

WHEN REGULATORY CO-PRODUCTION IS TOO NARROW: CARBON AND SUSTAINABILITY REPORTING UNDER UK BIOFUEL CERTIFICATION REGULATIONS

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Abstract

Biofuel policy has become highly contentious in Europe, originally driven by the Biofuels Directive (2003/30/EC), which requires that “biofuels or other renewable fuels” constitute 5.75% of the energy content of petrol and diesel sold for transport in member states by 2010, and now superseded by the Renewable Energy Directive. Here we discuss governance aspects of the environmental and social sustainability components of the expression of these directives in UK law via the 2008 UK Renewable Transport Fuel Obligation (RTFO). We observe that commercial and energy security priorities have dominated the design of carbon and sustainability performance management under the RTFO. As an environmental management tool, the RTFO has been exceptionally weak, being a reporting standard rather than a performance or design standard. While it will be strengthened by the Renewable Energy Directive (RED), significant concerns remain in relation to the sourcing of biomass for energy. RTFO certification is of a meta-type, being built upon existing certification and labelling schemes (e.g. the Roundtable on Responsible Soy, Forest

Stewardship Council, Roundtable on Sustainable Palm Oil and others), all of which are more or less contested by NGOs. Yet despite claiming legitimacy from these non-state initiatives, the serious concerns of environment and development NGOs have been largely ignored in regulatory terms. We draw on documentary evidence, interviews, the science in policy and environmental governance literatures, particularly ideas on regulatory co-production, post-normal science and the legitimacy of non-state certification and labelling processes, to suggest that until critical voices are given a stronger expression in UK and EC biofuel policy, biofuel policy cannot be said to have achieved a social mandate or a durable legitimacy.

Key Words: biofuels; sustainability certification; co-production of regulation; governance

1. Introduction

In November 2005, the UK Government announced that it would introduce a Renewable Transport Fuel Obligation (RTFO) as a means of supporting the use of biofuels and other renewable fuels in the transport sector. This paper discusses the contestations around RTFO carbon and sustainability reporting and the issues associated with gaining legitimacy for a policy that relies significantly on multiple, non-state, voluntary certification initiatives. The discussion is also relevant to European bioenergy and biofuel policy development and biofuel certification under the Renewable Energy Directive.

Biofuels-related debate in the UK and EU has developed rapidly in the first two and a half years of the RTFO's operation and early concern that policy was moving ahead of scientific knowledge in the area is, for civil society observers, proving increasingly founded. The Gallagher Report (Renewable Fuels Agency, 2008a) and its constituent studies represented official acknowledgement of the problems not only of most first generation biofuels (a term generally applied to current agricultural feedstocks used for biofuel), but also of the scale of the additional global land-take that would be required to significantly supply vehicle fleets in a period for which there is in any case likely to be a very substantial increase in global demand for agricultural land for food and animal feed (ibid). These concerns remain valid as biofuel policy continues to push ahead globally.

Our argument here is that biofuel policy development in the UK has been unduly non-responsive to critical opinion, given the level of contestation to which biofuel policy is subject, given the limited and worrying scientific evidence base and given the unusual reliance of RTFO sustainability certification on non-state actors and schemes. We show that despite surface agreement among stakeholders, this is a deeply contested arena with radically differing discourses and positions. While this is not unexpected, we suggest that if a wider social mandate and legitimacy for biofuels is to be achieved, a wider set of voices will need to be reflected in policy. Simply put, this means policy change. Scientific knowledge and standards-setting being critical in this arena, we bring to bear concepts and findings from earlier studies of environmental policy making. We refer in some detail to the literature on environmental and social certification and labelling initiatives, of which RTFO carbon and sustainability reporting makes use, to highlight issues associated with achieving societal legitimacy for biofuel certification.

2. The UK Renewable Transport Fuel Obligation

The RTFO began in April 2008 and applies to any road transport fuel supplier supplying more than 450,000 litres of fossil fuel per year to the UK market. The obligation requires road transport fuel suppliers to either ensure that a specified percentage of their fuel sales come from renewable sources, or to discharge their obligation in the ways described below. As originally formulated, the

level of the obligation on a transport fuels supplier was equivalent to 2.5% of their total road transport fuel sales in 2008/9, rising to 3.75% in 2009/10 and 5% in 2010-11 and beyond. However, following the recommendations made by the Renewable Fuels Agency (RFA) to the Government in the Gallagher review on the potential indirect land use effects of biofuels policy, the RTFO (Amendment) Order was made on 1 April 2009, reducing the rate of increase of the targets for biofuel supply by volume under the RTFO to 3.25% for 2009-10, 3.5% for 2010-11, 4% for 2011-12, 4.5% for 2012-13 and 5% for 2013 onwards (Renewable Fuels Agency, 2009a).

UK biofuels policy was initially driven by the Biofuels Directive (2003/30/EC), which requires that "biofuels or other renewable fuels" constitute 5.75% of the energy content of petrol and diesel sold for transport in member states by 2010. An EC proposal (COM(2007)18) to reduce the carbon intensity of transport fuels, to be made in the Fuel Quality Directive, could raise the role of biofuels to 15% of transport fuel (by energy) by 2020, depending on the final target and the extent to which other renewable fuels are used (Renewable Fuels Agency, 2008a). In September 2008, the European Parliament's Industry and Energy Committee voted for a 5% share for renewable fuels by 2015 and 10% by 2020. This support was conditional on at least 20% of the 2015 target and 40% of the 2020 goal (i.e. 4% of total 2020 fuel sales) being met from "non-food and feed-competing" second-generation biofuels (echoing the Gallagher report above) or from other renewable fuels such as renewably-sourced electricity and hydrogen. This would effectively reduce the interim 2015 target for the share of EU fuel sales that must be from biofuel to 4%, compared to the target of 5.75% by 2010 set in the 2003 Biofuels Directive (EurActiv.com, 2008). In December 2008, the European Parliament agreed that in order to count toward the EU target, biofuels must deliver life-cycle CO₂ savings of initially 35%, then 50% from 2017, rising to 60% when produced from new refineries that come on-stream from 2017 onwards (European Parliament, 2008). The European Parliament has also repeatedly referred to the need for biofuels supply to be subject to effective sustainability criteria, and has specified environmental criteria (essentially prohibitions on the use of biodiverse, high carbon stock and wooded land) for this purpose (Article 17, in *ibid*). The UK Government is expected to implement the resulting European Renewable Energy Directive (RED) (EC, 2009) in December 2010, a date for which the UK Renewable Fuels Agency is preparing via an informal consultation and via proposals to strengthen the RTFO meta-standard system discussed below (RFA, 2010).

