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Certification for sustainable biofuels

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Abstract

Certification for sustainable biofuels has been developed to ensure that biofuel production methods adhere to social and environmental sustainability standards. As such, requiring biofuels to be certified has become part of policy documents such as the EU Renewable Energy Directive (RED) that aim to promote energy security, reduce emissions and promote rural development. According to the EU RED, in 2020 10% of our transport energy should come from renewable sources, including biofuels. Only certified biofuels may count towards this target. In this paper I examine what biofuel certificates are, what they can do and what their weak points are. I argue that the EU RED makes an important but unjustified assumption in demanding certified biofuels for its target: that if biofuel production is sustainable, then biofuel use is too. Applying the use plan approach from the philosophy of technology to biofuel certification, I show why this assumption is unjustified and why the EU is in fact making ‘improper use’ of biofuel certification. Finally, I discuss ways in which biofuel certification could be used in working towards the EU RED’s goals.

Keywords: agrofuels, bio-energy, EU Renewable Energy Directive, stakeholder participation, use plan approach

Introduction

Biofuels have been hailed by the EU as a potential step towards energy security, reducing greenhouse gas emissions and stimulating rural development (EC, 2009; statement 1). According to the EU’s 2009 Renewable Energy Directive (RED; EC, 2009), in 2020 10% of the EU’s transport fuel and energy consumption should come from renewable sources: Bowyer (2011) anticipates that 92% of this target will be attained by using biofuels.

However, biofuels have been strongly criticised for increasing food insecurity through using food crops for fuel, and arable land for fuel crops; actually contributing to climate change, as direct and indirect land use change for fuel crop cultivation can release large amounts of greenhouse gases into the atmosphere (Gomiero et al., 2010); and increasing rural poverty (Levidow, 2013). The EU RED proposes several strategies to deal with these problems, including increasing efficiency in energy use, developing second-generation biofuels and developing sustainable production criteria for biofuels, laid down in certificates, where only certified liquid biomass may count towards the 10% target.

Much like the Forest Stewardship Council or Fairtrade certificates, biofuel certification is meant to guarantee that fuel crop cultivation and biofuel production adhere to certain sustainability standards, e.g. with regard to labour conditions, protection of the local environment and projected greenhouse gas emissions. Much discussion in the last years has focused on the content of those certificates and whether they should be ‘universal’ or adapted to specific regions (e.g. Guariguata et al., 2011). Less attention, however, has been given to certificate use, and whether it manages to accomplish the EU’s goals: delivering the supposed biofuel benefits of energy security and emission reductions while minimising social and environmental costs and stimulating rural development. In this paper I argue that the EU does not and indeed cannot achieve these goals, given how biofuel certificates are currently used. I argue that this is because of an assumption implicitly present in the EU RED, that if biofuel production is sustainable, then
biofuel use as prescribed in the EU RED is sustainable, but this assumption is currently not justifiable. I show what measures could be taken in order to make this assumption justified by applying the ‘use plan account’ for technical artefacts (Houkes and Vermaas, 2004, 2010) to biofuel certification. Specifically, I argue that capping or taxing consumption or emissions is a necessary part of those measures.

Biofuel certificates

The development of biofuel certification serves two purposes. First, it is a way of identifying and establishing general principles, that can be agreed upon by all stakeholders involved in the development process, which biofuel production has to adhere to in order to be classified as ‘sustainable’. Second, it establishes how these principles should be translated into practically measurable criteria, in order to prescribe biofuel producers what they actually should do in order to produce biofuels sustainably. For example, a principle might describe the general importance of protecting human and labour rights of workers, while its related criteria prescribe specific regulations concerning unionisation, against child labour, etc. Principles and criteria can be established together by one party (e.g. as by the Roundtable on Sustainable Biofuels (RSB) 2010), but they can also be established in different ways by different parties. For example, the Dutch Cramer Criteria (Cramer, 2007) are a set of principles established by a committee, which was headed by a government minister and included experts from both industry and civil society. These principles were translated into criteria, however, by the Netherlands Standardization Institute (as the NTA 8080/81).

Whether certificates actually work and can be considered legitimate depends on the processes by which principles and criteria are arrived at. Some certificates are generally considered to be effective in dealing with direct social and environmental impacts, such as the FSC sustainable forestry certificate (Guariguata et al., 2011). Much of their success, however, depends on the degree of stakeholder involvement. For example, if the principles are not discussed by a comprehensive set of stakeholders, as is often the case with voluntary industry standards such as the RSPO, legitimacy of the certificate is threatened, as different stakeholders have different conceptions of what counts as ‘sustainable’ production (Partzsch, 2011). Similarly, if the principles are formulated by a comprehensive set of stakeholders, but the criteria are not, the resulting criteria may not be implementable ‘in the field’ (this charge is levelled by Romijn et al., 2013 against the NTA 8080/81). Even well-working certificates have inherent weak points, however, that fall into two classes. First, the scope of certificates is usually limited, excluding, for example, considerations of indirect land use change and social and environmental impacts above farm or plantation level (Guariguata et al., 2011). Second, certification as an instrument tends to favour powerful stakeholders in the global biofuel trade. This is partly inherent to certification – companies and plantations have more administrative resources to spend on the certification process than smallholder farmers, even though the latter tend to have less environmental impact (Romijn et al., 2013). Furthermore, in practice the process of drawing up principles and criteria is often dominated by powerful stakeholders in developed countries, sometimes not even involving stakeholders from the global south (Partzsch, 2011).

