

## Towards biofuel sustainability

Following arduous negotiations, sustainability criteria for biofuels were adopted in March 2009 as part of the new EU Renewable Energy Directive. While clarifying the field for future schemes of sustainability certification, the directive leaves open a raft of controversial issues for negotiation. The future of the biofuels industry will largely be determined by the quality of these negotiations. **Markku Lehtonen**

The EU's development of sustainability criteria has been driven by the need to provide stability to biofuels markets, prevent the proliferation of many mutually incompatible schemes and make sure that biofuels do not completely lose public support, in a situation where regulation has struggled to keep up with market development. The EU Commission has adopted a 'meta-standards' approach, building on existing and planned certification schemes, to avoid duplicating work and to create an umbrella set of criteria for existing national and private schemes.

Governments of the UK, the Netherlands and Germany have been among the frontrunners in developing national certification schemes. The UK Renewable Transport Fuels Obligation, which entered into force in April 2008, has been particularly influential. It requires any company supplying more than 450,000 liters per year of transport fuel to the UK market to ensure that a specified percentage of its fuel sales come from renewable sources.

Initially, the level of the obligation was set as equivalent to 2.5% of suppliers' total road transport fuel sales in 2008-09, rising to 3.75% in 2009-10 and 5% in 2010-11 and beyond. However, following the recommendations made by the government-commissioned Gallagher review on the potential indirect land use effects of biofuels, the targets were reduced so that the 5% target would be reached only in 2013.

The UK has set an example for other European countries to follow. For instance, it prompted the Netherlands to adopt the same principle based on sustainability reporting. However, the RTFO does not stipulate specific sustainability requirements, but only imposes an obligation on suppliers to report on the social and broader environmental impacts of their biofuels.

### EU renewables directive

In March 2007, EU leaders decided that member states should get 10% of their transport fuels from biofuels by 2020. Since then, EU biofuels policy has faced intense criticism concerning its broader sustainability impacts, especially in developing countries. As a result, the new Renewable Energy Directive in March 2009 struck a compromise between the European Parliament, which wanted to scale down the biofuel target to only 4% by 2015, and the Commission, which wanted to retain the original target.

The new directive keeps the 10% objective, but defines it as a share of any renewable energy source in total transport energy supply, for example including

renewable electricity used for transport. Importantly, the directive establishes a set of mandatory sustainability criteria for both imported and domestically-produced biofuels. EU countries are required to report in 2012 on national measures taken to respect the sustainability criteria.

To count toward the EU target, biofuels must deliver life-cycle CO<sub>2</sub> savings of initially, by December 2010, 35%, then 50% from 2017, rising to 60% in 2018 when produced from new refineries that come on stream from 2017 onwards. The directive also establishes the specific rules for calculating the life-cycle GHG impact of biofuels, allowing companies either to calculate the actual emissions or to use default values specified for biofuels sourced from different feedstocks.

However, while the rules clarify problems common to biofuel life-cycle assessment studies, such as the establishment of system boundaries and calculation of emission savings from co-products such as animal feed, they nevertheless leave open a number of potentially tricky questions. The use of default values does not take into account the considerable variation in emissions according to the place of feedstock cultivation and biofuel production methods. Knowledge is notoriously uncertain concerning issues such as soil carbon stocks in different ecosystems and the release of N<sub>2</sub>O from soil – a gas with 296 times higher greenhouse forcing potential than CO<sub>2</sub>. Also definitions of types of land banned from biofuel feedstock cultivation leave room for interpretation, notably that of "land with high diversity value".

### Indirect land use change

The directive seeks to tackle head on one of the most debated issues surrounding biofuels, namely Indirect Land Use Change, and its impacts on GHG emissions. ILUC refers to secondary changes brought about by the relocation of crops previously cultivated on land taken for biofuel feedstock cultivation.