3. Carbon and sustainability reporting under the RTFO

To receive an RTFO certificate, a supplier operating in the UK above the threshold of 450,000 litres of biofuel per year must report monthly on their performance in terms of the extent to which they have met: (1) the qualifying standards (discussed below) defined in RFA guidance; (2) the greenhouse gas (GHG) intensity of the biofuels supplied; (3) land use on Nov 30th 2005; and (4) the level of accuracy of the data supplied, as defined on five levels (Renewable Fuels Agency, 2009b). Qualifying standards are defined as those that meet a specified number of criteria in the RTFO sustainability meta-standard, which is a set of aspirational principles, criteria and indicators that is broader and in some cases of a higher standard than the qualifying standards. The RFA takes responsibility for reporting indirect effects on land use and commodity prices, not the biofuels supplier.

At the time of writing, meeting a qualifying standard is not mandatory: RTFO certificates are earned for supplying biofuel that fails to meet RFA-specified environmental and social standards. The RFA has previously stated that it aims for meeting its specified standards to be mandatory by April 2011, conditional on this being compatible with World Trade Organisation rules and EU Technical Standards requirements, consistent with the policy framework being developed by the European Commission as part of the review of the Biofuels Directive, and subject to consultation on its

environmental and economic impacts (Renewable Fuels Agency, 2009b: p.2). The situation is fluid, but that date now appears to be brought forward to the end of 2010, to correspond with the RED implementation date (RFA, 2010). In the UK, the qualifying environmental standards are: Linking Environment And Farming Marque (LEAF); Roundtable on Sustainable Palm Oil (RSPO) (also a qualifying social standard); Sustainable Agriculture Network/Rainforest Alliance (SAN/RA) (also a qualifying social standard); Basel criteria for soy ('Basel') (also a qualifying social standard); Roundtable on Responsible Soy (RTRS); Forest Stewardship Council (FSC); Assured Combinable Crops Scheme (ACCS) and Genesis Quality Assurance (QA) (RFA, 2009b). There are several other standards that do not meet the RTFO qualifying standard and there are also initiatives that seek to harmonise national and other initiatives; Gnansounou et al (2007) provide a review of initiatives as of 2007, but the number has proliferated since then. Also notable is the European Committee for Standardisation (CEN) CEN/TC 383 'Sustainably produced biomass for energy applications', which, although voluntary, will apply as a European standard across the EU. Being consensual, this may come to function as a 'lowest common denominator', but at the present time it is too early to comment with any certainty. It should be noted that, under the RTFO, both pre- and post-RED, meeting the RTFO meta-standard need not involve following and supplementing the named constituent standards (FSC, RTRS etc). For example, ethanol supplied by *Greenenergy* in the UK complies with the UK meta-standard via Greenenergy's own assessment system (Greenenergy, 2010a).

4. Co-production of regulation

We have identified three strands of literature that are particularly relevant to the case of what many regard to be the risky path that UK and EC biofuel policy is pursuing. These are co-production of regulation, post-normal science and the ways in which environmental governance initiatives, specifically sustainability certification and labelling, gain legitimacy. In this section we provide an overview of the first two literatures, to provide high-level context.

That scientific knowledge is deployed in the development and implementation of environmental regulation is widely known. Seeking to characterise the relationship of science to policy more fully, in particular the relationship of science to regulation, Jasanoff (1990) identified three types of scientific activity in the regulatory arena. First are studies commissioned by regulatory agencies to provide additional, policy-relevant knowledge; second are synthesising and reviewing activities; and third are assessments or forecasts of environmental risk. In order to increase the policy utility of this type of knowledge-generation, there is often a significant element of interaction between scientists or academics and those commissioning the work – an iterative activity termed *co-production* in the field of science and technology studies.

Within the sphere of environmental regulation and its co-productive relationship to science and science advisors, our focus here is on the development of a particular environmental and social reporting standard, namely the meta-standard of the RTFO. Jasanoff (1998: p.108) characterises the generic standard-setting process as a superficially bureaucratic but actually deeply value-laden process; a measure of 'high' performance, that, in an environmental context, is often intended to protect vulnerable populations or to ensure reasonable levels of safety, health, and environmental quality for those most at risk; and a 'powerful averaging instrument that requires conformity from everyone it affects', potentially and often unintentionally defining the de facto upper bounds of performance as well as the lower bounds (Jasanoff, 1998). As Jasanoff further points out, it is often impossible to demonstrate in real time whether an environmental standard is meeting its intended purpose, due for example to background 'noise' and the practicalities of monitoring; and/or a substantial temporal separation of cause and effect; and/or difficulties in isolating specific causes (ibid). Consequently, the credibility of environmental standards may depend more on the methods by which they are generated and enforced than on their empirical validation (ibid: p.108).

Whereas design standards target the components of a technological system, performance standards are intended to regulate the quality of the output of that system: in other words, to specify how the system as a whole should perform (ibid: pp.109-110). Performance standards are preferred by industry for their relative flexibility because they leave to industrial managers the choice of how to achieve the desired level of performance and at what cost (ibid). However, Jasanoff observes that the interpretation of standards-related data can become highly political for several reasons: data gaps are often endemic in standards setting; the limited available information tends to support differing perceptions of risk; and because environmental standards can have far-reaching economic and social consequences (ibid: p.112).