The sustainable production assumption

In this section I examine another factor that falls outside the scope of biofuel certification, namely how sustainably produced biofuels are used. In particular, I argue that sustainable biofuel production does not entail sustainable biofuel use in the way envisaged by the EU RED. I do so by examining certificate use through the lens of the ‘use plan approach’ for technical artefacts, as developed by Houkes and Vermaas (2004, 2010).
The use plan approach

The use plan approach for technical artefacts (Houkes and Vermaas, 2004, 2010) is a rational reconstruction of the product design process that sets standards for the design of functional technical objects, or technical artefacts. Central to the approach is the idea that product design is not primarily about artefact design, but about use plan design. According to Houkes and Vermaas, a use plan describes a series of actions leading to a goal, where the actions involve the use of one or more technical artefacts. For example, according to this approach designing a jatropha seed press should not start with designing the physical press, but rather with designing a plan for extracting jatropha oil from seeds. This plan, in turn, informs the physical artefact design (e.g. that the artefact needs a funnel to put seeds in, a mechanism to press them, etc.). This is not to say that physical design questions are not important, but rather that they are subservient to the overall use plan: the physical design depends on considerations of what the artefact is to be used for, and how.

Usually a use plan is developed by the designer and then communicated to the user: the user’s manual is one way by which this can be done, but there are others, including labels, symbols and affordances. Communication of the use plan is not only important in that it enables the user to use the artefact for its intended purpose; it also helps transfer responsibility for the consequences of artefact use from designer to user (Pols, 2010). Users may create their own use plan for existing artefacts as well, such as when using a jatropha seed press as a doorstopper. Designers have only limited responsibility for the consequences of such ‘improper use’, however, especially when they warn against doing so in the use plan. This is not to say that improper use can never be successful, just that users have no ground to complain to the designers if it is not, and experiment at their own risk.

Use plans and certificates

Though biofuel certificates are social rather than technical artefacts, there is reason to assume that the use plan approach can help us evaluate their conditions for ‘proper use’. As mentioned, the use plan approach evaluates plan design, according to values of practical rationality, rather than specific technical artefact design. This implies that biofuel certificates can be evaluated with this approach, insofar as they are designed for one or more specific goals, and specify means for reaching these goals.

The goal of biofuel certificates, or expected result of implementing certification criteria, is usually defined as the sustainable production of biofuels or biomass (e.g. Cramer, 2007; RSB, 2010). Applying the concrete criteria is then performing the ‘series of actions’ that should lead to that goal. However, much like the manual of a microwave that tells one not to put whole eggs or metal bakeware in it, several certification systems come with added disclaimers of what would constitute improper use. The RSB Principles and Criteria document, for example, states that ‘...the Principles & Criteria do not attempt to quantify an amount of biofuels which could be sustainably produced, or whether, as a whole, biofuels are sustainable. Biofuels cannot replace all of our fuel consumption and must be accompanied by significant changes in lifestyle and efficiency of use’ (2010: 3). In a similar vein, the Nuffield Council on Bioethics (NCB) proposes six ethical principles for biofuel production and development, but states that we only have a moral duty to produce biofuels if additional considerations are met, including considerations of alternative energy sources, alternative applications of biomass and stakeholder participation (NCB, 2011: 78).

If we compare these ‘instructions for use’ with the way the EU is actually using certification, as described in the EU RED, several discrepancies emerge. Most salient among them is that the EU takes (rising) levels of transport fuel consumption as a given, rather than as a habit to be changed (Levidow, 2013). Though it suggests ‘soft’ incentives to reduce energy consumption, such as transport planning and...
supporting public transport (EC, 2009, statement 28), it is not clear whether these can bring about the ‘significant changes in lifestyle’ that the RSB prescribes. And while the EU acknowledges the importance of increasing efficiency of use, doing so without unambiguously limiting use could lead to a rebound effect where efficiency gains are at least partly offset by increased use (Alcott, 2010). Finally, by setting a quantitative target of 10% renewable transport energy in 2020, the EU sets a goal that is not guaranteed to be achievable by biofuel production according to certificate criteria, as the RSB has noted (cf. Bindraban et al., 2009; Sues, 2011). In terms of the use plan approach, the EU is making improper use of certification as an instrument to achieve a goal, which might not be achievable in that way. Moreover, if transport fuel consumption were to keep growing, possibly even stimulated by the large-scale production of biofuels, increased biofuel production might not even help to bring the target within reach.

