



Fuelling the ecological crisis

- six examples of habitat destruction driven by biofuels

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BirdLife
INTERNATIONAL

This report

The European Commission's biofuel policy laid out in the draft Renewable Energy Directive is fundamentally flawed. If accepted, it might make the European Union a global driving force in the production of harmful biofuel crops. This report presents six case studies of ecological damage that is being driven by commodity production that will be boosted by the proposed European policy. If EU decision-makers accept the proposed biofuels policy, it is expected that the EU will be responsible for many more such examples. While this report does not cover any social implications of biofuel production, these are highly significant and must also be addressed.

Imposing a mandatory biofuels target

The Renewable Energy Directive, as drafted, would force the European Union to deliver 10% of its transport fuel from biofuel by 2020. This policy is being presented to the public as an environmentally sensitive way to tackle climate change. Yet, a rapidly increasing body of scientific evidence is questioning the effectiveness of current biofuels in reducing greenhouse gas emissions. Further evidence suggests that ecosystems and biodiversity will suffer and that the policy may, at worst, actually accelerate climate change in some cases.

Increasing greenhouse gas emissions

Biofuels are sometimes said to be 'carbon neutral' as they are derived from crops that take up atmospheric carbon during their growth, which is released when they are burnt. However, this ignores emissions released during production, as a result of land-use change, fertilizer application and processing¹.

When the emissions from the whole life cycle of biofuel production are taken into account, often biofuels provide limited, if any, greenhouse gas savings compared to conventional fossil fuels. Indeed, huge releases of greenhouse gas emissions to the atmosphere can arise if large carbon stocks – such as tropical forests or peatlands – are destroyed to make way for biofuel production. This could lead to carbon emissions between 17 and 420 times higher than the annual greenhouse gas reductions that the biofuels could provide by replacing fossil fuels². Furthermore, indirect landuse change where biofuel crops displace current crop production onto natural habitats can significantly contribute to further raised emissions and wildlife losses.

Moreover, many current biofuels (for example biodiesel made from rapeseed and bioethanol from corn) require nitrogen fertiliser during cultivation, which could contribute as much, or more, to global warming through nitrous oxide (N₂O) emissions than the carbon dioxide (CO₂) emissions that they are meant to save³. Nitrous oxide is an extremely potent greenhouse gas.

Wildlife and ecosystem destruction

There is currently very limited protection for important wildlife habitats in the provisions of the draft Renewable Energy Directive. If the 10% biofuel target is accepted, it will lead to unsustainable production of biofuels causing serious ecosystem damage and massive biodiversity loss. The case studies presented below illustrate the impacts of biofuel production on wildlife and ecosystems around the world. While some cases refer specifically to biofuel production, others refer to commodities already used for biofuels that will see production significantly boosted by the future EU target. They highlight the real life impacts that would be produced or aggravated by the proposed EU biofuels policy.

BirdLife International proposes six solutions

BirdLife proposes six solutions on how to address the biofuel problem in the Renewable Energy Directive:

- **A moratorium on all new biofuel incentives and targets at EU level ...**

until it can be shown that the targets can be met in a truly sustainable manner, taking into account the latest science and evidence on the direct and indirect environmental and social impacts of biofuel policy and production.

- **Minimum greenhouse gas emissions savings of 60% compared to fossil fuels ...**

for all bioenergy applications including biofuels for transport and electricity and heat generation from biomass, taking into account direct *and indirect* land-use change and emissions from nitrogen fertiliser use.

- **Minimum sustainability standards ...**

for all bioenergy, that adequately safeguard against negative environmental and social impacts.

- **A robust and verifiable system of certification ...**

for all bioenergy based on these standards.

- **Active promotion of measures aimed at reducing emissions in the transport sector ...**

that have fewer sustainability concerns and higher levels of greenhouse gas emission savings such as managing demand for travel and improved vehicle efficiency.

- **A greenhouse gas emission reduction approach to transport fuels ...**

through the emission reduction mechanism currently proposed in the Fuel Quality Directive i.e. setting a greenhouse gas reduction target that takes into account the full life-cycle of the fuel, rather than setting volume or energy-based targets. The contribution of biofuels to the achievement of such targets should be kept at a sustainable level and linked to the above-mentioned sustainability standards.



Palm oil plantations are a main driver of habitat destruction in South-East Asia and Melanesia. © BirdLife International

Castor oil cultivation around the Babilie Elephant Sanctuary migration route – Ethiopia

In March 2007, 10,000 hectares of land adjacent to the Babilie Elephant Sanctuary were granted to a European biodiesel producer, to produce biofuel from castor oil seed.

