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Regulating a global value chain with the European Union's sustainability criteria – experiences from the Swedish liquid transport biofuel sector

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ABSTRACT

Despite promises that they can contribute toward more environmentally beneficial transportation there are many sustainability concerns about liquid transport biofuels. In response to pressure from civil society, the European Union (EU) has introduced sustainability criteria for biofuels. A hybrid regulatory system involving state and non-state actors stipulates that retailers and producers must comply to be eligible for fiscal support such as tax exemptions. Flexibility in the system allows choice between different means of compliance, including a range of voluntary schemes. We present an analysis of views within the Swedish liquid transport biofuel sector in 2012 – a year after the introduction of EU sustainability criteria. Using document analysis, official statistics, and a survey, we use four key structures of global value chains – input–output structure, territorial configuration, institutional framework, and firm-level chain governance structure – to structure an analysis of biofuel value chain coordination. This yields three main findings regarding how the Swedish liquid transport biofuel system operates within, and views, the new regulatory framework. Firstly that it uses a broad portfolio of feedstock mainly from within Europe, seemingly avoiding countries where any supply conditions may be in doubt; second, larger retailers and producers achieve compliance without the need to provide additional social sustainability information; third, that actors exhibit predominantly Eurocentric perspectives on sustainability, express confidence that their supply chains have strong 'sustainability performance' and desire long-term policy stability. We conclude that despite a deep critique of the sustainability of biofuels amongst civil society and academia, EU regulation allows for production systems that reflect a European- and climate change mitigation-centred view on biofuel 'sustainability'.

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1. Introduction

Market-based instruments and hybrid regulatory systems involving both state and non-state actors are increasingly applied to address transnational sustainability issues. These approaches give rise to new forms of environmental authority and political space for myriad actors (cf. [Cashore, 2002](#); [Lemos and Agrawal, 2006](#); [Sikor et al., 2013](#)). The mechanisms included in the EU's sustainability criteria for bioliquids and transport biofuels (EU SC) is a key example. The EU SC applies mandatory criteria to regulate

certain areas of environmental concern in the production of biofuels. However, actors such as fuel retailers, biofuel producers, third-party certification organizations, and local communities are often caught between conflicting interests and power positions. As a result, the transformational promises (and performance) of these criteria towards sustainability cannot be taken for granted (cf. [Mol, 2010](#); [Fortin, 2013](#)). This study adds to this debate by presenting an examination of views held by firms that deliver liquid transport biofuel¹ (LTB) to the Swedish transport energy system. We consider

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¹ Liquid transport biofuels include ethanol, and biodiesel (e.g. FAME, HVO, etc.) and other fuels that are used in combustion engines of vehicles either within low-level gasoline or diesel blends, or high-level versions such as E85 and B100 that are more dependent on more specialized combustion engines.

their views of, and reactions to, the EU SC as important as they are effectively the ‘gate keepers’ for the Swedish LTB production and consumption system. This actor group owns and runs key production units and distribution platforms – their choices, and actions in response to policy interventions are thus crucial to the form and function of the Swedish system.

The EU SC was introduced simultaneously with the Renewable Energy Directive (2009/28/EC) and the Fuel Quality Directive (2009/30/EC). Together these set mandatory renewable energy targets and quotas to be met by all member states. This development is seen as the result of the European Commission (EC) efforts to harmonize renewable energy initiatives of EU member states (cf. Pacini et al., 2013). While such initiatives originally targeted improved energy security and rural development, changes were enacted in response to pressure from civil society regarding a range of biofuel sustainability aspects that became apparent during its development (ibid.). Contentious issues included: doubts regarding the GHG performance of biofuels when incorporating indirect land use change; the food-feed-fibre versus fuel-debate; whether support should be focused on conventional or advanced biofuel options, and disparate views regarding the role of international trade for developing countries (see Londo and Deurwaarder, 2007). As a response, the EC set out to create a ‘sustainability safeguarding scheme’ to mitigate adverse effects, and sought input from the public on its design (EC, 2007). Feedback to the process came predominantly from European actors, and although the EU had direct consultation meetings with representatives from Brazil, Malaysia and Mozambique (these countries being considered as potential exporters), the process has been criticised for insufficiently including the perspectives of countries in the Global South (Di Lucia, 2010).

According to the legal framework, only biofuels complying with the EU SC can be counted towards fulfilment of member state renewable fuel targets and be eligible for fiscal support such as tax exemptions. The regulatory scheme stipulates that economic operators which are eligible for tax exemptions are to comply with legislation. However, a degree of flexibility is granted regarding how they may demonstrate compliance. They are allowed to demonstrate compliance through national regulatory systems, any of seventeen (as of 2014) voluntary schemes, or through specific bilateral agreements (e.g. arrangements made with supplier countries).