For example, expansion of ethanol production in Brazil does not directly cause deforestation in the Amazon region, which has poor conditions for sugarcane cultivation, but in expanding to pastures and agricultural land, sugarcane may expand the agricultural frontier and push these activities to rainforests and savannas. Similarly a controversial yet plausible hypothesis is that biofuels drive up agricultural commodity prices, threatening the food security of the poorest, while boosting the incomes of commercial farmers.

The EU directive requires the Commission to report on ways to address ILUC – possibly including a concrete methodology for calculating the impact on GHG – by end-2010. However, the Commission has decided to move quickly. In September 2009, it will present scientific models on ILUC, a stakeholder event is planned for October, and the report, possibly together with a legislative proposal, is expected as early as March 2010. This would allow EU member states to take the guidance into account when drafting their national renewable energy action plans due by end-2010.

Both European biofuel producers and Non-Governmental Organizations have called into question the feasibility of calculating the GHG emissions resulting from indirect land use. Beyond the technicalities of GHG calculations, this opposition raises a more fundamental point: Is certification the right instrument for addressing the various indirect impacts from biofuel production, or should especially the macro level impacts be addressed through other means – legislation, institution-building and better law enforcement aimed at the prevention of adverse impacts such as deforestation?

### Scope and coverage

While the emphasis in the new directive is on GHG emission reduction, it seeks also to address two other key areas of sustainability – the wider environmental impacts and the social impacts. The directive includes both environmental and social sustainability criteria, yet without establishing quantified, binding targets. Biofuels produced in the EU must simply comply with the existing environmental and social criteria governing EU agriculture. Companies receiving biofuel imports are asked to report on the compliance of non-EU producers with the EU's social and environmental criteria.

While the legitimacy of the environmental aspects among sustainability criteria is seldom questioned, the inclusion of social criteria is far more contentious. Views diverge on the role of biofuels in recent food price increases and the threat that biofuel feedstocks would replace food crops. Especially producers from developing countries oppose the inclusion of criteria relating to issues such as labor rights, land ownership, workers' health, and local community development.

Despite the controversies, the debate on social criteria is unlikely to go away. Not only the NGOs, but also organizations such as the International Labour Organization keep a close eye on developments in the area. Furthermore, certification is one of the few means of addressing the social problems related to biofuel production. For instance, in the sugarcane producing region of northeast Brazil, international pressure may be needed to fuel change in historically unequal social relations.

The EU Commission has also suggested that sustainability criteria may in the future be applied to other agricultural crops. Biofuel advocates have indeed asked why biofuel feedstocks should be treated differently from other agricultural commodities – why should sugarcane used for ethanol production have to be more sustainable than that destined for sugar production, for example?

### Sustainability criteria as a trade barrier

Just like eco-labeling in the 1990s, EU plans for biofuel sustainability criteria have been attacked by developing countries such as Brazil as 'eco-colonialistic' protectionism, at odds with WTO trade rules. And, as with eco-labeling, the potential inclusion of social criteria has proved to be the most contentious idea.

### Typical and default values for biofuels if produced with no net carbon emissions from land use change

Biofuel production pathway	Greenhouse gas emission saving (%)	
	Typical	Default
sugar beet ethanol	61	52
wheat ethanol (value depends on process fuel and whether a CHP plant is employed)	32-69	16-69
corn (maize) ethanol (Community produced – natural gas as process fuel in CHP plant)	56	49
sugar cane ethanol	71	71
rape seed biodiesel	45	38
sunflower biodiesel	58	51
soybean biodiesel	40	31
palm oil biodiesel (depending on methane capture)	36-62	19-56
waste vegetable or animal oil biodiesel	88	83
hydrotreated vegetable oil from rape seed	51	47
hydrotreated vegetable oil from sunflower	65	62
hydrotreated vegetable oil from palm oil (depending on methane capture)	40-68	26-65
pure vegetable oil from rape seed	58	57
biogas from various sources as CNG	80-86	73-82