Many of these features of co-production apply to UK biofuel sustainability regulation. For example, in relation to the latter point of preference for design standards, in order to avoid the costs of site-specific standards and monitoring, the RTFO uses a reporting standard in combination with chain of custody methods that reduce transaction costs by allowing separation of physical product from its certificate (i.e. 'book and claim' and mass-balance methods in addition to tighter 'track and trace' systems). In fact the meta-standard is weaker than a performance standard, as it mandates selective reporting on performance, not performance per se. The biofuel policy development process has also closely involved a single consultant (Ecofys). However, our objective here is not so much to critique the content of UK biofuel policy as such, nor to detail the role of consultants in the policy process, but rather to suggest that the limited knowledge base on biofuel impacts, and the complexity of the policy arena (cutting across, for example, domestic and international aspects of trade, rural development, climate change, biodiversity and transport policy) justifies *broader* co-production, extending Jasanoff's concept to denote the deliberate inclusion of a broader range of policy viewpoints. This is knowledge co-production in the sense of co-operation and collaboration between agents from different backgrounds, who bring to bear different experiences and perspectives. The term is used in this sense across a wide range of fields, such as agriculture (Aeberhard and Rist, 2009), management (Berggren and Söderlund, 2008) and environmental health (Corburn, 2007).

In advocating wider co-production, we also appeal to a body of thinking that provides a rationale for broader stakeholder inclusivity in policy development, namely that on 'post-normal science'. The main arguments for post-normal science, as reviewed by Frame and Brown (2008, drawing on e.g. Ravetz, 1987; Funtowicz and Ravetz, 1990; Funtowicz and Ravetz, 1993; Funtowicz and Ravetz, 1994) are: firstly, that it is legitimate to view the world in more than one way i.e. that there is an 'irreducible plurality of perspectives and modes of understanding' (Frame and Brown, 2008). This echoes arguments from science and technology studies regarding the value of local knowledge and the contingency of scientific knowledge (e.g. Wynne, 1996). Secondly, that epistemological inclusivity is likely to lead to better decisions with wider political support and legitimacy, particularly in contexts that have been described as 'wicked' (Rittel and Webber, 1973) and that require solutions that may be described as 'clumsy' (e.g. Shapiro, 1988; Verweij et al., 2006; Rayner, 2006).

Not only is UK biofuel and bioenergy policy pursued in part for its contribution to mitigating the 'wicked' problem of climate change, but the way in which it crosses multiple policy domains; makes use of non-state policy instruments over which governments have little control; relies on the co-operation of actors along supply chains for certification compliance; involves indirect impacts that are intrinsically difficult to model and monitor; is entangled with national and international agricultural commodity trading and food supply, all of which is subject to significant contestation, makes this policy arena difficult itself - unless the objective is simply to stimulate fuel supply regardless of other consequences.

5. Environmental certification and legitimacy

Several biofuel certification schemes are currently under development (van Dam et al, 2008). As described above, although carbon and sustainability reporting under the RTFO has been state-led, and although under RED compliance with GHG, land use, carbon stock and biodiversity criteria will be mandatory, non-state initiatives will remain important in biofuel certification as a means of demonstrating compliance with those criteria. As labelling and certification schemes lack the legitimisation and enforcement capability of traditional governmental rule making, to be effective in the sense of achieving and maintaining policy making authority, they need to achieve a sufficient degree of legitimacy by the actors involved. These actors are not only consumers, but also include consumer organisations, NGOs, governments, academia, media and other institutions forming social interests or who consider themselves a stakeholder. Exactly what degree of legitimation is sufficient for a scheme to operate, and by whom, is of course debatable. Both theory and intuitive plausibility, however, would imply that the more widely a network or arrangement is given legitimacy in society, the most robust it will be (Latour, 1996). What is less certain, and what may vary on a case-by-case basis, is for how long a certification process may be able to continue with relatively partial legitimacy. One would expect network stability to be potentially harmed, for example, by opposition campaigns and/or events such as new, disruptive scientific knowledge. The latter may well pertain to the current situation with biofuel certification: to date, and most pertinently, indirect land use change has not been well accounted for in certification processes and it is not at all clear that this is a politically sustainable situation. Be that as it may, in this section we review some key concepts and findings from the non-state environmental certification and labelling literature. As our focus is on the way in which the RTFO carbon and sustainability system has failed to achieve a wide social mandate, as inferred from continuing and strong NGO opposition, we particularly consider how certification schemes achieve (or fail to achieve) social legitimacy.

5.1 Corporate engagement

Motivations for businesses to set up, use and/or participate in certification and labelling schemes are many. First, by adopting or participating in voluntary labelling schemes, or in reacting positively to mandatory ones, businesses can meet societal demands and protect and improve their reputation, be this as single firm or collectively for the whole industry (Pedersen & Neergaard 2006, p 25; Boström & Klintman 2008, p 70). Second, through over-compliance with mandatory standards (going beyond what is legally required), business may influence or pre-empt future government standards (van Wijk et al. 2008). Third, labelling can be used as a marketing instrument to offer information to consumers during their purchasing decisions, in order to gain competitive advantages, extract a price premium, or to gain greater access to markets (de Boer 2003, p 258; Gulbrandsen 2006, p 478; Kaiser 1996, pp 22–27; Landmann 1997, p 13). According to Jordan et al., producers and service providers are often driven "by fears about a loss of market shares rather than the hope of increasing their market share" (Jordan et al. 2006, p 176). Once a critical mass of businesses has applied a label within a certain market segment, the remaining companies find themselves under considerable market pressure to seek the label for their competing products. The breakthrough in terms of sales of certified Fair Trade products in the US, for example, came when Starbucks made their commitment and shortly after other speciality-coffee companies followed (Barrientos et al. 2007, p 56); (Fridell 2009, p 86). In the UK, a major push happened in 2000 with the involvement of the Co-op retailer, who started selling Fair Trade bananas and the first own brand, Fair Trade certified chocolate bar. By the end of 2002 all major supermarkets in the UK sold at least one Fair Trade item (Barrientos & Smith 2007, p 105).

With respect to the above, there are both similarities and differences in the case of biofuel certification in the UK. As stated, pre-RED implementation, suppliers have not had to meet any

qualifying standards or the meta-standard, only report on the extent to which they have met these. Yet some suppliers have been more pro-active in this respect than others and this differentiation has been reported annually by the RFA. The above thinking on corporate participation in voluntary initiatives would seem more applicable to those biofuel suppliers who have taken pro-active stance than to those who have not. Post-RED implementation, the situation will change in that suppliers will have to meet RED criteria, and in the current RFA proposal for the UK, companies will be free to either use and supplement existing constituent schemes, or to meet the meta-standard in some other way. Certainly those who are already complying with the RTFO meta-standard will be better-placed to meet legislative requirements.