Compliance to the EU SC has the potential for strong international implications as the EU relies on imports (of both biofuel, and feedstock) to satisfy its renewable energy targets (OECD and FAO, 2014a,b). Indeed, it is projected to become the world’s largest importer of biofuels with an expected import of 15.9 million m³/year by 2020 (Bowyer, 2010). Furthermore, statistical analysis by Hamelinck et al. (2013) showed that 43% (2.4 Mha) of the land used to produce the feedstock for EU-consumed biofuels in 2010 was outside of the EU territory. As the EU SC conditions need also to be fulfilled for feedstock and fuel produced outside the EU, the EU is partly promoting and regulating production beyond its own territory (Di Lucia, 2010). Despite the potential effect of the EU transport energy system on an increasingly diverse constellation of socio-environmental settings, we perceive that the actual impact of the regulatory system on the decision-making processes and operation of its key economic actors remains relatively unexplored.

This article draws on findings from an on-going research project that explores the broader effects of the EU SC from a Swedish perspective. It situates the development of the Swedish LTB sector in a European and global context. We examine aspects of international trade, and the operation and perceptions of actors complying with regulation, delivering LTB to the Swedish transport energy system. This includes retailers (that buy and distribute

LTB) and producers (that produce and sell LTB). The study involved document analysis of legislation, official statistics and literature in the field, and a survey of Swedish LTB actors. Applying approaches defined within the global value chain (GVC) literature, we view retailers and producers as actors in charge of the coordination of their economic activities, directly involved in the links of exchange and transformation that result in a finished product delivered to a final market (Gereffi et al., 2005). Acknowledging critique within the literature of GVC research (cf. Ponte and Gibbon, 2005; Ponte and Sturgeon, 2014), effort has been focused on gaining an understanding of the operation of these actors within a broader regulatory context – in this case the Swedish transposition of EU’s framework. A closer examination of the decision-making processes and operation of retailers and producers within the complex regulatory system provides a useful platform for discussing how LTB GVCs are coordinated. Here, Sweden serves as a relevant case with feedstock used for 78% of the total delivered amount (m³) of LTB reported between 2011 and 2013 originating outside of its national borders (Swedish Energy Agency, 2014a). Sweden is also a suitable study object as: it has a long history of promoting biofuels (Eklöf et al., 2012); it was among the first to successfully transpose the EU SC (Hamelinck et al., 2013), and as it has a widely disseminated political goal to achieve conditions where its vehicle fleet is independent of fossil fuels by 2030² (Government of Sweden, 2010).

This paper has the following structure. Section two delivers a conceptual frame for the analysis based on the four key structures of global value chains: input–output structure, territorial configuration, institutional framework, and firm-level chain governance structure. Section three then describes, and justifies, methods for data collection, data constructing methods and types of data. Official statistics are then used to delineate the general economic structures within which Swedish LTB value chains operate. Section four then explains how the EU framework is transposed into the Swedish legal context, together with survey findings regarding respondents’ views on sustainability. In section five we provide a global value chain analysis of how LTB chains are coordinated, present survey findings, and then use a chain governance perspective to support a discussion of market operations and decision-making processes among retailers and producers in relation to their respective institutional frameworks.³ In the concluding discussion we address the capacity, or incapacity, of the EU’s regulatory system to address the social sustainability challenges associated with biofuel production and consumption.

2. Conceptual framework

While approaching global supply chains presents methodological challenges (cf. Boons et al., 2012), scholars of GVC have presented heuristic tools for structuring complex global economic activities in a bottom-up and actor-centred manner (Bair, 2009; Boons et al., 2012). Although the term ‘value chain’ refers to chain of activities when firms and labour–workers bring a product from its initial conception to final consumption, the GVC

² The political goal of a vehicle fleet independent of fossil fuels by 2030 is defined as having less than 50% of the final energy consumption for domestic transport comprised of fossil fuels (Government of Sweden, 2010).

³ Here, ‘institutional framework’ refers: EU’s Renewable Energy Directive and associated sustainability criteria for biofuels and bioliquids; the Swedish transposition of EU SC; Voluntary Schemes used by Swedish retailers and producers; the proposed set of amendments directed at incorporating indirect land-use change (ILUC) caused by the expansion of biofuels into EU SC of 17 October 2012 (EC, 2012); a set of (adjacent) policy and market uncertainties – including price fluctuations of fossil fuels and feedstock, and increased requirements on social sustainability.

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