

## Biofuels

### Panacea or Pandora's Box

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**The President of Brazil, Luiz Inácio Lula da Silva, has recently called upon the developed world to join Brazil in adopting a sustainable approach to development. In order to reduce dependence on fossil fuels he invited the industrialized nations to embrace the technology of biofuels and 'plant the oil of the future' (Guardian, March 7, 2006). On the face of it this appears to be a sensible strategy as we can reduce our greenhouse emissions and our reliance on fossil fuels, while giving our farmers an incentive to produce a renewable fuel that can be used in cars, power stations and in industry. There are issues, however, which need to be examined before we can adopt this policy and this article will look at some of the caveats involved.**



### Missing Our Targets

As one of the industrialized nations, the United Kingdom has ratified the Kyoto Protocol and has agreed to reduce its emissions by 12.5% by 2010. It has also set a national target of a reduction in CO<sub>2</sub> emissions by 20% by 2010 and 60% by 2050. One of the ways the Government intends to achieve these goals is by substituting 5.75% of the petrol and diesel fossil fuels currently used in the transport sector with renewable biofuels such as bioethanol and biodiesel. However, current biofuel production is not on track to meet these targets.

The Joint Research Centre of the European Commission estimates that, while it was hoped that biofuel consumption would reach 5.9 million tonnes of oil equivalent (TOE) in 2005 and 18.2 million TOE in 2010, biofuel production was actually only 2.8 million TOE in 2005 and is estimated to reach only 9.4 million TOE in 2010. Similar shortfalls can be seen in the targets of the "Sustainable Energy Europe" programme that aimed to multiply ethanol production by five and biodiesel production by three for the end of 2008, figures that are now recognised as, 'too ambitious with respect to current efforts' (Europa, 2006).

However, even this is not the full picture. Dr. Kevin Anderson, of Manchester University, has discovered a 'blind spot' in the Government's emissions figures, which stems from the fact that emissions from aircraft and ships, which have doubled since 1990 and are expected to double again before 2010, are not included in the targets. Having reported these findings he said,

***"You can't just conveniently forget to count some sectors..... If aviation and shipping emissions are included, then the UK has not made any reduction in carbon dioxide emissions since 1990."***

***Dr. Kevin Anderson, Manchester University***

### Meeting the Demand at Home

To address the shortfall in biofuels production it has been suggested that we simply increase the amount of land planted with biofuel crops. This is a possible course of action, but the problem is that, to maintain current food production while increasing biofuel production, we may have to plant biofuel crops on set-aside land that is already out of production. Before this is allowed to happen, it is essential that we consider the potential impacts that planting biofuel crops, such as oil seed rape, *Miscanthus* (elephant grass) and willow, on the 470,000 hectares of set-aside in the UK would have on the British landscape and its wildlife.

It is true to say that there are some potential wildlife benefits from the planting of short rotation crops of native plants such as willow. Sallows are known to support a large number of invertebrates and it is estimated that willows have over 450 insect and mite species associated with them, including 166 lepidopteran species (Kennedy and Southwood, 1984). These invertebrate populations can, in turn, support many other animals that feed on them such as bats and birds.

However, while the planting of biofuel crops could potentially create wildlife habitats, it has been emphasised that for these benefits to be seen it would require that they are, 'planted on an appropriate scale, with a mixture of other land uses' (Sage, 2006 in Parry, 2006). In addition, while willow coppice is an example of a crop that could be good for biodiversity, there are many others, particularly non-native species, that are not.



Crops like oil seed rape are non-native species that do not benefit British wildlife and this is made worse if the crop is farmed intensively over large areas.

### Conservation Concerns

Research carried out by the RSPB in the mid-nineties, which compared the wintering bird populations in rotational set-aside fields with those in winter cereal fields, found that of the 47 species recorded, 11 were found significantly more frequently on set-aside than on cereals (Wilson *et al*, 1995). Further studies have also produced evidence that set-aside benefits species that have suffered since winter cereals were first planted e.g. skylark, curlew and grey partridge (Gilbert and Anderson, 2003).

In light of these and other findings, many conservation organisations, such as the RSPB, are concerned about the prospect of a loss of set-aside. In their public consultation document, which they submitted to the Department for Transport in 2004, the RSPB stated that, although they endorsed the government plan to reduce emissions they *'could not lend their support to a significant growth in the bio-energy crop industry without a clearer understanding of its positive*

*and negative effects, and without a strategic policy framework - including a certification scheme which takes into account both carbon and other environmental factors, including effects on biodiversity— that strives to ensure that negative effects are minimized and positive effects are maximized’ (RSPB, 2004).*

### **Import Biofuels, Export the Problem**

To prevent the further displacement of farmland species that have already experienced severe declines, and which the UK Government is already committed to conserving, the proportion of set-aside that can be used for biofuel crop plantations should be limited. However, as has already been described, there is a shortfall between the amount of biofuels required and the amount currently being produced, so where is the balance going to come from? The deficiency is not just a British problem, the European Community as a whole has an ever increasing demand for bioethanol and biodiesel, but doesn't have the infrastructure in place for mass production.

At present, the only solution to this problem is to import biofuels from abroad and, in particular, this is in the form of palm oil or sugar cane from plantations throughout tropical regions. Palm tree plantations are growing the fastest, because it is cheaper to make biodiesel from palm trees than it is from any other crop, and countries like Malaysia, Indonesia, Sumatra and Borneo are turning ever greater areas of land over to the production of biofuels to meet the burgeoning world demand (Monbiot, 2005).



Biofuel crops, such as sugar cane, are being grown on a vast scale in tropical areas.

There is, of course, a serious problem with the European Community importing to meet its demand for biofuels and that is that we are just exporting the ecological disaster. Between 1985 and 2000, the development of oil-palm plantations was responsible for an estimated 87 per cent of deforestation in Malaysia. In Sumatra and Borneo, 4 million hectares of forest has been converted to palm farms and a further 6 million hectares in Malaysia and 16.5 million hectares in Indonesia are scheduled for clearance (FotE, 2005).

As oil plantations grow the forests of Asia will shrink and with them there will be a loss of habitat and subsequently an even great acceleration of the extinction of species.

***"The orang-utan is likely to become extinct in the wild. Sumatran rhinos, tigers, gibbons, tapirs, proboscis monkeys and thousands of other species could go the same way."***

**Monbiot, 2005**

Monocultures, such as oil palm and sugar cane plantations, do little to maintain biodiversity locally and, even when considered in terms of a carbon budget, claims that oil palm plantations are producing 'green fuel' do not appear to be justified. Not only are the original forests felled and burnt, but the underlying peat dries out and oxidises releasing more CO<sub>2</sub> into the atmosphere. Then, to cap it all, the product has to be shipped from Asia to Europe thereby burning even greater quantities of fuel and further increasing emissions.

### Summary

In conclusion, the situation appears depressing. Can any fuel claim to be "green" or "carbon neutral"? In the end it all comes down to the consumer and what he or she is prepared to sacrifice – convenience or biodiversity. At the moment economic considerations are taking precedence, but soon we will all have to decide where our priorities lie. As consumers from a developed, industrial country none of us are exempt from our role in making this decision.

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