



Contribution of green labels in electricity retail markets to fostering renewable energy



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HIGHLIGHTS

- In Europe, electricity retailers are obliged to disclose the energy source.
- In the Netherlands, most renewable energy is based on imported certificates.
- The certificates system does not result in more renewable energy.
- Restrictions on international trade may improve the effectiveness.

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ABSTRACT

In European countries, retailers are obliged to disclose the energy source and the related environmental impacts of their portfolio over the preceding year. The electricity supplied in the Dutch retail market is presented as renewable energy for 34%, but this relatively high share is for 69% based on certificates (Guarantees of Origin) which are imported from in particular Norway. The certificates are used to sell green electricity to consumers. The premium for green electricity which is actually paid by Dutch consumers is no more than a few percentages of the retail price. The low level of this premium is related to the abundant supply of certificates at low marginal costs from Norway. This also means that the premium for green electricity is too low to give an incentive for investments in new capacity. Hence, the current labelling system for renewable electricity is mainly valuable, besides being an instrument for tracking and tracing of renewable energy, as a marketing instrument for electricity retailers. The effectiveness of Guarantees of Origin as a policy instrument to foster renewable electricity sources is weak. This effectiveness can be raised by implementing restrictions on the international trade or the issuance of new certificates.

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1. Introduction

Because of the liberalization of electricity retail markets, consumers are able to choose their preferred retailer and their preferred type of contract. The retailers as well as the contract types may differ in several aspects, such as the structure and the level of tariffs. Although electricity in itself is a homogeneous product, retailers may also offer electricity contracts which differ in the way the electricity is generated. As a result, consumers in some countries can choose between labels like 'grey electricity', 'green electricity' or 'electricity produced by domestic wind turbines'. The existence of such type of contracts does not only result from the

innovation within electricity retail markets, but it is also related to the objectives of governments to stimulate renewable energy sources. In Europe, the objective is to realise a share of renewable energy of at least 20% in total energy consumption in 2020, besides the ambitions to realise a reduction of 20% in greenhouse gas emissions and an increase of 20% in energy efficiency. Recently, the target for renewable energy has been extended to 27% for 2030 (EC, 2015).

Because of these policy objectives for renewable energy, a number of policy measures have been implemented by the various Member States (CEC, 2008). Examples of such policy measures are feed-in-tariffs and contracts-for-differences. In this first subsidy scheme, producers of renewable energy receive a fixed amount per unit of electricity over the lifetime of the investment covering all costs, while in the second scheme the subsidy is also related to the actual price of electricity. These type of measures are

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implemented on a national basis. A policy measure which refers to all EU countries is the creation of a market for renewable certificates. EU Member States are obliged to issue certificates, called Guarantees of Origin (GO), for the generation of renewable electricity on request. This requirement is laid down in Directive 2001/77/EC which aims to promote electricity production from renewable sources (Van der Linden et al., 2004).¹ A GO serves as a proof that electricity is generated from renewable sources, such as wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogases. Producers of renewable energy receive a certificate for each MWh of electricity produced which they can transfer to retailers or other players in the electricity market. If a retailer acquires these certificates, it is allowed to sell electricity as being generated through a renewable technique. When the GOs are used, they are cancelled. Hence, cancellation of GOs means that a GO certificate is used to sell electricity under the label of green energy. Hence, the electricity in the retail market may be labelled as green. If a GO is not used within 1 year, it expires. The labelling system in the retail market to sell green electricity is thus based on a tracking system of the production of electricity (Lise et al., 2007).

A consequence of the existence of a separate market for certificates is that these certificates can be traded separately from actual electricity flows within the EU. This trade in the certificates is registered in the European Energy Certification System (EECS). Although the certificates are not necessarily linked to quota mechanisms (Van der Linden et al., 2004), Member States are allowed to include imported GOs from inside the EU to meet the national indicative target if the exporting Member State explicitly accepts that it will not count the renewable electricity for its own target.² Because of this option, countries are able to use imports of GOs to reach national targets for renewable energy instead of increase their own electricity production from renewable sources provided that they have an agreement with the GO exporting country that this country will not use this electricity for its target.

