

No Idle Threat to the Marginalised: The Focus on “Marginal and Idle” Land for Biofuels (Agrofuels)

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Recent months have seen intense debate over agrofuels – biofuels made from crops. At first they were described as a panacea – a means of addressing climate change and regenerating agriculture and rural regions in Europe and around the world, particularly in Africa. The drive to exploit the global south for agrofuel production of fuels from food crops such as corn and soya was presented as a development opportunity. However, many questions have since arisen about their true value for reducing greenhouse gas emissions and their impact on food production and prices. The indirect impacts of agrofuel production, such as land-use change, water depletion, the displacement of people, other crops and animals and the human and environmental costs entailed, have become major concerns.

In response to these problems, policy-makers have been offered ‘second generation’ agrofuels. These, we are told, will not affect food production because they will use non-food crops. Technologies will convert the whole plant or tree, plus waste plant material, to fuel, not just the fruit or seed... (see box1). At least that is the vision. However, large plantations will still be required to provide the raw materials – the biomass - and thus, although agrofuels might not compete for food crops, they will certainly compete for land and water. Moreover the technologies may not be commercially viable for 10-20 years, if ever.

All this has caused confusion among political decision-makers. The European Union, having decided early in 2007 on a 10% target for agrofuel use by 2020, has been strongly urged to reconsider by a wide range of organisations and scientists profoundly concerned about the impacts, but the EU has resisted doing so to date. In February 2008, in response to the growing outcry about food prices and the indirect impacts of agrofuels, especially changes in land use, the UK government invited its newly established *Renewable Fuels Agency* (RFA) to undertake a review of such impacts. However, it continued with its plans to introduce mandatory blending of 2.5% of ‘renewable’ fuels in petrol in April 2008, rising to 5% by 2010.

Marginal from whose perspective? The real tragedy of the commons

In July 2008, the RFA published the *Gallagher Review of the Indirect Effects of Agrofuel Production*.¹ The review acknowledges the multiple problems of agrofuel production. But while expressing caution about the 10% agrofuel target, it claims that focusing on ‘marginal and idle lands’ and developing next generation agrofuels may be a solution. Such a claim involves two major assumptions: first that second generation agrofuels will actually work, and second that there is enough ‘marginal’ land in the world to meet these ambitious targets without negative impacts. Unfortunately, neither of these assumptions stands up to scrutiny.

So what is this marginal land that is now presented to us as a solution to current agrofuel problems, and the need to expand agricultural production in general? How is it defined? This is a key question, because as well as marginal, it is variously described as degraded, under-used, abandoned, sleeping, wasteland. These pejorative terms are being widely used to suggest that millions of hectares would actually benefit from being converted to agrofuel plantations. For example, the Brazilian government asserts that sugar cane in Brazil is mainly planted on ‘degraded’ land, of which it claims there are millions of hectares.

There is a resounding response to such assertions in *Mausam*, a new Indian magazine on climate change on the *Corner House* website, which says: ‘Rural and forest communities [...] say that there is no such thing as wastelands. Most of these lands are grazing lands, common pastures, degraded forests, and also lands of small and marginal communities. They not only support a multitude of livelihoods but also have a critical ecological role. This is where the government and corporations are pushing for their fuels, displacing thousands of peoples [...]’.

Pastures and grazing lands In India are often de facto village commons and CPRs (common property resources), many of which form part of

1 ‘The Gallagher Review of the indirect effects of agrofuel production’, Renewable Fuels Agency, July 2008

the larger forest landscapes and contribute to the forest communities' economy and livelihoods.' According to *Mausam* there are millions of hectares of such land in India, and they are vital to local people.²

As soon as one looks at marginal land in this way, it becomes clear that the pattern is repeated worldwide: untitled, common land exists in Africa, South America and across Asia. People may farm a plot individually, but also depend upon the shared resources of the commons. Indeed such land was a vital resource in the UK until the great waves of enclosure that reached a climax in the 19th Century dispossessed and uprooted ordinary people, concentrating land in the hands of a few, and driving the majority into the cities or overseas.