The Babilie Elephant Sanctuary and its surroundings are one of the most important areas in Ethiopia for the protection of an estimated remaining population of over 300 African Elephants that are a unique sub-species. This area also protects an estimated remaining 1,000 Black-mane Lions, an Ethiopian national symbol found on national bank notes⁴.

BirdLife International has also identified this area as an area of global importance for birds, a so-called 'Important Bird Area'. A preliminary survey in 1995 found 106 bird species, including 24 Somali-Masai biome species⁵, such as the Gillett's Lark *Mirafraga gilletti*, and the Scaly Chatterer *Turdoides aylmeri*.

Elephants need to migrate periodically through this region to find water. However, the forest and bushland area has recently been cleared and cultivated with several thousand hectares of castor oil plants for biofuel, thus disrupting migration routes.

At least 196,000 hectares of land have been officially granted to a number of foreign biofuel companies operating in Ethiopia. This is set to increase to 1.15 million hectares (equivalent to 3 million football pitches) when land under negotiation is included in the calculation⁶.

Likely impact of proposed EU biofuel policy

Although the draft Renewable Energy Directive states that raw materials for biofuel production cannot come from protected areas, it does not provide any protection to the land that surrounds them. In many cases, the value of protected areas depends on the integrity of surrounding areas which act as a buffer zone for dispersal and migration routes or for access to water sources. If these areas are destroyed the protected areas often become ecologically isolated. This has particular impacts on species that migrate each year.

Many large mammal populations living in drylands, for example African Elephants and Wildebeest, depend for their survival on access to larger landscapes that usually extend beyond formal protected areas⁷.



African Elephants are a flagship species threatened by castor oil plantations in Ethiopia.

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Case study 2

Palm oil expansion is destroying South-East Asia's and Melanesia's rainforest



Bismarck Kingfisher
Alcedo websteri © Nik Borrow



Red-naped Trogon
Harpactes kasumba
© Jacob Wijpkema



Palm oil plantation

© M Lambertini/BirdLife International

The expansion of palm oil and coconut plantations has contributed to the destruction of much of South-East Asia's tropical forests. The lowland forests of Malaysia and Indonesia have already seen catastrophic losses, including approximately 80% of Orang-utan habitat. Palm oil companies are now moving eastwards to Papua New Guinea, in part spurred on by the global drive for biofuels.

New Britain, an island situated off the east coast of Papua New Guinea, is being logged at a higher rate than almost anywhere else in Southeast Asia (1.1% of New Britain's forests are logged per year compared to 0.8-0.9% for Southeast Asia as a whole)⁸.

New Britain forms part of an Endemic Bird Area, hosting 38 species found nowhere else on Earth⁹. A study compared satellite images of forest loss in New Britain from 1989 to 2000. This was then compared with the habitats of birds to assess how each species is likely to have been affected. The study found that 12% of forest, including 20% of the lowland forest (under 100m altitude), was cleared between 1989 and 2000. If current deforestation rates continue, all forest below 200m will have been cleared by 2060.⁸

Furthermore, the study shows that six bird species, including the Bismarck Kingfisher *Alcedo websteri* and Green-fronted Hanging-parrot *Loriculus tener*, had lost or were predicted to lose more than one fifth of their habitat. Some endemic birds were hardest hit, such as the Slaty-mantled Sparrowhawk *Accipiter luteoschistaceus*, the New Britain Bronzewing *Henicophaps foersteri* and the Black Honey-buzzard *Henicopernis infuscatus*.

Palm oil is traditionally used for various products: cooking oil, liquid detergents, soaps, shampoos, lipstick, waxes and polishes⁹. However, as traditional vegetable oils, such as rapeseed and sunflower seed, are increasingly converted to biodiesel in the EU, the demand for vegetable oil is being filled by increased palm oil production in South-East Asia, driving the destruction of rainforest and peatlands, both significant carbon stores. These highly destructive indirect or 'displacement' effects are one of the principal problems with biofuel production, causing destruction of wildlife and destruction of globally important carbon stores. In addition, while a relatively small volume of palm oil is currently used directly for biodiesel, this quantity is likely to grow significantly in response to increased global demand for biofuels in general and EU targets in particular.

Likely impact of proposed EU biofuels policy

The draft Renewable Energy Directive provides no protection to forests from indirect effects such as the displacement of food crops to palm oil production.

Further deforestation for biofuel production is prevented after a cut off date of January 2008 in the draft Directive. However, this recent cut off date would mean that a vast area of forest that was logged before this date would still be considered 'sustainable' for palm oil cultivation, further driving endangered wildlife closer to extinction. Although not comparable to untouched forest, there is good evidence that recently disturbed land, such as patches of degraded forest and scrubby unplanted areas, are still valuable to wildlife such as Tigers, Tapirs and Clouded Leopards^{10,11}, and often offer the last available refuge to wildlife.

