

## Biofuels and indirect land use change (ILUC)

# Optimising the ‘grandfathering’ of existing biofuels production

## Summary of research carried out by Ecofys, “Assessing grandfathering options under an EU ILUC policy” and NGO policy recommendations

March 2012

### Context

The European Union supports the consumption of biofuels in several ways, most notably through the Renewable Energy Directive (RED<sup>1</sup>), which contains a 10% target for renewable energy in transport to be reached by 2020.

The Fuel Quality Directive (FQD<sup>2</sup>) also obliges (fossil) fuel suppliers to reduce the greenhouse gas impact of their fuels by 6% by 2020.

Biofuels are expected to play a major role in achieving both targets.

Given that these laws are a key part of the EU’s climate strategy, it’s key to ensure that the use of biofuels actually leads to a global reduction in CO<sub>2</sub> emissions. But Indirect Land Use Change (ILUC) and its associated emissions threaten this goal. An impressive body of scientific work<sup>3</sup> shows that ILUC effects due to EU biofuel policies are likely to be considerable, even if the exact outcomes of modelling studies vary. If left unchanged, EU policy will lead to more greenhouse gas emissions, not less.

Against this background, the European Commission is expected to publish a legislative proposal on a methodology to address ILUC later this year (though the proposal is already more than a year late).

The only credible route for an EU fuels policy that ensures environmental sustainability, credible climate change mitigation and investment security is full accounting of GHG emissions from all types of fuel: biofuel and fossil fuels alike. For biofuels this will mean that GHG emissions associated with different types of biofuels have to be addressed with feedstock-specific ILUC factors.

---

<sup>1</sup> DIRECTIVE 2009/28/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

<sup>2</sup> DIRECTIVE 2009/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

<sup>3</sup> For an overview of scientific studies on ILUC, see [http://transenv.eu/iluc\\_science](http://transenv.eu/iluc_science)

The EU should act in line with the best available scientific evidence and no concessions should be made regarding the choice of policy option.

## **‘Grandfathering’ in the current legislation**

A grandfathering clause is a legal provision which allows an old rule to continue to apply to some existing situations, while a new rule will apply to future situations.

Both the RED and the FQD contain<sup>4</sup> an identical “grandfathering” clause that describes what should happen when the Commission proposes action on ILUC. Under this clause, biofuels produced in all installations in place at the end of 2013 would be exempted or ‘grandfathered’ until the end of 2017, provided that their biofuels achieved at least a 45% GHG savings (excluding ILUC).

### **Current grandfathering clause is bad for the environment, and has led to political stalemate**

The current ‘grandfathering’ clause is causing two big problems:

The first issue is environmental. There is considerable overcapacity in the sector. Existing installation capacity (21.5 Million tonnes of oil equivalent (Mtoe) to produce biofuels is almost sufficient to fill the 10% target. Grandfathering all this existing capacity implies that all biofuels would be exempt from the ILUC regulation until 2017. This would mean large additional land conversion between 4.7 and 7.9 million hectares and environmental damage, roughly the size of Ireland (IEEP 2011).

The second issue is political. The fact that the grandfathering clause would expire in 2017 is posing a major political problem. The necessary policy for dealing with ILUC would mean feedstock-specific ILUC in both the RED and the FQD, these would effectively rule out high-ILUC biofuels, including most conventional biodiesel, after 2017<sup>5</sup>. As said before, most European biofuel production happens to be of conventional biodiesel. The Commission seems unable to stomach the idea of ending the market for it in 2017.

The result is a damaging stalemate. Sales of high-ILUC biofuel are still rising. In 2007-8, the consumption of biofuels in the EU grew by 16%<sup>6</sup> to 10.2 Mtoe. This is anticipated to rise to 27.3 Mtoe in 2020, as suggested in Member States national renewable energy action plans (NREAPs). This means that the sales of conventional biodiesel in the EU will triple, raising from current 7.44 Mtoe to 21.3 Mtoe by 2020. This policy, if left unchanged will result in between 1003 and 1668 MtCO<sub>2</sub>e excess CO<sub>2</sub> emissions and negative impacts on biodiversity (IEEP, 2011).