Box 1 Second generation agrofuels

Second generation agrofuels are defined as biomass to liquid (BTL) fuels, derived from whole plants or trees, including material often classified as waste such as bark, stalks and stubble. Fuels from algae, sewage or slurry are not included here.

There are two different methods of producing second generation agrofuels: biochemical (including ligno-cellulosic and biobutanol) and thermal (including biomass gasification).

Biochemical methods separate two vital constituents of plant cells, cellulose and lignin, using heat, pressure, acid or a combination of all three. Cellulose is broken down into fermentable sugars by enzymes and then fermented into fuel by micro-organisms. Lignin can be used directly as fuel or as a potential source of chemicals currently derived from oil.

Thermal methods involve controlled combustion (pyrolysis) including Fischer Tropsch synthesis to break the biomass into down bio-oil, bio-char and synthesis gas consisting of carbon monoxide, carbon dioxide and hydrogen. Even though unproven, bio-char is currently touted as a "soil improver". Bio-oil and syngas can be used for heat and power or as pre-cursors to transport fuel. Additionally, bio-oil can be used as shipping fuel.

Both methods involve energy inputs that could render their energy and emissions balance unfavourable.

Microorganisms are studied and genetically engineered with the aim of reducing energy inputs and streamlining the process of converting biomass into agrofuel. GM research also aims to make plants grow faster, reduce the amount of lignin, or alter their metabolism to make them yield more.

Apart from the risks involved, even those who develop these technologies estimate that it will be one or two decades (if ever) before they achieve positive energy balance and commercial viability. However, next generation agrofuels risk diverting attention from the immediate need to reduce consumption and increase efficiency.

Marginalised and invisible: the people who care for marginal lands

Genuinely marginal land, land that is not vital to local communities, does not exist in the amounts assumed. There are therefore highly damaging assumptions being made about the true extent of marginal lands available. Jonathan Davies, global co-ordinator of *the World Initiative for Sustainable Pastoralism*, Nairobi, Kenya, says: 'These marginal lands do not exist on the scale people think. In Africa, most of the lands in question are actively managed by pastoralists, hunter-gatherers and sometimes dryland farmers [...] There may be wastelands lying around to be put under the plough, but I doubt that they are very extensive.'

In many parts of the world, women still have no property or inheritance rights. So-called marginal land may be the only land they can access. Widows, for instance, are sometimes given dry or degraded land on which to grow food for their families.

For them it can make the difference between life and death in hard years because they know how to produce and gather food from it. Thus, according to the UN's Food and Agriculture Organisation 2008 report *Gender and Equity Issues in Liquid Biofuels Production – Minimising the Risks to Maximise the Opportunities*: 'The conversion of these lands to plantations for agrofuels production might therefore cause the partial or total displacement of women's agricultural activities towards increasingly marginal lands' which would apply even greater pressure on women and land alike. Female labour on plantations is often exploitative and insecure while it is usually men who benefit most from cash crops for export.

Another group regularly marginalised in discussions about development are cattle herders and pastoralists, especially in Africa. They travel across wide areas following the seasonal rains and fresh grass with their animals. External observers often assume that their lives would be improved if they were settled in one place and provided with the means to grow crops. However the pastoralist way of life, evolved over many generations, often embodies vital knowledge about how to sustain these fragile resources.

At the 11th session (2005) of the working group on *Minorities* from the *Higher Commission On Human Rights*, an Ethiopian representative said: 'The pastoral groups of the region traditionally depend on the common property resources consisting of pasture, water and mineral licks. Each has management rules that regulate access and responsibilities. Customarily, land is the collective property of the pastoralists and

² see: www.thecornerhouse.org.uk

managed according to specific rules.’ Pastoralist communities in particular use highly effective systems of traditional ecological governance to manage their environments, but these are rarely acknowledged in modern development thinking.