Source: Annex V; EU Renewables Directive

## A selection of International initiatives relevant for biofuel sustainability certification

Scheme	Initiator/participants
Roundtable on Sustainable Biofuel	École Polytechnique Fédérale de Lausanne
International Bioenergy Platform – IBEP	FAO
IEA Bioenergy Tasks 30, 31 and 40	IEA
Global Bioenergy Partnership	GS +5 / UNEP
European Green Electricity Network – EUGENE	Network of researchers, consumer and environmental NGOs
Roundtable on Sustainable Palm Oil	Palm oil supply chain stakeholders
Roundtable on Sustainable Soy	Soy supply chain stakeholders
Better Sugarcane Initiative	Sugarcane supply chain stakeholders
IDB Biofuels Sustainability Scorecard	Inter-American Development Bank
International Sustainability & Carbon Certification	German government
Forest Stewardship Council – FSC	Forest sector stakeholders

Source: Platts

In general, the WTO is opposed to attempts to develop mandatory certification systems and permits voluntary schemes only where trade in non-certified goods is uninhibited. This is why the EU has been careful to make sure that sustainability criteria apply to both EU and non-EU biofuels producers.

Officials from the UN Conference on Trade and Development have concluded that while the inclusion of social criteria concerning labor standards and human rights is probably inadmissible, criteria for GHG emissions and broader environmental issues are more likely to pass the WTO test. However, this would not remove the problems faced by developing country producers in case several major importing countries simultaneously introduce certification schemes.

Furthermore, the well-rehearsed WTO argument that each country should be allowed to define its own levels of social and environmental protection is problematic, both on ethical and practical grounds. The 'freedom' of the poor in the developing world to define their own desired levels of protection seems a hypothetical possibility at best, when weighed against the imperatives of global markets and the interests of strong players in both the northern and southern hemispheres.

### Winners and losers

Among the many virtues attributed to biofuels has been their ability to provide additional income and prosperity in rural areas, especially in emerging economies. However, while the EU directive clarifies a number of issues and seeks to create a more level playing field for the various sustainability requirements, the establishment of such criteria may disproportionately affect small producers in the developing world.

Strict and comprehensive sustainability certification systems tend to be complex and costly, and require high institutional and technical capacities, which small producers seldom possess. Moreover, adopting production methods that comply with the sustainability criteria usually incurs an extra cost. The Cramer Commission, set up to

develop Dutch biofuel sustainability criteria, estimated that the additional cost from certification on small producers would be on average 20% of production costs, but could in some cases be higher.

Experience from forest certification schemes suggests that the costs tend to affect not only small producers, but also developing countries as a whole. First, developing countries often lack reliable forest data needed for certification, and second, they usually have less favorable conditions for implementing sustainable forestry practices. These conditions may not always apply to biofuels: for instance Brazilian sugarcane fares well without much irrigation and fewer chemical inputs than in many other producing countries. However, the impact of the lack of data and technical capacity is clear: for the lack of credible in-country certification expertise, developing countries often must resort to expensive services by industrialized country experts to ensure market access.

To alleviate the cost and administrative burdens on small producers, two proposals have been put forward. Group certification, following the example of Forest Stewardship Council certification, would allow several small producers to share the costs of administration. Another possibility could be to apply less stringent criteria or less elaborate verification procedures for small producers, yet this would require great caution to avoid certification losing its credibility among consumers. In any case, technical and financial support to small producers and developing countries is an essential prerequisite to a successful certification scheme.

### Credibility and legitimacy

Should biofuel producers in the developed world care about the impacts of certification on those in developing countries? The obvious answer is that to be WTO compatible, sustainability criteria should not be perceived as discriminatory. But even if a scheme is rejected because it fails the WTO test, where's the damage? Isn't it the governments and NGOs that 'need' certification, rather than the companies? The answer again is no: without a credible system able to

demonstrate the sustainability of biofuels, the biofuel industry as a whole may face extinction and government support policies will be impossible to sell to the public.

