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1 Implementation of Tracking Systems

1.1 Electricity Disclosure

The Energy Industry Act (*Energiewirtschaftsgesetz*, latest version 2014) has implemented electricity disclosure in Germany in § 42. Within this regulation the competent body appointed for disclosure is the German regulator *Bundesnetzagentur* (BNetzA). Besides implementing the requirements from the Directive 2009/72/EC, the law also regulates several details of how disclosure shall be implemented. As of disclosure year 2013, the use of GO is required for disclosure of unsupported RES-E (unless contained in the residual mix). With respect to other fuels, the law does not clarify the role and eligibility of GO and other tracking mechanisms in detail. The law specifies six fuel categories to be displayed (nuclear, coal, methane gas, other fossil, RES-E supported according to the German Renewable Energy Sources Act, other RES-E). In case the origin of energy is unknown, a “reasonably” corrected ENTSO-E mix has to be used. In practice, only those RES-E volumes are included in the ENTSO-E mix of a disclosure year X which have expired in the period between 01.07.X and 30.06.X+1. For the initial year 2013 this applies to all GOs which have expired in the period between 01.01.2014 and 31.07.2014. For 2014 this applies to all GOs which have expired in the period between 01.08.2014 and 30.06.2015. The following elements go beyond the requirements of the Directive:

- Information on the environmental indicators CO₂ emissions and radioactive waste must be disclosed with the fuel mix (a reference to e.g. a company website is not sufficient);
- National average values for the fuel mix and the environmental indicators must be given in addition to the supplier company mix;
- If a supplier differentiates products in terms of the origin of the electricity, then he must disclose the abovementioned information for the product, for the “company residual” (the supplier company mix minus the product) and for the supplier company mix;
- For disclosure of unsupported RES-E, GOs have to be used in the GO registry of the German Competent Body for RES GO (Federal Environment Agency – *Umweltbundesamt*)¹.

Details of how disclosure should be implemented are only given in non-binding guidelines, which have been issued by the electricity branch organisation BDEW (latest version 2014).

1.1.1 Disclosure Figures

No official disclosure figures are calculated and provided for Germany. However, BDEW has published figures for a German reference mix (see Table 1) and a “corrected” ENTSO-E mix (all RES-E has been deducted, see Table 2) for 2013 production in coordination with the German regulator *Bundesnetzagentur*, which is the Competent Body for electricity disclosure, and with *Umweltbundesamt* (UBA), which is the Competent Body for GOs.

¹ This regulation does not apply for RES-E supported according to the German Renewable Energy Law, and for RES-E as share of the corrected ENTSO-E mix



Table 1: German Reference Fuel Mix information for use in electricity disclosure for 2013 as published by BDEW (BDEW 2014: Datenerhebung 2013 – Bundesmix 2013 (Stand 29.08.2014))

Fuel	Share [%]	CO ₂ Emissions [g/kWh]	Radioactive Waste [g/kWh]	Net Generation [TWh]
Nuclear	16,6			92,1
Coal	46,4			256,8
Methane Gas	8,1			44,6
Other Fossil	3,0			16,9
RES-E (Total), thereof:	(25,8)			(143,2)
RES-E supported according to the Renewable Energy Sources Act*	21,9			121,6
Other RES-E	4,0			22,0
Total Mix Germany	100	511	0,0004	554,0

*including mine gas

Table 2: Corrected ENTSO-E Fuel Mix information for Germany for use in electricity disclosure for unknown shares for 2013 as published by BDEW (BDEW 2014: Datenbestimmung 2013 für den ENTSO-E-Energieträgermix für Deutschland gemäß § 42 Abs. 4 EnWG (Stand 12. August 2014))

Fuel	Share [%]	CO ₂ Emissions [g/kWh]	Radioactive Waste [g/kWh]	Net Generation [TWh]
Nuclear	21,40	---	0,0027	92,1
Coal	58,55	---	---	252,0
Methane Gas	13,68	---	---	58,9
Other Fossil	5,86	---	---	25,2
RES-E documented by GO or supported according to the Renewable Energy Sources Act	---	---	---	---
Other RES-E*	0,51	---	---	2,2
Total Mix Germany	100	680	0,0006	430,4

* according to § 42 (5) Nr. 3 EnWG

1.1.2 Environmental Information

In Germany, information on CO₂ emissions and radioactive waste has to be provided with electricity disclosure. For information on average emissions for the Total Mix Germany, see Table 1 above.