Old myths about empty land and export driven development

Such collective management of land is often invisible to outsiders – whether government or private capital. The convenient concept of *terra nullius* – empty land – continues to thrive. The briefing: *Agrofuels and the Myth of the Marginal Lands*, published in September 2008 by the Gaia Foundation and others, reports: ‘Icin, an indigenous Dayak from West Kalimantan, Indonesia, points at a map of the proposed [agrofuel] plantations, on supposedly unproductive ‘sleeping’ land. “Actually there should be seven villages marked in this area. But they are not mentioned. Does this mean, for the outside world we do not exist any more?”’

Where convenient, the presence of people may be recognised by agrofuel proponents. Smallholder farmers are often cited as the likely beneficiaries of agrofuel developments, especially oil palm and jatropha, because these require labour, but according to Olivier De Schutter, United Nations Special Rapporteur on the right to food, in his report to the UN General Assembly: ‘there is a real risk that export-led agricultural development will further marginalise the position of smallholders, worsening their food insecurity instead of improving it.’

Thus land that might appear ‘marginal’ to one person can be a vital resource to another. It may seem idle, degraded or underused, yet can provide vital food, fuel, medicine and building materials to local communities. It may be collective or common land used by such communities for generations, without the security of formal title to it.

Yet as De Schutter notes that ‘No governmental delegation present at the High-Level Conference on World Food Security [held in June 2008 as the food crisis increased] mentioned agrarian reform or the need to protect the security of land tenure.’ Land reform is constantly sidelined by governments, but becomes ever more urgent in the context of agrofuels. This is because, while there is a natural limit to the demand for food crops, demand for agrofuel crops is potentially inexhaustible, because of the energy dependence of industrialised countries and the fact that fossil fuel is far more energy-dense than biomass. Even if agrofuel growers benefit, for others, their ‘food security might suffer, for instance as a result of the increased price of land or a diminished availability of food.’ De Schutter warns against

trying to shape development through export crops, yet this is exactly how the agrofuel agenda is promoted in many regions.

People and their land

The interaction between people and marginal land may be subtle and complex. Dr Melaku Worede, renowned Ethiopian geneticist, one of the founders of Seeds of Survival and a specialist in uncultivated biodiversity, says that marginal land with poor soils can be home to a highly biodiverse population of plants and animals in dynamic interaction. In parts of Ethiopia, these lands are not actively managed, and small farmers frequently leave areas undisturbed alongside the fields they cultivate. Although little studied, such marginal areas may prove to be important reserves. Because plants on marginal land must continuously adapt to harsh, often rapidly changing conditions, such land could be a vital source of genetic diversity for resistance to

Box 2 Jatropha – myth or reality?

The oilseed bush *Jatropha curcas* is often cited as ideal for growing on marginal land with poor soils and little water in developing countries. It is claimed that vast amounts of such land are available, thereby avoiding competition with food-production on good, well-watered land. *Jatropha* plantations already exist in Africa, Asia and South America. However, there is no previous experience of growing *jatropha* on a large scale and little is known about it, except that - although it may survive drought and poor soil - it is unlikely to produce a worthwhile crop under such conditions. *Jatropha* requires labour and thousands are being promised jobs and income, but there is no guarantee that it will be viable.

At an expert meeting in Brussels in 2007 the Dutch research institute *Plant Research International* found that “any claims of low nutrient requirements, low water use, low labour inputs, the non-existence of competition with food production, and tolerance to pests and diseases are definitely not true in combination with high oil yield production.”¹

Fuels from Agriculture in Commercial Technology (FACT), an expert group based in the Netherlands, warned in a position paper (2007) against large-scale plantations of *Jatropha* for at least 4 or 5 years, until sufficient experimental data is available: “At this stage, it is important to distinguish between ‘reality’, ‘promises’ and ‘dangerous extrapolations.’”¹ Their information suggests that optimal oil production from *jatropha* requires significant annual rainfall of up to 1000-1500 mm/hectare, considerably larger amounts than generally fall on what is usually considered “marginal land.”

Evidence suggests that many agrofuel investors know this already, and are therefore choosing to develop their *jatropha* plantations on well-watered, fertile lands, and not on “marginal” lands.

stresses such as drought, disease and pests in the future, especially as climate change threatens the viability even of locally adapted farmer varieties of crops.

