive support for agrofuels largely in responde to corporate lobbying, even though every single 'biofuel dream' has long turned into an 'agrofuel nightmare' and hundreds of civil society groups, large numbers of scientists and institutions have condemning or advising against such policies. Blending obligations continue to be introduced and increased and subsidies continue to flow. Some of the agrofuels impacts are briefly discussed below.

There is still one missing piece of the jigsaw: The agrofuel industry alliance is now strong enough to keep distorting 'renewable energy' policies and increasing their profits through ever more subsidies and incentives. Yet if governments created this industry alliance and market in the first place, why ever did they do so?

Back to beginnings – studies and myths:

Before the agrofuel policies came the studies: Studies about the 'global biomass potential' [5]. Together with the myth of biomass being 'carbon neutral' (with all emissions from land-conversion, agro-chemical use, etc ignored), those studies convinced policy-makers that it was possible to replace a significant proportion of oil for transport with biofuels and they could do so in a climate-friendly way. True, the full picture is more complex and from the start, many policy makers were far more interested in 'energy security' than climate change. In the US in particular, military 'security' interests and arguments also continue to play an important role in agrofuel developments [6]. Yet without the 'feasibility studies' and the belief in carbon neutrality, it is hard to see agrofuels having attracted anything like the near-universal support amongst Northern governments.

Many studies about bioenergy 'potential' have been published and they are mostly based on the same premises and reach much the same conclusions. Those are:

Biomass is 'carbon neutral' because new plants will absorb all the carbon emitted from burning crops, trees and 'residues'.

There are hundreds of millions of hectares of 'abandoned cropland', 'idle' or 'marginal lands', most of it in Africa, Asia and Latin America and that land could be turned into biofuel plantations without destroying forests or wetlands or causing global food shortages;

With the help of standards, such vast-scale land conversion to agrofuel production can be achieved without deforestation or other bad effects. Some studies suggest that global yield increases can play a major role in making this possible;

There are also large amounts of forest and agricultural residues available which can be used for bioenergy.

The best way of converting those hundreds of millions of hectares of 'marginal' or 'abandoned cropland' to biofuel production is to end or reduce pastoralism, which is inefficient.

And here is the reality:

There is no spare fertile land. Any land that is good enough for growing biofuel crops and trees is good enough for growing food or for pasture. Arable lands classed as 'marginal', 'abandoned' or 'idle' are home to hundreds of millions of people including pastoralists, small farmers and indigenous peoples. Furthermore, land conversion to agrofuel production rules out any possibility of degraded ecosystems, including forests, being restored or allowed to regenerate. [7].

Definitions for 'abandoned cropland' or 'marginal land' used in the 'bioenergy potential studies' generally ignore people entirely.

Extensive grazing by pastoralists not only supports large numbers of people and their livelihoods – it also protects ecosystems and biodiversity and can help to store and sequester carbon.

Standards and certification are ineffective, not least because they do not and cannot address indirect impacts: Greater demand for crops, woods and land inevitably pushes the agricultural frontier further into forests and grasslands and no credible way of preventing this without curbing demand has ever been proposed. Furthermore, even very basic standards have been shown to be unenforceable. The longest-standing international certification scheme, the Forest Stewardship Council, still regularly supplies wood from illegal logging and plantations, from legal but highly destructive plantations, from old-growth forest logging, etc.

Yet one of the assumptions is true: Pastoralist people's livelihoods and their lands are indeed being sacrificed for agrofuels today, as are those of small farmers, indigenous

peoples and many other communities. Land-grabbing after all, is not an unforeseen 'side-effect', it has always been central (and explicitly so) within the global agrofuel/bioeconomy blueprint.

Agrofuel realities:

Deforestation for palm oil in Indonesia is often cited as a case of 'agrofuels gone wrong'. Scientists, advocates, policy makers and many in the industry have never intended to see tropical rainforests and peatlands destroyed for oil palm monocultures. EU legislation even states that biofuels produced at such a cost should not be eligible for subsidies and other support. Yet the unintended direct and indirect consequence of increasing demands have in fact resulted in expanding palm oil and other plantations at the expense of tropical forests and peatlands in many parts of the world. Meanwhile, under that same European legislation, evictions, land conflicts, land-grabbing, agro-chemical poisoning and other human rights abuses are not even considered as a reason for biofuels not be classed, and subsidised, as "sustainable".

Deforestation in Indonesia illustrates extremely well what happens when a new global market in agricultural commodities is created (incidentally the same as what happens with a new global demand for wood): Crops and trees grow fastest in the tropics, which is why tropical wood is cheaper than North American wood and palm oil is cheaper than canola or North American soybean oil. Palm oil companies in Indonesia in turn look to maximise their own profits – it takes three years for new oil palms to bear fruit, meanwhile, the quickest money comes from clearing and selling tropical timber. Certification allows companies to sell palm oil from older plantations where rainforest was destroyed in the past for a higher price while cutting down new rainforest for the uncertified markets – and earn more money overall. Policymakers and companies meanwhile boast about procuring 'sustainable palm oil' and the public is misled. This example is not an aberration, but a clear example of how the global agrofuel market works.