1.1.3 Suppliers Fuel-Mix Calculations

For disclosure of RES-E (besides the RES-E shares as supported according to the German Renewable Energy Sources Act, and RES-E as possible element of the Residual Mix), RES-GOs have to be used by suppliers. The RES-GOs have to be cancelled in the GO registry of German Federal Environment Agency (Umweltbundesamt – UBA), which is competent body for RES-GOs. Further detailed specifications on electricity disclosure are laid out in the voluntary disclosure guidelines provided by the

energy branch association BDEW, which implement an iterative ex-post allocation mechanism as the default tracking option for other fuels besides RES. This mechanism reflects the net balances of bilateral trading of electricity between all market participants and as it is ex-post, it allows using electricity trades as the method of allocation of attributes while not interfering with the trading process itself. The procedure is performed in three iterations. It requires the cooperation of market participants, which need to enter data into a joint online spreadsheet which is provided by BDEW. This default tracking option allows minimising the volume of energy with unknown origin. While use of GO is mandatory for RES-E products, the BDEW guidelines ask that explicit tracking for other fuel types should be linked to electricity supply contracts (i.e. contract based tracking). There are no specific requirements about these explicit mechanisms for prevention of double counting (e.g. like provision of respective information to a central authority). For all iteration steps, the BDEW guidelines require to cover volumes of unknown origin by a corrected ENTSO-E mix as published by BDEW (see Table 2).

1.1.4 Recognition of GOs

The Competent Body UBA refers to the general GO recognition criteria as elaborated by the CA-RES initiative. UBA has furthermore commissioned the execution of a research project for general assessment of the GO and disclosure systems of potential exporting domains. Summaries of the findings of the project team are published on the UBA website.² Still, UBA stresses that recognition decisions are in principle taken with respect to individual GOs.

Since the start of operation of the GO registry at UBA beginning of 2013, all RES-GO which had been transferred via the AIB Hub to UBA's GO registry and which had not exceeded the maximum lifetime as defined by German expiry regulation have been actually imported and thus been recognised. If a rejection would occur, this in practice would be handled as a block of import of the respective GO.

1.2 Guarantees of Origin for Electricity from Renewable Energy Sources and High-Efficient Cogeneration

1.2.1 RES-GO System

Regulations for RES-GO in Germany are laid out in the German Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz*, EEG) and the Energy Industry Act (*Energiewirtschaftsgesetz* § 42, EnWG). The revision of the law in 2012 has legally implemented the respective requirements of the Renewables Directive 2009/28/EC, together with secondary regulations (GO Ordinance - HkNV, GO Implementing Ordinance – HkNDV, GO Fee Ordinance – HkNGebV and Terms of use). The Federal Environment Agency (Umweltbundesamt – UBA) has been appointed as competent body. The GO registry went live in January 2013.

With the new GO registry at UBA, RES-GOs are issued on a monthly basis for net production, and only for volumes which do not benefit from public support (usually being a market premium). The UBA GO registry provides for electronic transfer and cancellation, and RES-GOs expire 12 months after the end of the production period. Optionally, the registry can indicate whether a GO has been transferred linked with a physical contract from the RES-E producer if independent auditors verify this.³ It is also worth mentioning that the use of GOs is limited to electricity disclosure in the sense of the Internal Energy Market Directive (i.e., it is not possible for an end consumer to cancel GO independently from his electricity supplier). Furthermore, cancellation has to take place in the own account of each single supplier, but not on a third account by a service provider. International transfers are generally subject to the availability of an electronic interface to the other registry, which currently is only implemented with the AIB Hub.

² See <http://www.umweltbundesamt.de/en/topics/climate-energy/renewable-energies/guarantees-of-origin-for-renewable-energy-sources>

³ As such information is not part of the data transfer protocol as defined by AIB, such information can only be provided in the national system, meaning that this functionality only applies for German GOs which remain in the German domain until cancellation.