In general, politicised consumer demand and societal pressure is usually more intense for larger, more prominent firms towards the consumer end of the supply chain (Boström & Klintman, 2008, p 148). Such firms typically include large producers and branders, processors, or retailers, of whom the latter may be of key importance in the context of certification and labelling (IEFE & ICEM CEEM, 1998, pp 71–72). By moderating between the production and consumption side, retailers influence which goods, information and values reach the customer and vice versa (Hansen, 1988, p 336). To meet this pressure in general, retailers (or other core actors) increasingly use their power to push for modular supply chains that adhere to labelling standards (Lebel & Lorek, 2008, pp 248–249; Reynolds & Ngcwangu, 2010, p 75). However, in the case of biofuels, UK petrol and diesel retailers have so far appeared shy of proclaiming the benefits of their biofuel-blended product, despite there being opportunities for differentiation. In this respect their behaviour is starkly different from typical certification and labelling practice, in which a label is used to communicate with customers.

The involvement of mainstream retailers and/or other large mainstream actors like branders or producers can further increase the market effect of a scheme by reducing the problems and costs involved in penetrating the market. By adding a label to existing reputations, it is possible to take advantage of existing reputations, the knowledge that large companies already have of market demand and also of marketing resources (Renard, 1999, p 496). In short, the involvement of large, mainstream actors is usually unavoidable if a certification and labelling scheme aims to achieve large scale market penetration and transformation. In fact this applies along the supply chain: in many cases, the push for sustainability-oriented, modular supply chains through large buyers has also increased sourcing from larger commercial producers rather than small scale producer. The former not only offer more revenues from license fees for the certification scheme but are also more likely to have the financial, personnel and structural resources to adapt production processes to meet labelling criteria. If the price premium gained at the retailer end does not reach the producer end of the chain, certification then risks transferring the extra costs of achieving environmental and social standards to producers, eroding their financial margins (Ponte, 2008, p 170). Moreover, the involvement of large scale, powerful buyers facilitates the emergence of industrial-market conventions (e.g. demand for high quality for small prices). Such conventions are more likely to be met by large producers profiting from economies of scale. Labelling and certification schemes thus risk facilitating not only large scale modifications of the supply chain towards sustainability but also a shift towards more buyer driven supply chains characterised by large scale, powerful actors exchanging goods and using labelling and certification standards to exert control over the rest of the supply chain. In terms of biofuel supply, it is indeed more likely that it will be the larger producers who will have the resources to meet sustainability requirements, unless particular effort is made to support smaller producers.

5. 2 Forms of legitimacy

Theorists have posed several different aspects of legitimacy, as applied to environmental governance initiatives. To understand the different dynamics of legitimacy granting Cashore (2002)

distinguishes between pragmatic, moral, and cognitive legitimacy, based on Suchmann's social legitimacy framework (Suchman, 1995, p 578). For Suchmann, *pragmatic legitimacy* issues "rest on the self interested calculations of an organization's most immediate audiences" (Suchman, 1995, p 578). This generally relates to short term benefits like the compliance of firms in order to improve market access or meet societal pressure, or to achieve the support of a scheme by NGOs. This is the most fundamental form of legitimacy that some firms have sought under the RTFO and that they will have to satisfy under RED. Firms will simply not be able to legally claim RTFO certificates, or operate legally in the EU, unless they comply with RED-mandated legislation. *Moral legitimacy*, however, refers to the issue of whether a scheme is "the right thing to do" (Suchman, 1995, p 579) and has its roots in broader societal values (Cashore, 2002, p 519). This is the major challenge for biofuel policy and how this form of legitimacy develops in future will in part depend on the way in which debates such as food security and land use emissions develop in relation to biofuels and bioenergy.

This is not to say that science will necessarily resolve such debates: the impacts of biofuel and bioenergy production are likely to remain contested, we would suggest, because impact assessment will likely struggle to conclusively associate indirect cause and effect and because it can also legitimately deploy a range of competing methods and evidence. Contrast, for example, the method of ex-ante macro-economic modelling coupled to a biophysical model (e.g. Lapola et al, 2010) to derive estimates of indirect land use change consequent on biofuel production, with Greenergy's (2010b) argument that indirect land use factors can and should be based on ex-post, observed change in specific localities (e.g. via remote sensing) to infer future impact. Typically, environmental certification schemes highlight the involvement of science in their decision making processes, usually involving experts from universities, NGOs, business, social associations and regulators with both scientific and industrial experience. These experts are often involved as regular members but also in special panels to review problematic scientific issues (Eden & Bear, 2010). Indeed, reference to and inclusion of science "are often seen to be essential in order to establish trust and create an impression of independence" (Boström 2006, p 142).

However, where the science of impact assessment is as contested and as undeveloped as it is in the case of biofuels, both voluntary certification schemes and government-led policy processes are likely to directly or indirectly exclude some points of view, including those that are scientifically-informed. This appears to be the case for the RTFO and it may well also apply to other biofuel certification processes. Hence even the Roundtable on Sustainable Biofuels does not appear to have drawn in NGOs who would be classed as strong objectors to UK/EC biofuel policy (notably Greenpeace, Friends of the Earth and Oxfam or their international organisations). This is despite the RSB developing a biofuel certification system via a process that has closely consulted with, and now includes in its own governance, organisations representing a wide range of differing interests (RSB, 2010a). It is also despite RSB certification principles and criteria acknowledging the need for 'significant changes in lifestyle and efficiency of use' in biofuel consumer countries and a commitment to introduce measures to minimise what it recognises as the potentially high impact of indirect land use change (RSB, 2010b). It remains to be seen whether these measures will satisfy the more critical NGOs – at present this would seem doubtful.