---

<sup>4</sup> Articles 19.6 (RED) and 7.d.6 (FWD) respectively

<sup>5</sup> Biodiesel made from feedstocks not grown on competitive land (e.g. degraded land, or algae-based) could still qualify.

<sup>6</sup> Commission progress report [http://ec.europa.eu/energy/renewables/reports/doc/sec\\_2011\\_0130.pdf](http://ec.europa.eu/energy/renewables/reports/doc/sec_2011_0130.pdf)

## Why this study?

Grandfathering in the context of biofuels will perpetuate an environmentally harmful practice. Environmental organisations cannot welcome it for that reason. This research was commissioned by BirdLife Europe, the European Environmental Bureau and Transport & Environment to help limit the damage being caused by the current political deadlock, out of a recognition that the relevant laws already dictate that grandfathering will take place, and that there are smarter ways to grandfather than the current interpretation of these laws dictates. Our support for smarter forms of grandfathering is entirely contingent upon the adoption of science-based, feedstock-specific ILUC factors in both the FQD and the RED.

Download the full report here: [www.ecofys.com/en/publication/assessing\\_eu\\_iluc\\_policy/](http://www.ecofys.com/en/publication/assessing_eu_iluc_policy/)

## Overview of the report

**The Ecofys report investigates how grandfathering provisions can be best implemented to minimise damage to the environment. The consultants also considered the economic and political implications of the various options examined.**

The report starts with an overview of the EU biofuels market, future investment plans for building new biofuel production installations and the cost and payback time for different biofuel facilities. It then analysed the impact of possible ILUC policy options on actors in the biofuel supply chain and the level of protection of biofuel sector investments and jobs that would potentially be required.

Subsequently, the report analyses the grandfathering clause as included in the RED and FQD as well as possible extended grandfathering options that could become relevant to enable payback time for investors and prevent job losses.

The study concludes that the EU can introduce a meaningful “ILUC policy” in both directives while maintaining employment and paying back the investments that went into the construction of existing biofuel facilities through adequate grandfathering. While farmers and EU ethanol producers will not need grandfathering under any of the assessed ILUC policy options, the EU biodiesel sector could face some challenges if ILUC-factors are introduced.

## Key results of the report

**EU market: biodiesel dominates, capacity to fill 10% target is almost there.**

In 2009, EU Member States produced a total of 7.44 Mtoe of biodiesel and 1.87 Mtoe of bioethanol. The production capacity was much higher: 18.61 Mtoe for biodiesel and 2.92 Mtoe for bioethanol. This means that, on average, only around 40% of biodiesel capacity and 64% of bioethanol capacity was being used (see table 1).

**Table 1. Production of biofuels in the EU compared to the production capacity (both in Mtoe) (Source: EBB, 2011; ePURE, 2010)**

	Capacity	Actual Production	Capacity Utilisation
<b>Biodiesel</b>			
2005	3.76	1.63	43%
2006	5.40	2.46	46%
2007	9.16	3.85	42%
2008	14.24	5.67	40%
2009	18.61	7.44	40%
<b>Bioethanol</b>			
2005	0.92	0.55	60%
2006	1.43	0.84	59%
2007	1.98	1.10	56%
2008	2.75	1.54	56%
2009	2.92	1.87	64%

Current EU biofuel production capacity is almost sufficient to meet the entire 10% RED target for 2020. Grandfathering all of this production capacity to 2017 will lead to large additional ILUC. According to IEEP, the additional land conversion that would be needed is between 4.7 and 7.9 million hectares (IEEP, 2011). As most of the EU biofuel mix in 2020 will be biodiesel (72%) and conventional biodiesel generally has the highest ILUC emissions, this will cause large additional emissions.

**Biofuels policy has led to a major increase in vegetable oil imports and consequent deforestation**

European biofuels policy has substantially increased the imports and consumption of vegetable oils in the EU, as illustrated in figure 2 below (ICCT, 2011).