The keywords are credibility and legitimacy. However 'technically perfect' a certification system might be, it will only be effective so long as not only the sector stakeholders, but also the public at large, trust in the integrity and fairness of the system. Admittedly, this is a tall order. On the one hand, the criteria and standards need to be stringent, and the compliance and enforcement systems robust enough to avoid accusations of 'greenwashing' or 'social whitewashing'. On the other hand, stringency should not lead to excessive costs and complexity, which could discriminate against small producers and thereby threaten the legitimacy of the system.

In the final analysis, the key questions relating to sustainability criteria and certification are political, not technical. Data gaps need to be filled and scientific uncertainties reduced, but the more fundamental uncertainties relate to the different interests, beliefs and worldviews of the stakeholders involved. The justified calls for certification and sustainability criteria to be 'evidence-based' or 'scientifically reliable' should not be used to disguise the underlying reasons for disagreement.

All major biofuel-related certification schemes declare their adherence to inclusive 'multi-stakeholder' processes. However, the devil is in the detail, and the classic issues and dilemmas related to participatory processes apply: who should have the right to participate, on which conditions, and through which processes? The framing of the debate is especially crucial in the production of the evidence base; being proactive means gaining control of the process, on the themes to be discussed and the basic definitions of key concepts – starting with sustainability.

The major international environmental NGOs have generally participated, and often played a central role, in processes aimed at developing certification schemes. By contrast, civil society organizations from developing countries have often boycotted the processes, labeling them as poorly disguised attempts by the biofuel companies to legitimize their unsustainable practices. Some NGOs have criticized the EU approach of 'meta-standards', contesting the claim that existing certification systems represent a legitimate consensus amongst stakeholders. Instead, they have pointed out the poor quality and representation in existing schemes which are marketed as highly participatory.

The logic of the multi-stakeholder process faces a tough test when groups refuse to limit themselves to debating only the specific criteria of certification, but question the whole principle that monoculture biofuel crop production could ever be acceptable, let alone called sustainable. Similar examples from areas such as highway building and nuclear energy have shown

that poorly designed and managed 'participatory' processes may end up in widespread frustration: for the opponents, because the processes only allow discussion on project details and not on the principle of whether a project is needed in the first place, and for the project advocates, who see opposition based on such fundamental questions as mere troublemaking.

To ensure that the multi-stakeholder processes actually deliver what they promise – credible and legitimate certification schemes vital for the survival of the biofuel sector – more attention needs to be paid to the structural reasons that prevent participation by different stakeholders on an equal footing. So far not only local civil society organizations, but also small-scale crop producers from emerging economies have been underrepresented at best and absent at worst from negotiations on major certification schemes.

More active measures than merely 'open doors' are needed to ensure that the weaker parties are able to fully contribute to the process. For example, the International Organization for Standardization is frequently considered as a legitimate international forum, yet even within the ISO the developing countries are disadvantaged by the sheer lack of money, human resources and technical capacity. Assistance from organizations such as UNCTAD to developing country governments helps redress inequality between countries, but does not ensure that all groups of society get represented.

#### **Acid test for success**

EU biofuel policy has in recent years been mired in controversy. Paradoxically, this may in fact have rendered a service to the sector. Slowing down an overheated market has given a needed respite, forced the stakeholders to face the unavoidable broader sustainability debate, and prevented the industry from heading towards a public relations catastrophe. The scope of the debate has been broadened from the initial exclusive emphasis on GHG emissions to cover biodiversity and other environmental issues, indirect land use change, and even social issues.

However, the need to reduce technical uncertainties should not obscure the essentially political nature of the processes underlying biofuel sustainability criteria. Ultimately, the conflicts around the sustainability of biofuels are about competing worldviews. Sustainability criteria are bound to be radically different for someone who sees sustainability as small-scale rural community development than for someone else who defines sustainability in terms of 'green' innovation and technological development.

Beyond the considerations relating to compliance with WTO rules and calculation of indirect land use impacts, the real acid test for the EU's biofuel sustainability regime is the capacity of the EU to generate a process genuinely open to the range of highly diverging perspectives towards sustainable development.