Continuing discussion of the various forms of legitimacy that a certification scheme needs to attain, for Boström, to achieve the approval of stakeholders, a scheme must be *credible* in a general sense (Boström, 2006, p 135), of which constituent attributes are inclusiveness and independence, scientific validity, global applicability and auditability (Boström, 2006, p 141). Key factors for credibility are institutional structures that are based on and facilitate shared decision making and open and inclusive deliberation among all parties affected by a scheme (Lebel & Lorek, 2008, p 254; Gulbrandsen, 2008, p 576; Boström, 2006, p 141; Schrader, 2004, pp 203–204; Teufel et al., 2009, pp 61–62; Frankl et al., 2005, p 307; Meidinger, 2008, p 269). Once included, groups with different

concerns, knowledge, and experience can then shed light on different aspects of the problem to make responsible decisions and reduce burdens and risks (Boström & Klintman, 2008, p 182; Lebel & Lorek, 2009, p 264). Closely related to inclusiveness is the independence of the scheme. In fact inclusiveness can create independence: “Whereas most individual members reflect a certain ‘interest’ relative to the aim of the project—they are not ‘independent’ or ‘neutral’—it is the combination and mutual adjustment of interests that create this image” (Boström, 2006, p 141). Of course inclusion is not a politically simple matter and we discuss this further below.

Certification schemes also need *global applicability*: they need to fit in with the with existing international sets of institutionalised norms already accepted as legitimate in the relevant issue areas (Boström, 2006, p 142). Potential conflicts can evolve for example with WTO law and this issue was raised by DfT in its 2008 consultation on the RTFO. A credible scheme also needs a *verification* procedure for analysis, audit and accreditation by an independent body to ensure that the regulated entity actually meets the stated standards (Boström 2006, p 141; Cashore 2002, p 513; House of Commons Environmental Audit Committee 2009, p 17; Schrader 2004, pp 203–204). Indeed, independent verification is an essential feature of biofuel certification schemes. Moreover, certification schemes need *cognitive legitimacy*, in the sense of “comprehensibility” or “taken-for-grantedness” (Cashore 2002, p 519) – i.e. they must either make intellectual sense or alternatives “become unthinkable” (Suchman 1995, p 583). To enhance comprehensibility, a transparent and verifiable structure is essential (Scholl 1999, p 15; Schrader 2004, pp 203–204; Eden & Bear 2010, p 102; Teufel et al. 2009, pp 61–62). Taken-for-grantedness can be triggered through the compliance with international established modes or standards. The standard of the MSC for example is designed to comply with international codes of conduct “to enhance the legitimacy” (Gulbrandsen 2008, p 570). Similarly, the RTFO meta-standard is explicitly intended to be capable of being met via existing certification processes, though these need supplementing under RED.

5.3 Inclusivity

Key to gaining moral as well as pragmatic legitimisation from core actors is the *inclusion* of their interests in decision making processes. Otherwise key actors may use their influence to oppose the scheme rather than enabling its shaping function. Next to ensuring their legitimisation, the inclusion of stakeholders also enables use of their knowledge, structural and financial resources. Certification and labelling schemes have tried to institutionalise inclusive decision making processes through various structures, which usually go further than loose coalitions between different actors directly or indirectly interested in the scheme. For Bostroem and Klintman (2008), many such schemes are best regarded as policy networks, “in which actors orient their strategies and actions towards each other. They have “become a permanent activity which requires resources, administration, and enduring, rule-based participation between parties” which normally requires a formal institutional organization (Boström & Klintman 2008, p 134).

Legitimisation is essential not only by actors that participate in the institutional structures of the scheme, but also the ones that have direct (e.g. companies interested in certification) and *indirect interests* (e.g. values hold by individuals). NGO led schemes for example generally need to include market based arguments to ensure the participation and pragmatic legitimisation of business actors along the supply chain, even if businesses are not formally involved. Likewise, business led schemes, even though they are in theory able to ignore societal demands, will in doing so most likely threaten their moral legitimisation by consumers, NGOs, media, academia or other institutions shaping political consumerism. A corollary is that NGOs tend to avoid offering legitimacy to schemes that they are doubtful of, a tendency that in part explains the exclusion or marginalisation of dissenting voices in biofuel policy.

Of course, inclusive structures introduce many demands and the potential for power struggles. Actors that need to participate in and legitimise an effective certification and labelling scheme almost inevitable have different core interests and often contradictory views (Boström 2006, p 154). One of the key challenges for a certification and labelling scheme is the setting of certification criteria that gain legitimisation by all crucial actors. Business actors usually favour criteria that ensure that products remain marketable, which in turn may require compromises in environmental or social performance and message (Boström & Klintman 2008, p 191). NGOs, whose legitimisation is essential in this context (though a point ignored under UK/EC biofuel policy), usually call for more rigorous standards focusing on environmental or social benefits. To ensure the legitimisation by both business and NGOs, the standard setting body needs to find a compromise between these two poles. Of course that compromise may well not favour all equally and there may well be asymmetrical power relationships, with larger business actors usually having more resources with which to influence certification and labelling processes, compared to small scale producers or NGOs. While this problem has probably not been overly significant in the case of the RTFO, in general it can be mitigated by support schemes such Fair Trade's Producer Support Network (Taylor 2005, p 140).

One way that a network or certification process can be strengthened is via the involvement of powerful actors, with powerful being defined as actors with access to other, influential resources. Thus governmental actors can be crucial. The Fair Trade scheme for example has been supported by a growing state involvement, involving politicians, civil servants, and companies that supply goods to the public sector (Fisher 2009). Hence in Brazil, for example, "Fair Trade is firmly positioned within the official policy arena with substantial producer and network support being provided by State offices [...]. In South Africa, Fair Trade has been tied to official Black Economic Empowerment policies" (Raynolds & Murray, 2007, p 232). In addition, the EU has positioned itself favourably with regard to Fair Trade since 1998, promoting consumer awareness and the implementation of public procurement policies (Wilkinson, 2007, p 234). Local governments in Europe, and recently the USA, have also enrolled in so-called Fair Trade town campaigns. Wales has taken this even further, to become the first "Fair Trade Nation". These campaigns have stimulated demand for Fair Trade products, particularly in terms of public procurement chains (Dendler In progress, a). Fair Trade has also found support among various civic organisations ranging from students unions, over the Youth Hostel Association to the Salvation Army as well as a range social movements and campaigns for trade justice etc (Wilkinson, 2007, p 227). In contrast, the opposite has been the case in some countries for the Marine Stewardship Council (MSC), where a lack of support from governments (mainly in their role as resource owners) and producers in Nordic countries has led to a major regional failure of the scheme. In this case, governments have been concerned about the lack of governmental control over the process and the potential threat to what has been traditionally been an area of governmental authority. The support from and legitimisation by these groups, in addition to NGOs, retailers and processors, has proved much more important than for example the demand from individual consumers (Dendler In progress, b).