From a use plan point of view, what is worse is the EU RED statement that “The main purpose of mandatory national targets is to provide certainty for investors and to encourage continuous development of technologies which generate energy from all types of renewable sources” (EC, 2009, statement 14, author’s italics). This suggests that the goals of the EU RED regarding energy, emissions and rural development are not similar to the purpose of one of its key parts, the 10% target. Indeed, as we have seen, both goals may well conflict, and this might create pressure to lighten certifications’ sustainability requirements.

Can proper use of certification fulfil the EU Renewable Energy Directive goals?

I have argued that, according to the use plan theory, the EU’s reliance on certified biofuels to fulfil its 10% target constitutes improper use of certification. In this section I examine which of the EU RED’s goals of energy security, lowering emissions and rural development proper use could facilitate.

First, as the RSB makes clear, proper use of biofuel certification is intended to yield an unspecified quantity of sustainably produced biofuels. Biofuel production certificates cannot guarantee any contribution to the EU’s energy security as they cannot put limits on the EU’s transport fuel use. Worse, the rebound effect suggests that increasing biofuel production without limiting transport fuel consumption could increase rather than offset transport fuel consumption, leaving us no closer to this goal than before (Alcott, 2010). For the same reason, biofuel certification cannot guarantee an actual reduction in greenhouse gas emissions, even if we disregard indirect emissions, such as those resulting from indirect land use change, and the fact that many biofuel crops have a relatively modest potential for reducing emissions. Certificates cannot guarantee this actual reduction in greenhouse gas emissions even despite the fact that explicit emission criteria are currently part of systems like the RSB and the Cramer Criteria and the EU RED itself (EC, 2009, criterion 2). For example, the EU RED demands that the greenhouse gas emission savings from biofuel use should be at least 35% now, compared to fossil fuel emissions, rising to 60% in 2018. Again, however, biofuel production certificates cannot put limits on EU transport fuel use or total level of transport emissions. Therefore, if the rebound effect were to lead to more fuel consumption, the absolute emissions could rise, even if biofuels emit relatively less than fossil fuels, if emissions are not capped or taxed in some other way. Certificates have more promise to contribute to rural development, as they explicitly concern conditions regarding biofuel production. As mentioned in section two, though, special attention should be given to ways in which certification could be made to work for smallholder farmers and poor stakeholders. Certificates can establish a procedure for sustainable biofuel production, but they do not guarantee that smallholder farmers benefit from them, or can even implement them in practice (cf. Romijn et al., 2013). Also, considering the extreme poverty and food insecurity many smallholder farmers in developing countries face, it could be argued that we should help them meet their basic needs with more tried-and-tested means before we ask them to experiment with biofuel schemes.
Conclusion

Biofuel certification has been used by the EU as a means towards energy security, reduction of greenhouse gas emissions and rural development, while avoiding the social and environmental costs associated with large-scale biofuel developments. In this paper I have used the use plan approach to argue that biofuel certificates can be used for producing biofuels sustainably, but that there is no guarantee that proper certificate use will yield the quantity of biofuels required to meet the EU RED's target. Nor can certificates guarantee that using them to produce sustainable biofuels will ultimately help the EU achieve its goals of energy security and greenhouse gas emissions. Finally, both certificate structure and use practice place restrictions on the ways certificates can be used for rural development.

If biofuel certification cannot guarantee a contribution towards at least two of these three goals, and assuming that abandoning those goals is not an option (though their relative priorities merit discussion), how could we embed biofuel certification in a use plan that does contribute to those goals? Two approaches have been put forward in this paper: combining certification with other measures, and improving the process of establishing certification principles and criteria.

With regard to other measures, fuel consumption or emission caps or taxes have been suggested to be the only way to guarantee achievement of set emission or consumption goals (Alcott, 2010). Combining these measures with biofuel certification could help prevent the rebound effect and thus help the EU towards energy security and emission reductions. These measures would also create a more fair competition of biofuels with other liquid fuels such as fossil fuels, and other renewable energy sources (cf. NCB, 2011, Chapter 6). Furthermore, they would remove the need for separate greenhouse gas emission reduction targets in certification. Finally, policies using biofuel certification should be aware of certification’s ‘weak spots’ and compensate for them, e.g. through the inclusion of indirect land use change factors such as discussed for the EU RED (Levidow, 2013) and considerations of other potential biomass applications.

Improving the certification process would be more useful for achieving the goals of rural development (and poverty alleviation) through sustainable biofuel production. As mentioned in section two, the certification process should then be tailored to better fit business models that favour smallholder farmers, such as cooperatives (as Fairtrade is aimed at) or outgrower schemes. Also, the formulation of principles and criteria should involve stakeholders from both business and civil society from consuming and producing countries. Extra efforts should be made to involve those stakeholders who have urgent and legitimate moral claims, but little power or opportunity to defend their interests, such as smallholder farmers. ‘Experiments’ with the most vulnerable should be avoided. In these ways, use plans could be developed that allow linking the use of biofuel sustainability certification to effectively achieving societally desired goals.

References

Section 1