Case study 3

Planned sugarcane cultivation in the delta of Kenya's largest river– the Tana River

Developers are planning to establish 20,000 hectares of sugarcane plantation in the Tana River Delta on the northeast coast of Kenya partly for biofuel production¹². This proposal has been called a 'national disaster' by local environmentalists.

The 130,000-hectare Tana Delta consists of a series of complex and seasonally flooded habitats, and is an Important Bird Area with more than 345 species of birds including the threatened Basra Reed Warbler *Acrocephalus griseldis* and Tana River Cisticola *Cisticola restrictus*. No less than 22 species with internationally important populations have been recorded there, making the delta one of the key sites in Kenya for bird conservation¹³.

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White-faced Whistling-duck
Dendrocygna viduata in the
Tana River Delta, an area
threatened by development of
sugarcane plantations.

© Michel Laplace-Toulouse
(www.africanlatitude.com)

The delta is inhabited by indigenous and minority groups including the Orma, Wardei and Pokomo people. These groups live by the seasons, using centuries-old practices to grow rice, relying on the seasonal flooding to keep the area fertile. In the dry season, the delta provides critical grazing grounds for many thousands of cattle from the surrounding drylands.

The irrigation requirement of a large sugarcane project adjacent to the delta would seriously affect water flow into the Tana River Delta, as well as causing build up of infertile salts in the soil and the discharge and runoff of polluted agricultural effluents, degrading the quality of the entire wetland ecosystem.

If the project goes ahead, it is estimated that up to one third of the water flow into the delta may be reduced during the dry season¹⁴. This will cause severe competition for water resources between the sugar project, other development projects and downstream domestic livestock, wildlife, fisheries and ecosystem needs, affecting not just wildlife, but local livelihoods as well.

Likely impact of proposed EU biofuels policy

Although the draft Renewable Energy Directive excludes biofuel crops planted directly on wetlands, it does not exclude the cultivation of those crops that are likely to have an indirect impact on critical wetlands. For example, biofuel crops planted in dry habitats adjacent to wetlands will, of course, be in need of significant irrigation, diverting water away from valuable habitats. This is likely to have serious impacts on both the biodiversity and carbon storage of such areas.

Case study 4

Soya bean drives the destruction of Brazilian 'Cerrado', the world's richest savannah

The Cerrado is located in Brazil's central highlands covering approximately 21% of the country¹⁵. By 2004, large-scale soya bean farming and other farming had reduced the size of this unique habitat to 43% of its original size. Around 1% of the remaining Cerrado is lost every year¹⁶.

The Cerrado is a mixture of different habitats from dry forest and woodland savannah, to scrub and open grassland penetrated by the streams and rivers of three major Brazilian drainage basins¹⁷.

The Cerrado is the world's most wildlife-rich savannah. It contains 935 bird species, including the critically endangered Cone-billed Tanager *Conothraupis mesoleuca*¹⁸, and nearly 300 species of mammals, with threatened species such as the Giant Anteater, Pampas Cat and Maned Wolf.¹⁹ Together with hundreds of species of reptiles and freshwater fish, and thousands of species of plants, this area is of huge importance for wildlife.

Soya bean farmers clear the forest and savannah directly for large-scale soya bean cultivation. This is also pushing cattle ranchers and slash-and-burn farmers ever deeper into the Amazon rainforest¹⁶. The global demand for soya bean for food and recently for biodiesel is increasing, causing the expansion of soya bean farms into the biodiverse Cerrado.

Moreover, the Cerrado soil and vegetation have high levels of stored carbon. If soya bean biodiesel crop replaced Cerrado it is estimated that it would take 37 years to replace the carbon lost in the process²⁰, making this biofuel both ineffective and potentially counterproductive for tackling climate change.

Likely impact of proposed EU biofuels policy

The vast majority of the Cerrado region is left unprotected under the draft Renewable Energy Directive as 'savannahs' have been left out of the list of habitats that are excluded from biofuel production. The draft Directive only protects closed forests and "highly biodiverse grassland" but not scrubland, open woody-savannah, and other landscapes typical of the Cerrado. Huge areas of Cerrado are thus under serious threat from expansion of biofuel crops, such as soya bean. Such habitats are a key refuge for threatened wildlife, particularly for species with poor dispersal abilities as the destruction and fragmentation of their habitat would inhibit their ability to adapt to climatic change.²¹

The Cerrado of Brazil and Paraguay is one of the worlds most wildlife rich savannahs and is under threat from sugarcane, soya bean production and livestock grazing.