Why the maths don't add up:

The underlying problem with agrofuels and the bioeconomy is that, at best, it takes a lot of land to get energy from plants, i.e. from photosynthesis. At worst, it takes not only a lot of land but also a lot more energy inputs than gains. A recent US study about "energy sprawl" illustrates how much more land is needed for producing the same energy output from different types of energy. The article shows that biofuels or electricity from wood requires far more land per megawatt than any other type of energy production, including wind and solar:
www.plosone.org/article/info:doi/10.1371/journal.pone.0006802.

The "land footprint" for bioenergy is a critical point: A stable climate relies on plants, soils and oceans absorbing and emitting the same amount of carbon – recycling, rather than creating energy. The same is true for nitrogen, nutrients, etc. all of which are cycled through ecosystems. Professor Tad Patzek sarcastically called one of his articles about biofuels: "Mining biomass forever without consequence" [8] which of course, cannot be done – taking billions of tonnes of 'residues' out of the system and millions of hectares of land over to new plantations has consequences, serious negative ones, including for climate, soils and freshwater supplies.

On to biochar…

Biochar and agrofuels are not the same. Biochar is a co-product of pyrolysis, which also produces bio-oil and syngas that can in turn be used as bioenergy or refined into agrofuels. Biochar can also be produced through another process (hydro-thermal carbonisation), but pyrolysis is the main one. For all the damage caused by agrofuels, they have an obvious 'utility value': Car engines and power stations can run on biofuels. The 'utility value' of biochar is still very uncertain and contested, with major unanswered

questions over climate impacts, impacts on soil fertility, etc. [9] Economically, biochar could nonetheless become profitable regardless of any 'utility value', if the International Biochar Initiative and their partners, including the Canadian Biochar Initiative, succeed in getting it included in carbon markets.

During August, science magazine *Nature Communications* published a peer-reviewed article by scientists who are also biochar advocates, including the chair and vice-chair of the International Biochar Initiative, which is the leading biochar lobbying group. The article, which has been widely reported, claims that 12% of all annual anthropogenic greenhouse gas emissions could be saved or 'offset' with biochar [10]. The authors call for 'sustainable biochar'. They stress that they do not want to see forests destroyed for biochar, nor cause global food shortages. Instead they are looking at large quantities of 'residues' as well as biomass which could be grown for biochar in vast areas of 'abandoned croplands', as well as on grasslands currently used for extensive grazing, 556 million hectares overall. 'Standards' similar to those suggested for biofuels are to guarantee 'biochar sustainability'.

Sound familiar? The similarities with the agrofuel –blueprint, studies and advocacy pre-2005 are indeed striking. Which is why over 100 groups worldwide have signed a declaration urging caution over biochar and opposing biochar inclusion in the carbon markets [11] and many groups continue to speak out against such plans [12].

NOTES:

[1] All subsidy figures are taken from research by the Global Subsidies Initiative.

[2] See for example: http://www.washingtonpost.com/wp-dyn/content/article/2007/03/12/AR2007031201722.html

[3] "From the world's breadbasket to the empire's fuel tank: How the agrofuels lobby is reshaping prairie agriculture", Cathy Holtslander, Glen Koroluk and Ian Lordon, January/February 2009, http://briarpatchmagazine.com/how-the-agrofuels-lobby-is-reshaping-prairie-agriculture/

[4] For a discussion about the global conversion of different corporate interest groups within the agrofuel industry, see for example: "Commodifying Nature's Last Straw", ETC Group, October 2008, www.etcgroup.org/upload/publication/703/02/sugareconomyweboct10-2008.pdf

[5] See for example: "The contribution of biomass in the future global energy supply: a review of 17 studies", Goeran Berndes et al, 1st July 2003, Biomass and

Bioenergy 25 (2003) 1 – 28

[6] See for example the involvement of the US Air Force in the development of aviation biofuels, e.g. www.greenaironline.com/news.php?viewStory=786

[7] For a more detailed discussion, see: "Agrofuels and the Myth of the Marginal Lands, Gaia Foundation, Biofuelwatch, African Biodiversity Network, Salva la Selva, Watch Indonesia! and Econexus, September 2008, www.africanbiodiversity.org/media/1221812708.pdf

[8] www.stopbp-berkeley.org/CellulosicBiofuels.pdf

[9] see: www.econexus.info/pdf/Agriculture_climate_change_copenhagen_2009.pdf

[10] Sustainable Biochar to Mitigate Global Climate Change, Dominic Woolf, Nature Communications, 10th August 2010, www.nature.com/ncomms/journal/v1/n5/full/ncomms1053.html

[11] www.regenwald.org/international/englisch/news.php?id=1226

[12] See for example: www.globalforestcoalition.org/news/view/211