The certificates for renewable energy play an essential role in the electricity retail market as it enables retailers to acquire a green image and to explicitly sell green products. Selling green products can be profitable for retailers as several groups of consumers are prepared to pay extra for renewable energy (Yang et al., 2015). Offering new innovative products can also help retailers to retain old customers or to attract new ones (Yang, 2014). Up to now, however, little is known on the effectiveness in environmental terms of using labelling in the electricity retail markets. Hast et al. (2015) conclude that the impact of the green electricity labels in Finland, Germany and the United Kingdom on additional renewable-energy capacity is modest, while they also point at the risk of double counting of the impact on renewable energy. The latter risk is, however, minimized by the auditing policies of the Association of Issuing Bodies which are responsible for the issuing of GOs.³

In this paper, we analyse the environmental effectiveness of the labelling system used in the Dutch electricity retail market. This labelling system has been implemented on two levels: on the level of retailers and on the level of individual products. Both for the labels on retailer level and on product level, certificates for green electricity play a central role.

Based on the Electricity Market Directive (2003/54/EC) of 26 June 2003, retailers are obliged to disclose the energy source (i.e.

the electricity fuel mix) and the related environmental impacts (CO₂ emissions and nuclear waste) of their portfolio over the preceding year. This regulation aims to provide consumers the ability to make informed decisions regarding their choice of retailers. From our analysis, it appears that the electricity supplied in the Dutch retail market which is labelled as renewable energy has a market share of 34%, but this relatively high share is for 69% based on GOs which are imported from in particular Norway. In addition, labels are used to define the characteristics of specific products supplied by retailers. These labels are in particular used to sell green electricity to consumers. From our analysis, it appears that the premium for green electricity which is actually paid by Dutch consumers amounts to a few percentages of the retail price. Hence, in the current design GOs appear to be more valuable as a marketing instrument, next to other instruments like offsetting carbon from electricity consumption, for electricity retailers than as policy instrument to increase the capacity of RES.

The structure of this paper is as follows. In Section 2, we first describe the European market for GOs. Afterwards, we discuss the method of determining the labels for retailers in the Dutch market as well as the method and data of determining the premium which is paid for renewable energy on product level. The results are presented in Section 3 and discussed in Section 4. In Section 5, we present the conclusions and policy implications.

2. Method and data

2.1. The market for Guarantees of Origin

The market for GOs has grown strongly over the past years. In 2014, it covers 362.5 TWh of electricity, which is about 10% of total EU consumption of electricity in that year (AIB, 2015). The Netherlands is a net importer of GOs: the net import is twice as large as domestic production of green electricity. Even Germany, which is the major producer of renewable energy in Europe, is a net importer of GOs. Norway is the largest net exporting country of GOs with a net export of 89.2 TWh (see Table 1). The other net

Table 1
Transactions of GOs per country in 2014 (in TWh).
Source: AIB, 2015.

Country	Issue	Export	Import	Net import	Expire	Cancel
Austria	11.9	14.6	18.9	4.3	–	15.7
Belgium	6.8	15.9	28.4	12.5	2.0	14.9
Croatia	–	–	–	–	–	–
Cyprus	–	–	–	–	–	–
Czech Republic	0.8	–	0.0	0.0	0.2	0.8
Denmark	16.5	7.2	2.4	–4.8	1.0	8.3
Estonia	0.2	–	–	–	0.0	0.1
Finland	20.9	25.8	16.6	–9.2	7.7	25.4
France	20.2	15.0	2.7	–12.2	0.9	7.9
Germany	18.4	4.8	67.6	62.8	4.1	80.5
Iceland	10.0	10.1	0.1	–10.0	0.0	0.1
Ireland	–	–	–	–	–	–
Italy	27.4	2.1	6.4	4.3	1.6	31.6
Luxembourg	0.0	0.2	3.5	3.3	0.3	3.3
Netherlands	11.6	7.9	32.5	24.5	1.0	37.9
Norway	130.5	116.9	27.7	–89.2	1.9	29.9
Portugal	0.2	–	0.2	0.2	–	0.2
Slovenia	–	–	–	–	–	–
Spain	0.8	0.2	0.0	–0.2	–	–
Sweden	22.6	26.9	26.9	0.0	0.4	20.9
Switzerland	63.4	7.2	11.8	4.6	50.4	54.3
UK	–	–	–	–	–	–
<i>Total</i>	<i>362.5</i>	<i>254.8</i>	<i>245.6</i>	<i>–9.2</i>	<i>71.6</i>	<i>331.9</i>

Note: Cancellation of a GO occurs when the certificate is realised, i.e. the certificate has been used.

¹ At least one independent body is assigned by each Member State with the task to issue GO within its own jurisdiction. In the Netherlands, CertiQ is responsible for the issuance of GO.

² Communication from the European Commission to the Council and the European Parliament (COM(2004) 366 final, May 2004).

³ See www.aib-net.org.

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