In the case of biofuels in the UK, voluntary certification initiatives are not being supported by state procurement of biofuel per se, though the state does of course procure fuel, but by state sanction of constituent schemes of the meta-certification system. This will continue in the UK under the RED and may become an implementation model in other countries. Alternatively, it may be that a more independent model, such as the ISCC (International Sustainability and Carbon Certification) system (ISCC, 2010) will become more widely adopted. Unlike the RTFO meta-system, the ISCC, which has the backing of the German government, does not formally incorporate existing certification schemes (though it has a benchmarking process to allow for the use of these). This may make it politically less complicated for companies to engage with than a meta-certification system, particularly as some of the existing certification schemes (particularly RTRS and RSPO) have low credibility with NGOs

(noted below). Interestingly, the ISCC also deliberately incorporates a graphical 'seal' or logo that is clearly intended for communication purposes, to convey authoritative certification of sustainability (it is not clear if this will also be directed at retail customers).

Other important actors in this context include academia and the news media. In the case of the British MSC, for example, the legitimisation of the scheme by consumers has been supported by a consistent media interest supported by celebrity chefs and other opinion leaders (Howes, 2008, p 97). Yet the MSC has also experienced the negative influence of academia and media. After the publication of two reports evaluating the MSC certification of various fisheries, an article in *The Guardian* newspaper expressed the view that the "Marine Stewardship Council lacks credibility and will collapse unless drastically reformed" (Brown 2004). Similarly a report by the Adam Smith Institute criticising the Fair Trade scheme was picked up in an article in *The Guardian* entitled "Not so fair trade" (Chambers, 12.12.09). Such negative publicity can threaten the legitimisation of a labelling scheme by political consumers. Although we do not extend this paper to evidence media treatment of biofuels here, few would disagree that biofuels have received a very mixed and often adverse press in recent years, to say the least.

In the next section, we summarise our findings on the contestations around UK biofuel policy, as evidenced by the views of UK stakeholders and critical and independent observers, and discuss these findings further in relation to the preceding literature.

6. Stakeholder opinion on UK biofuel policy

It has previously been noted that stakeholders from the global South (although as heterogeneous a group as those of the North) have been little represented in the academic literature on biofuel policy development (Tomei and Upham, 2009). In fact as of early 2010, there remains little on biofuel stakeholder opinion per se, outside of the grey literature. One of the few instances is (van Dam et al., 2008), which includes a summary of selected NGO opinion on and involvement in biomass certification, based on documentary evidence. However, the political and policy situation around biofuels continues to develop rapidly: UK environment and development NGO opinion on biofuels, as of 2009-10, is much more strongly doubtful of the extent to which UK and EC biofuel policy can deliver environmental (let alone social) protection than represented only a couple of years earlier in van Dam et al (2008).

Here we firstly refer to the positions evident in the publicly available stakeholder responses to the sustainability aspects of the RTFO, in order to identify areas of commonality and difference. Secondly, we consider interview material obtained from largely non-commercial stakeholders, focussing on detailed perceptions of the RTFO, particularly its sustainability-related components, and views of the process by which RTFO policy was developed. The interviews focused on largely non-commercial actors to meet the objective of evidencing the marginalisation of dissenting opinion from the policy process. The documentary sources used are: responses to the UK Department for Transport (DfT) consultation on the design of the RTFO (DfT, 2007a and 2008a); and 17 publicly available responses to the DfT consultation on RTFO carbon and sustainability reporting requirements (DfT, 2007b and 2008b; Africa Biodiversity Network et al., 2007; Country Land and Business Association, 2007; D1 Oils, 2007; Environment Agency, 2007; FiveBarGate Consultants, 2007; FoE England and Wales, 2007; FoE Scotland, 2007; Food and Drink Federation, 2007; General Motors, 2007; Greenergy, 2007; Lander, 2007; LowCVP, 2007; National Forum on Biomethane as a Road Transport Fuel, 2007; NFU, 2007; Natural England, 2007; Renewable Energy Association, 2007). These sources were those available on the internet or on their host organisation websites in mid-2008. They enabled us to document the concerns and issues raised and these are summarised below. The eleven structured telephone interviews with non-commercial stakeholders UK and EU

known to have positions on the RTFO or biofuel policy, and one telephone interview with a commercial stakeholder for comparison, were also undertaken in late 2009. Further detail is available as Upham and Tomei (2010).

Inspection of the responses to the RTFO consultations reveals diverse positions on biofuel and bioenergy options and a diversity of discourses used to describe these, but also a common and indeed ubiquitous appeal to the imperative of carbon dioxide or greenhouse gas (GHG) emissions reduction. Expressed concern over impacts on food prices, land theft and working conditions stand out as relatively widely shared. As GHG emissions reduction is taken for granted by stakeholders as an over-arching or framing discourse, what is much more revealing, in terms of characterising the differing priorities of stakeholders, are stakeholder comments relating to the stringency and timing of the introduction of reporting conditions, particularly the ability of suppliers to report 'unknown' regarding land use change, as well as the other concerns and issues that they raise. Avoiding land use change (unless such change is remedial via the use of degraded land, for which suppliers will receive a specific GHG performance bonus of 29g CO₂/MJ under the RED) is critical to realising the potential of bioenergy for emissions reduction.

In the consultations, concerns reported by commercial stakeholders to DfT included that the imposition of reporting standards would favour one agricultural sector over another; that the UK should wait for EU standards; that the minimum GHG saving should be reduced to as low as 10% relative to fossil petroleum (the RTFO as of late 2010 enforces no minimum GHG performance, but the RED will oblige a 35% minimum saving, which conveniently corresponds to some of the weakest, highly traded performers – rape and soy); and that RTFO certificates should be awarded not simply on the basis of supplying certified biofuel, but also on a grandfathered basis (i.e. to existing firms partly in proportion to existing levels of supply). Many of the commercial respondents also judged the RTFO's voluntary approach to assessing land use change as adequate. Most of these positions or concerns are antithetical to those of the NGOs: one might therefore say that, despite the ubiquitous reference to GHG or carbon reduction, the 'discourse coalition' (Hajer, 1995) around carbon emissions reduction in relation to the RTFO is only surface deep.