The registration details of some production devices have to be approved by environmental auditors, which are qualified for electricity production under the EMAS scheme. Further quality control measures include the following:

- Registration has to be renewed every five years.
- For pure biomass combustion plants, environmental verifiers have to confirm consistency of issued GOs and fuel documentations once a year; for multi-fuel plants, the environmental verifier has to audit BEFORE GOs are issued.
- Users are legally obliged to inform UBA about every change of data, otherwise they are sanctioned with an administrative fine.

UBA is connected to the AIB Hub as a non-member to AIB. The German RES-GO system has been implemented in line with the EECS Rules.

GOs are only issued on a voluntary basis for RES-E, but not mandatory, and not for other fuels than RES-E.

1.2.2 CHP-GO System

CHP-GO are implemented in Germany by the CHP law (latest version 2013). Competent Body for CHP-GO is the Federal Office of Economics and Export Control (*Bundesamt für Wirtschaft und Ausfuhrkontrolle* – BAFA). Small volumes of CHP-GO have been issued in the meantime, but there is no possibility for electronic transfer, and the potential use of CHP-GO remains unclear. According to the BAFA, the system for CHP-GO has no practical relevance in Germany.

However, issuing of RES-E GO is not allowed if CHP GO would have been issued for the same RES-E volumes.

1.2.3 GO Statistics

RES-GO statistics for 2014 are as follows:

- Issuing: 18,4 TWh
- Import: 67,4 TWh
- Export: 4,8 TWh
- Cancellation: 80,4 TWh
- Expire: 4,1 TWh

1.3 RES-E Support Schemes

The German Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz*, EEG) so far offered fixed feed-in tariffs and a market premium for most RES-E production (excluding old hydro and co-firing of biomass). The EEG has undergone major revision in 2014 and now focusses on market premium schemes as standard support system. Plant operators can decide on a monthly basis which support scheme they would like to make use of, or if they want to opt out of the support scheme and market the RES-E volumes on voluntary green markets. The cost of the support schemes is allocated on a pro-rata basis to all consumers (with exceptions for many industrial and commercial consumers). Accordingly, the supported volumes in terms of RES attributes are allocated on a pro-rata basis to the electricity disclosure for these consumers, and no GO can be issued for such volumes in order not to enhance double marketing.

2 Proposals for Improvement of the Tracking System

The following proposals are made in accordance with the RE-DISS Best Practice Recommendations,⁴ which have been agreed by the Participating Domains of the RE-DISS Project.

2.1 Proposals regarding Disclosure

- BPR [5]: Amongst the European countries which are of high relevance for international trade of electricity and GO, Germany applies the latest deadline for disclosure. In order to allow for a coordinated European approach, cancellations of GO relating to production periods in a given year X which take place until 31 March of year X+1 should count for disclosure in year X. Later cancellations should count for disclosure in year X+1. It is generally possible to combine this with the existing requirement, that GO for production in year X has to be used for disclosure of year X.
- BPR [17]; [23]; [24]; [29], [32]: Besides GO, only Reliable Tracking Systems and the Residual Mix should be available for usage for disclosure. No other tracking mechanisms should be accepted. Reliable Tracking Systems (RTS) should be defined where appropriate based on criteria of added value, reliability and transparency. For Germany, this particularly aims at assuring transparency of volumes of attributes which are tracked by the ex-post mechanism, and at exclusion or clear regulation of CBT.
- BPR [30]: More specifically, regulations on contract-based tracking shall ensure that
 - a. The rules of the tracking system are transparent and comprehensive and are clearly understood by all participants in the system.
 - b. Double counting of attributes and loss of disclosure information is minimised within the contract based tracking scheme and also in the interaction of the contract based tracking scheme to GO and other RTS (if applicable). As a precondition for this, the contract based tracking scheme should be able to provide comprehensive statistics about the volumes and types of electricity attributes which are tracked through it.
 - c. The relevant information for disclosure purposes should be available in time to meet the timing requirements for calculation of a residual mix according to the RE-DISS Best Practice Recommendations.
- BPR [31]; [38]: In cases that suppliers of electricity intend to use contract based tracking in order to fulfil claims made towards consumers regarding the origin of a certain electricity product (e.g. a green energy product), GO should be used in addition to the contract. For Germany, this recommendation remains relevant for claims on non-RES electricity, and basically requires implementation of a GO system which also covers other fuels than RES (see BPR [11]).
- BPR [35]: Germany should support a coordination of the timing of the calculation of the Residual Mix across Europe:
 - d. By 30 April X+1 all countries should determine their preliminary domestic Residual Mix and whether they have a surplus or deficit of attributes.
 - e. By 15 May X+1, the European Attribute Mix should be determined.
 - f. By 31 May X+1, the final national Residual Mixes should be published.
 - g. As of 1 July X+1 the disclosure figures relating to year X can be published by suppliers.