© Luiz Claudio Marigo (naturepl.com)



Case study 5

Abolition of set-aside in the EU threatens European farmland birds

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Little Bustard *Tetrax tetrax* is a species threatened by the expansion of biofuel crops and agricultural intensification in Europe.

© Stefan Benko

Due to the recent boom in biofuels, much land under the Common Agricultural Policy set-aside scheme has been turned into maize and rapeseed crops. This has caused further reduction in habitats available for many farmland birds. Although not introduced as an environmental measure, set-aside offered significant environmental benefits: for example, it has provided important feeding and nesting grounds for birds. The populations of many of these species, such as Little Bustard *Tetrax tetrax* and Turtle Dove *Streptopelia turtur*, had been in historic decline and set-aside land gave them a lifeline.

The Little Bustard was once common in open fields in many parts of Europe, but intensive agriculture has driven this bird to extinction in 11 European countries²². The remaining population in France has crashed by over 90% in the last 20 years²³. The Little Bustard, among many other farmland birds, now depends on set-aside policy for its survival. In Germany, rapeseed fields have expanded to 1.1 million hectares, 30% of which is on set-aside land, dramatically reducing clover and alfalfa plants that provide key habitats for threatened species such as the Red Kite *Milvus milvus*²⁴.

The European Commission has decreased the percentage of land dedicated to set-aside to 0% for the 2008 harvest year. The justification put forward for this decrease has been the high price of cereals, partly driven by the growth in biofuels²⁵.

Set-aside is important for birds because it provides food in winter and undisturbed nesting sites in spring. There is evidence that populations of farmland birds such as Little Bustard can recover in extensively managed agricultural habitats²⁶ such as set-aside. The promotion of unsustainable biofuels will not only affect bird populations through the loss of set-aside and conversion of grasslands to arable crops, the intensification of agriculture would also lead to increased water pollution and other environmental damage from greater use of fertilizers associated with biofuel production.

Likely impact of proposed EU biofuels policy

The draft Renewable Energy Directive has sustainability criteria that provide no protection for fallow or other low-input agricultural lands, such as biodiversity rich set-aside. Moreover, the definition of 'highly biodiverse grassland' in Article 15.3 (c) is ambiguous and there is currently no protection for all permanent grasslands which are valuable carbon stores and if ploughed up for biofuels would contribute substantially to overall greenhouse gas emissions.



Set-aside provides vital wildlife habitats in Europe's agricultural landscape.

© Andy Hay (rspb-images)

Case study 6

US corn ethanol boom impacts domestic and foreign wildlife habitats

US Government policies promoting biofuels, including a target of reducing 20% of gasoline use by 2017 mainly through the use of corn ethanol in fuels, has contributed to the increase in global corn prices and a decrease in US corn exports²⁷. Growing intensive corn crops has directly impacted wildlife in the US, but has also indirectly caused food crops that would have been grown in the US to be displaced to other countries, causing biodiversity declines abroad.

In the US, millions of ducks and other birds live on grass-covered wetlands that are kept idle from cultivation by the Conservation Reserve Program²⁸. However, ethanol production from corn is being promoted by the US government and the Department of Agriculture is considering allowing landowners currently enrolled in this programme to terminate their contracts early for the stated purpose of 'providing more acreage to meet the demand for corn'²⁹. A study has shown that without the Conservation Reserve Program land in the Prairie Pothole Region of North Dakota and South Dakota, there would be approximately 1.8 million fewer Sedge Wrens *Cistothorus platensis*, Grasshopper Sparrows *Ammodramus savannarum*, Dickcissels *Spiza Americana*, Bobolinks *Dolichonyx oryzivorus* and Western Meadowlarks *Sturnella neglecta*. This would lead to decreases in their populations of up to 52% depending on the species³⁰.



Corn is the main source of biofuels in the US.

© Andy Hay (rspb-images.com)

The indirect effects of corn-based fuels are being felt in Brazil. The shift from soya bean to corn production in the US has been proposed as one of the reasons for the recent surge in soya bean expansion in Brazil, leading to slash-and-burn practices and forest destruction in the Amazon, especially in the main soya-producing states of Para and Mato Grosso³¹.

Likely impact of proposed EU biofuels policy

Indirect habitat destruction from biofuels is not covered by the draft Renewable Energy Directive. Due to the interconnection of the global commodities trade, an increase in crop demand in one country often leads to effects in other parts of the world, frequently in developing countries rich in biodiversity. It is essential to take into account such effects in formulating EU policy.

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BirdLife International is a global Partnership of conservation organisations that strives to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources. BirdLife Partners operate in more than 100 countries and territories worldwide. BirdLife International is represented in 43 countries in Europe and is active in all EU Member States.



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