The structured interviews confirmed the substantial positional differences among stakeholders evidenced in the consultation returns. Table 1 summarises responses to questions on: the merits of biofuels for climate change mitigation and energy security; risks in terms of emissions from land use change and food poverty; who the rural beneficiaries are expected to be; degree of confidence in the RTFO carbon and sustainability method; whether transport demand should be reduced in preference to an expansion of biofuel production; and whether land should be prioritised for bioenergy crops for power and heat rather than for transport fuel. Respondents were also asked for their more detailed views on the RTFO carbon and sustainability reporting method and the process by which this was developed. Figure 1 illustrates the lack of confidence in RTFO carbon and sustainability reporting in simple graphical terms.

Regarding the general need for and energy security benefits of a large scale bioenergy and biofuel sector, NGO opinions differed from those of the other respondents, who were a representative of a UK fuel supplier, a Dutch bioenergy standards expert, a Dutch academic expert, a representative of a UK renewable energy consultancy and a representative of the UK Environment Agency. However, there was a higher degree of consensus on the risk posed by a large scale bioenergy/biofuel sector in terms of an increase in GHG emissions via land use change: only the fuel supplier and the Dutch academic disagreed that there was such a risk, and the latter's view was heavily qualified: "major preconditions have to be fulfilled to achieve strong GHG emissions reductions".

Only the fuel supplier thought that the RTFO adequately accounted for the breadth of scientific knowledge on biofuels. For the other interviewees, criticisms included that the RTFO carbon and sustainability reporting method was too simplistic (Dutch academic) and that it failed to account for indirect land use change (e.g. FoE and Biofuelwatch). RSPB criticised the meta-standard approach, arguing that while the RTFO had started with a ‘true definition of sustainability’ – the overall principles of which all stakeholders had initially agreed on – there were no extant certification processes that met this agreed definition of sustainability and as a consequence:

“They [the RFA] realised that nothing fitted the meta-standards, so they cobbled together some poor excuse of something that approaches [it] but isn’t”.

Similar opinions were expressed about the sustainability criteria relating to bioenergy under the EC Renewable Energy Directive (RED), with the failure to include social standards particularly criticised by some respondents.

In terms of perceptions of the policy process, when asked about the guidance given by DfT on the scope and content of the RTFO, the fuel supply representative was highly supportive of the process, arguing that:

“The way in which the RTFO was developed – it took two years of government involvement with stakeholders to get it right – they did an excellent job of consulting to get appropriate regulations”.

The latter was most definitely not a widely shared view among the NGOs.

It is clear that, despite initial and early support by NGOs for biofuels, RTFO carbon and sustainability policy has latterly reflected the interests of DfT and organisations with an interest in motor vehicle-based mobility – interests that biofuels readily mesh with (LowCVP, the Low Carbon Vehicle Partnership, and BP played a close role in its development). With the exception of WWF, critical stakeholders have been initially marginalised and have then disengaged from the policy process. It is in some ways a strange irony, therefore, that the RTFO meta-standard is dependent on the recent trend to non-state actors, both corporations and NGOs, playing a significant role in environmental policy. As of the end of 2009, qualifying environmental standards for the RTFO meta-standard were RSPO, RTRS, SAN/RA Basel, FSC, LEAF, ACCS and QA (Renewable Fuels Agency, 2008b). At least the first five of these have had substantial NGO involvement, though evidence on the effectiveness of such partnerships remains scant (Van Huijstee et al., 2007). Of our interviewees, only the fuel supplier highly rated the effectiveness of the RTRS, RSPO and FSC standards for environmental and social protection (these being key standards within the RTFO meta-certification system). The FSC was seen as the best of the three, with WWF being the most approving of the NGOs. The NGOs and the Dutch academic emphasised the limitations of voluntary, as opposed to mandatory, certification systems and also the problems associated with limited institutional capacity and instances of fraud in producer countries. Many of the NGOs were highly sceptical about the efficacy of certification schemes, emphasising their failure to stop deforestation and land use change in producer countries and their inability to take into account many of the more complex social issues:

“Fundamental problems are that they’re about products made in countries where corruption, poor governance and a total lack of accountability and disregard for habitats and forests is the norm or certainly endemic” (RSPB).

The legitimacy of existing certification schemes was also questioned by the NGOs, who argued that their currency was very low amongst NGO circles. Thus Grupo de Reflexion Rural:

“In the North such schemes are about consumer perceptions, it’s not about genuine environmental concerns for the South. The priority is to sell the commodity and avoid criticism: if a problem exists they can say ‘but we’ve got certification’ so in a way its set up to ease consumer consciences”.

Table 1 Interviewee responses to key biofuel policy contentions

Organisation	A large-scale, international trade in bioenergy feedstocks:					I have confidence in the RTFO carbon and sustainability reporting methodology (current or near future) as a model for managing bioenergy feedstock impacts	Reducing energy demand in developed countries should be a higher priority than further developing an international bioenergy market	Where land is scarce, cultivation of energy crops for power and heat should be prioritised over crops for transport fuel
	Is essential to tackle climate change	Is essential for UK energy security	Risks a net increase in global GHG emissions from land conversion	Poses little risk in terms of food poverty in developing countries	Will primarily benefit well-capitalised land owners			
WWF	2	U	3	4	2	3	1	1
RSPB	5	5	1	5	1	5	1	1
Friends of the Earth	5	5	1	5	1	5	1	2
Biofuelwatch	5	5	1	5	1	5	1	2
Practical Action	3	4	3	5	2	U	2	3
Grupo de Reflexion Rural	5	5	1	5	1	I	1	2