It is deeply ironic that climate change, already a serious threat to biodiversity and food production, may be accelerated by the conversion of marginal land to crops for biofuels - ostensibly to tackle climate change. Yet, while there is some discussion about how changes in land use increase global greenhouse gas emissions, for example when forests are cleared for crop production, we hear less about localised climate change caused by land-use change. Projections indicate that changing from grazing to crop production in East Africa would make some areas wetter and others drier, with more extreme floods and droughts and greater temperature differentials. The website of the *International Livestock Research Institute* reports that a joint African/US initiative, the *Climate Land Interaction Project*: 'provides evidence of the complex connection between regional changes in climate and changes in land cover and land use. New study results are warning that the conversion of huge areas of pasturelands to croplands in east Africa will be a major contributor to global warming in the region.' And this for the continent already projected to suffer some of the worst impacts of *global* climate change.

Speculative land-grabbing

Yet the pressure for a 'green revolution' for Africa and the perception that it is the 'new agricultural frontier' could lead to the rapid and violent conversion of pasture and other 'marginal' lands to crops. It also provides a good pretext for land-grabbing, as prices are set to rise. The market is certainly taking an interest. Mark Twain once quipped: 'Buy Land: they're not making it any more'. Recognising that agriculture may be entering a period of scarcity and hence high prices, and also fleeing the property downturn, speculators and corporations have moved into land and crop commodities. Indeed speculation and hoarding were at least partly to blame for high food prices in recent months. Hedge funds and corporations have also recognised the opportunity for profits. Emergent Asset Management, based in the UK, recently launched its African Agricultural Land Fund, inviting investors to participate in 'the growing Sub-Saharan agricultural sector'.

In its 2007 report 'Agrofuels in Africa: the impacts on land, food and forests'³ the Africa Biodiversity Network (ABN) found that cases of 'land grabbing'

3 'Agrofuels in Africa: the impact on land, food and forests', African Biodiversity Network, July 2007

had accelerated with the new influx of agrofuel developments.

Marginal land in the US and the EU

Even the US and the EU are not immune to the 'marginal land' issue. In some cases set-aside in the EU and conservation reserve land in the US may be 'marginal' because it is dry, has poor soils or steep gradients - yet may have a vital function within the ecosystem. For example, the US *Conservation Reserve Program* has been extremely successful in protecting biodiversity and water, reducing soil erosion, and providing natural flood control. According to US government figures, it prevents 408 million tonnes of soil erosion and sequesters nearly 21 million tonnes of carbon a year.⁴ Yet across the US and EU, millions of hectares of previously set-aside land (approximately 10% cropland in each region) are now being planted, following pressure from the agroenergy lobby and high commodity prices, which agrofuels have helped to push up.

CONCLUSION

To focus on 'marginal' land for agrofuels is extremely risky. Such land can be a vital resource for local people, who are often its most effective managers, yet they may be invisible to corporations and policy-makers, conveniently so for corporate agendas. Marginal land often plays a key role in protecting biodiversity, water and soil. That there are interactions between land-use change and climate change is clear but the dynamics are little understood. One thing is certain: they go far beyond the facile and deceptive emission counting beloved of bureaucrats and carbon traders. We already face an unpredictable future with increased extremes of temperature, rainfall, winds, droughts and violent weather events. Biodiverse ecosystems have a critical role to play in stabilising climate. And as far as plant genetic resources are concerned (a dry term for something our lives depend on!), so-called marginal land could be crucial. It must not be recklessly drenched in fertilisers and chemicals and planted with crops for unproven fuels in an attempt to avoid genuine adaptation to the end of the fossil fuel age and energy dense consumption patterns. If we do not act responsibly, we could further marginalise our survival. This is no idle threat.

4 'Estimating Water Quality, Air Quality and Soil Carbon Benefits of the Conservation Reserve Program', FAPRI, College of Agriculture, Food and Natural Resources, January 2007, www.fsa.usda.gov/Internet/FSA_File/606586_hr.pdf