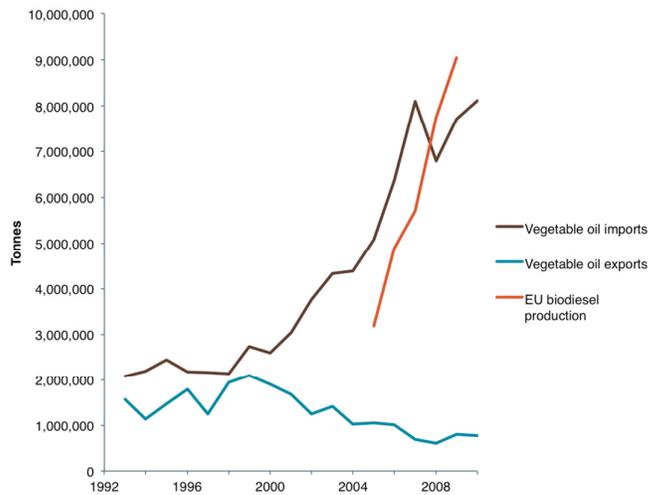


Figure 2: European aggregate imports and exports of major vegetable oils against increasing demand for EU biodiesel production (ICCT 2011).

The Ecofys report shows that currently the main feedstocks used for biodiesel sold on EU markets are rapeseed oil, soybean oil and palm oil. For bioethanol, the main feedstocks are sugarcane (for imported ethanol), sugar beet, wheat and maize. However, the EU's conversion of rapeseed oil to biodiesel has led to a sharp increase of EU imports of palm oil – the marginal vegetable oil – from

Indonesia and Malaysia; this expansion is causing large scale deforestation and peat drainage. This is likely to continue in the future, as the demand for biodiesel increases.

### **How would ILUC policy impact on the key players in the biofuels supply chain?**

Assuming the overall targets of the RED and FQD remain in place, the introduction of an ILUC policy measure in EU legislation would not necessarily change the overall demand for EU biofuels in 2020. It would lead to a shift from high-ILUC to low-ILUC biofuels. This could mean a shift from biodiesel to bioethanol, but also a shift from high-ILUC biodiesel to low-ILUC biodiesel (e.g. grown on degraded land or made from algae).

*Farmers: virtually unaffected; could shift to other cash crops*

Around 4-5% of EU agricultural land was used for biofuel feedstock production in 2008. Current biofuel crops are typically food crops and it is possible for farmers to revert to food crops or other cash crops should demand for biofuels be reduced. The farmers have alternative outlets for their products and with high global prices the risk that they would be affected by the ILUC policy option is low.

*Biofuel feedstock processors; could be affected by overall reduction in demand for processing*

The report shows that both biodiesel and bioethanol feedstocks are processed in installations that can also serve the food markets and thus are flexible. Like farmers, processors can typically switch between food and fuel markets with very low economic impacts, certainly at today's prices.

*Biofuel producers; ethanol installations could gain, dedicated biodiesel production installations could be affected*

Biofuel production installations are dedicated installations that cannot switch to other end-uses. If an ILUC policy measure leads to a decrease in demand for certain types of biofuels, this would have an impact on the installations which produce those biofuels. The report shows this is only relevant for biodiesel producers, if they cannot produce low-ILUC biodiesel.

### **95% of investment in installations is paid back by 2017**

Another key finding of the report is that both biodiesel and bioethanol plants are built for a payback period of 5-10 years. The report shows that no less than 95% of investments in current biodiesel installations would be paid back at the end of 2017, when an ILUC policy option would take full effect under the current grandfathering clause. Plants built between the years 2003 and 2008 would also be expected to turn a profit.