2.2 Proposals regarding GO

- BPR [11a, b, c]: The GO system should be extended beyond RES & cogeneration to all types of electricity generation. This should include issuing for all electricity production unless an RTS

⁴ Version 2.2, August 2014

applies for that production. Furthermore, it should be considered to make the use of GOs mandatory for all electricity supplied to final consumers. These measures now could be more realistic, after political responsibility for RES GO, CHP GO and disclosure has been assigned to one single ministry, the Federal Ministry for Economic Affairs and Energy.

- BPR [12, 1]: All types of GOs should be handled in one comprehensive registry system per country (this particularly includes RES GO and CHP GO). This now could be more realistic, after political responsibility both for RES GO and CHP GO has been assigned to one single ministry, the Federal Ministry for Economic Affairs and Energy.
- BPR [15b]: For the case of CHP plants which are using RES as the energy source it is recommended that only one GO should be issued per unit of electricity, which at present is the case; but this GO should combine the functionalities of a RES-GO and a cogeneration GO.
- BPR [34]: The deadline for cancelling GO for purposes of disclosure in a given year X should be 31 March of year X+1.

2.3 Proposals regarding Recognition of GO

- BPR [21]: Germany should cooperate with other European countries to establish a register of their decisions taken regarding the acceptance of imported GO, which gives guidance to other competent bodies and also provides transparency for market actors.

2.4 Further proposals regarding Disclosure

- BPR [40]: There should be clear rules for the claims which suppliers of e.g. green power can make towards their consumers. There should be rules how the “additionality” of such products can be measured (the effect which the product has on actually reducing the environmental impact of power generation), and suppliers should be required to provide to consumers the rating of each product based on these rules.
- BPR [41]: Claims made by suppliers and consumers of green or other low-carbon energy relating to carbon emissions or carbon reductions should also be regulated clearly. These regulations should avoid double counting of low-carbon energy in such claims. A decision needs to be taken whether such claims should adequately reflect whether the energy purchased was “additional” or not.
- BPR [42]: In case that suppliers are serving final consumers in several countries rules must be developed and implemented consistently in the countries involved on whether the company disclosure mix of these suppliers should relate to all consumers or only to those in a single country.

2.5 Matrix of disclosure related problems and country-specific proposals

The following proposals refer to the RE-DISS Best Practice Recommendations which apply to Germany, based on the RE-DISS Best Practice Recommendations V2.2.

Problem	Country-specific proposal
Possible double counting in different explicit tracking instruments	BPRs [11a, b, c], [12, 1], [17], [23], [24], [29], [30], [31], [32], [38]
Double counting of attributes in implicit tracking mechanisms	BPRs [5], [11a, b, c], [12, 1], [21], [23], [24], [29], [30], [32]
Double counting within individual supplier's portfolio	BPRs: [40], [41], [42]
Loss of disclosure information	BPRs: [11a, b, c], [15b]
Intransparency for consumers	BPRs: [11a, b, c], [23], [24],

Problem	Country-specific proposal
	[29], [30], [31], [32], [34], [35], [38], [40], [41], [42]
Leakage of attributes and/or arbitrage	BPRs: [5b], [34], [35]
Unintended market barriers	BPRs: [20b]

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