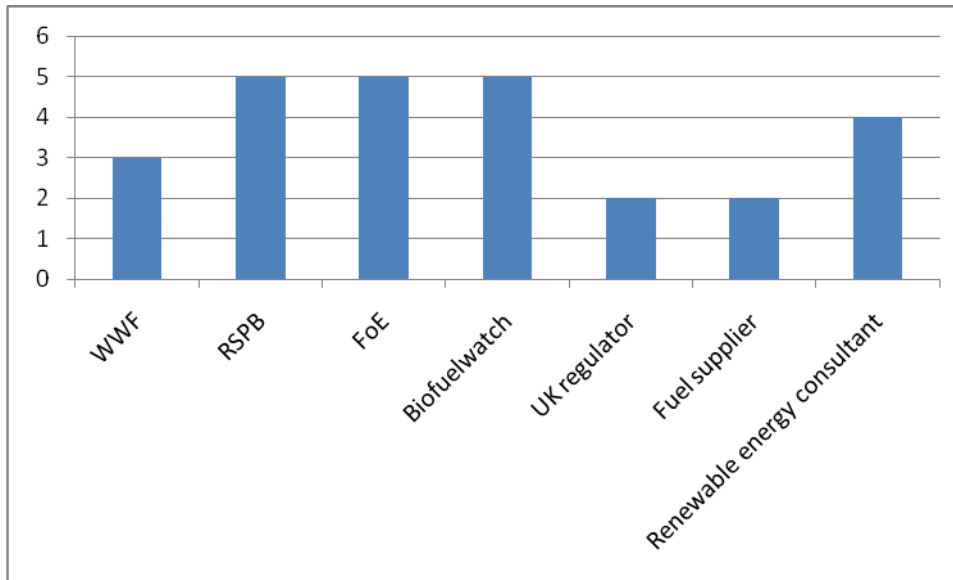
UK regulator	4	5	1	5	2	2	3	U
Fuel supplier	1	3	5	2	3	2	4	5
Renewable energy consultant	2	1	2	3	U	4	1	U
Dutch academic	1	1	4	2	3	U	5	5
Dutch standards expert	1	U	2	1	2	U	2	2

Strongly agree = 1, agree = 2, neither agree nor disagree = 3, disagree = 4, strongly disagree = 5. U = unsure/ don't know

Figure 1 Low NGO confidence in RTFO carbon and sustainability reporting

Note: this is a graphical version of one of the questions in Table 1, with respondents who did not answer omitted. The scale indicates level of agreement with the statement: “I have confidence in the RTFO carbon and sustainability reporting methodology as a model for managing bioenergy feedstock impacts”.

Scale: 5= strongly disagree; 1= strongly agree.



7 Future prospects

Given the above, the degree to which the arguably limited level of public legitimacy of UK biofuel policy can be sustained, without public relations problems, is unclear. Evidence on UK public awareness of biofuel policy is very limited. A YouGov opinion survey of 2,183 UK adults in April 2008, just before the commencement of the RTFO and commissioned by Friends of the Earth, found that 89% of respondents did not know that biofuel would be added to their vehicle fuel from 15th April 2008. Of the 55% of respondents who knew what biofuels were, only 14% thought they were the best way to reduce emissions from road transport and 44% singled out improving public transport as the best option (FoE, 2008). Certainly petrol and diesel retailers have not been keen to communicate with consumers on biofuels. If biofuel supply were more conclusively unproblematic, it would seem somewhat odd for companies not to communicate the benefits to consumers. The situation might in part be accounted for by the requirement for all major suppliers to include biofuel in their supply and hence a limited opportunity for product differentiation. Yet the RFA reports make it clear that there has been, pre-RED, substantial differentiation among biofuels supplied: at the end of year two of the RTFO, only a third of the feedstock of the biofuel supplied met an environmental standard (Renewable Fuels Agency, 2009c). Indeed, only 14% of the feedstock of biofuel supplied in the UK in year two met the RTFO meta-standard (ibid). Moreover some of the biofuel supplied, notably that including made from wastes, out-performs other supply in terms of GHG performance (ibid).

Speculatively, it may be that a low level blend of 5% in UK/EU transport fuel supply could be maintained despite relatively low profile NGO campaigns. It may also be that RSB certification, as the initiative that is perhaps the most inclusive, responsive to NGO and small producer concerns and explicit in acknowledging Northern over-consumption and indirect land use change, may achieve wide and widest legitimacy. On the other hand, large producers may prefer the familiarity of ISCC's non-profit company status (we have not compared the relative stringency of the two schemes). The UK meta-certification approach is flexible and ISCC also allows for compliance via existing constituent schemes, providing equivalence is demonstrated. These systems will all, however, need to deal convincingly with indirect land use change, if they are to withstand future challenges in terms of accumulating scientific evidence. Of course wider societal attitudes to climate change policy will also play a major role, particularly attitudes to risk and precaution.

8 Conclusions

There are and will remain strong political dimensions to transport fuel supply at all levels. Indeed, biofuels add a new dimension to geopolitical tensions, in terms of trade, land acquisition and security of supply, which we have not had space to discuss here. Despite a dominant surface discourse of carbon and GHG emissions reduction, UK stakeholder opinion differs radically on biofuel policy. In consultation on the design of the RTFO carbon and sustainability reporting framework, commercial and transport policy stakeholders have wanted to see biofuel supply driven ahead with RTFO regulation in its initial state of a reporting standard, or even weaker. Their appeal to emissions reduction overlies understandable commercial and economic priorities, in particular that these interests should not be adversely affected by the RTFO carbon and sustainability reporting framework. The environmental and social NGO positions are similarly consistent with their own missions: they are unconvinced that indirect land use change can be avoided, that sustainability certification will deliver environmental protection, or that livelihoods will be improved.

Generalisations are rarely justifiable in the context of bioenergy and biofuels, so varied are the potential feedstocks, agronomies, conversion processes and end uses, and so contingent are likely outcomes on how these are combined and regulated. Nonetheless, we have suggested that the combination of a limited science base, major positional differences among stakeholders and the

complexity of cross-policy domain interactions justify a wider co-production of related regulation and policy. We have further suggested that this view finds support in earlier studies of science in policy, in thinking on stakeholder involvement in complex policy problems and in thinking on the legitimacy of non-state standards. The future for UK and EC biofuel policy is uncertain, but in our view it is still far from a position of having achieved a wide social mandate and will only do so once a higher degree of environmental precaution is reflected in that policy.

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