**From a business economics point of view sticking to the 2017 deadline is defensible; by then the vast majority of installations will have had the opportunity to turn a profit.**

### **Assessment of grandfathering options and recommendations**

The report evaluates four different grandfathering options that have been discussed or mentioned by different stakeholders. These are:

1. grandfathering existing biofuel production capacity (this is the baseline scenario derived from the interpretation of the current legislation)
2. grandfathering 50% production capacity
3. grandfathering agricultural land used for biofuels production prior to 2008
4. grandfathering biofuel consumption at the 2010-2012 level.

These options are then evaluated on the basis of several criteria, such as environmental robustness, ease of implementation and verification.

The report finds that option 1, grandfathering as enshrined in the current RED/FQD legislation, would lead to large additional ILUC. This is unsurprising because the current installation capacity is almost enough to fill up the 10% target for 2020.

Grandfathering 50% of capacity, option 2, is much better from an environmental point of view because it roughly grandfathers today's quantity of biofuels, not more. But the fact that it ends in 2017 is politically challenging.

Grandfathering agricultural land used for biofuels in 2008 (option 3) would be very difficult to implement in practice; verification is very challenging.

The report recommends grandfathering on the basis of the average 2010-2012 biofuel consumption level of EU Member States (option 4b). Translated to individual biofuel production installations, this option would grandfather on the basis of their average production in the 2010-2012 period.

In practice, this option would stabilise use of conventional biodiesel at the current level, hence preventing a further increase in penetration of this high-ILUC biofuel. The report suggests prolonging grandfathering until 2020. NGOs believe that this can be done by phasing it out between 2017 and 2020.

## **NGO policy recommendations**

**The report demonstrates** that 'smarter' grandfathering can help the political feasibility of an environmentally robust policy measure for emissions from indirect land use change (ILUC) of biofuels.

**The combination of science-based feedstock-specific ILUC factors with a grandfathering strategy that caps high-ILUC biofuels at current supply levels while gradually phasing them out by 2020 combines environmental effectiveness and a clear framework for new low-carbon investment with fair treatment of past investment and current activity.**

**Our support for smarter forms of grandfathering** is entirely contingent on the adoption of science-based feedstock-specific ILUC factors in order to ensure that by 2020 all biofuels marketed in the EU have a much better carbon footprint than their fossil fuel equivalents.

Download the full report here: [www.ecofys.com/en/publication/assessing\\_eu\\_iluc\\_policy/](http://www.ecofys.com/en/publication/assessing_eu_iluc_policy/)

## References

Ecofys (2012) Assessing grandfathering options under an EU ILUC policy, [http://www.ecofys.com/en/publication/assessing\\_eu\\_iluc\\_policy/](http://www.ecofys.com/en/publication/assessing_eu_iluc_policy/)

ICCT (2011) Indirect land use change - considering the policy options, [http://www.theicct.org/sites/default/files/publications/ICCT\\_ILUC-EU-options\\_Nov2011-1.pdf](http://www.theicct.org/sites/default/files/publications/ICCT_ILUC-EU-options_Nov2011-1.pdf)

IEEP (2011) Anticipated Indirect Land Use Change Associated with Expanded Use of Biofuels and Bioliquids in the EU – An Analysis of the National Renewable Energy Action Plans, [http://www.ieep.eu/assets/786/Analysis of ILUC Based on the National Renewable Energy Action Plans.pdf](http://www.ieep.eu/assets/786/Analysis_of_ILUC_Based_on_the_National_Renewable_Energy_Action_Plans.pdf)

IFPRI (2011) Assessing the Land Use Change Consequences of European Biofuel Policies: <http://www.ifpri.org/sites/default/files/publications/biofuelsreportec2011.pdf>

DG Energy (2011) COMMISSION STAFF WORKING DOCUMENT Recent progress in developing renewable energy sources and technical evaluation of the use of biofuels and other renewable fuels in transport in accordance with Article 3 of Directive 2001/77/EC and Article 4(2) of Directive 2003/30/EC, [http://ec.europa.eu/energy/renewables/reports/doc/sec\\_2011\\_0130.pdf](http://ec.europa.eu/energy/renewables/reports/doc/sec_2011_0130.pdf)