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1 Implementation of Tracking Systems

1.1 Electricity Disclosure

The Energy Act (Energiewirtschaftsgesetz, latest version 2011) has implemented electricity disclosure in Germany. Besides implementing the requirements from the Directive 2009/72/EC, the law also regulates several details of how disclosure shall be implemented. As major revision as compared to former versions, the use of GO is required (after an interim period) for disclosure of RES-E. With respect to other fuels, the law does not clarify the role and eligibility of other tracking mechanisms in detail. The law also specifies six fuel categories to be displayed (Nuclear, coal, methane gas, other fossil, RES-E supported according to the German Feed-In Law, other RES-E). In case the origin of energy is unknown, a “reasonably” corrected ENTSO-E mix has to be used. The law foresees the option of a secondary regulation, which has not been used so far. 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 RES-E, GO have to be used in the GO registry of the German Competent Body for RES GO (Federal Environmental 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 2011).

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 2011 production in coordination with the German regulator Bundesnetzagentur, which is Competent Body for electricity disclosure.

¹ This regulation does not apply for RES-E supported by the German feed-in and premium mechanism, and for RES as share of the corrected ENTSO-E mix

Table 1: German Reference Fuel Mix information for use in electricity disclosure for 2010 as published by BDEW (BDEW 2012: Datenerhebung 2011 – Bundesmix 2011 (Stand 04.10.2012))

Fuel	Share [%]	CO ₂ Emissions [g/kWh]	Radioactive Waste [g/kWh]	Net Generation [TWh]
Nuclear	17,7			102,2
Coal	41,7			240,6
Methane Gas	14,2			82,3
Other Fossil	5,4			30,9
RES-E (Total), thereof:	(21,0)			(121,1)
RES-E supported according to the Renewables Law*	15,8			91,2
Other RES-E	5,2			30,1
Total Mix Germany	100	503	0,0005	577,3

*including mine gas

Table 2: Corrected ENTSO-E Fuel Mix information for use in electricity disclosure for unknown shares for 2011 as published by BDEW (BDEW 2012: Datenbestimmung 2011 für den ENTSO-E-Energieträgermix für Deutschland gemäß §42 EnWG Abs. 4 (Stand 16. August 2012))

Fuel	Share [%]	CO ₂ Emissions [g/kWh]	Radioactive Waste [g/kWh]	Net Generation [TWh]
Nuclear	22,5	---	0,0027	101,5
Coal	54,7	1.032	---	247,4
Methane Gas	17,2	372	---	77,7
Other Fossil	5,6	513	---	
RES-E supported according to the Renewables Law*	---	---	---	---
Other RES-E	---	---	---	---
Total Mix Germany	100	658	0,0006	451,9

*including mine gas

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

The probably major change which has been introduced with the latest revision of the German Energy Act in 2011 has been the mandatory requirement for using GO for disclosure of RES-E (besides the RES-E shares as supported according to the German Renewables Act, and RES-E as element of the Residual Mix). The RES-E GO have to be cancelled in the upcoming GO registry of UBA, which will come into operation probably beginning of 2013. Thus, this regulation will only apply for electricity production as of 2013. Further detailed specifications on electricity disclosure are laid out in the voluntary BDEW guidelines, which implement a complex ex-post contract-based allocation mechanism as the default tracking option. This mechanism reflects the net balances of bilateral trading of electricity between all market participants and as it is ex-post, it allows using contracts as the method of allocation of attributes while not interfering with the trading process. The procedure is somewhat complex and 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. However, the mechanism does not support the active management of a supplier portfolio, because the mixes of energy sellers are only known ex post. While use of GO will be mandatory for RES-E products, the BDEW guidelines allow using a variety of explicit tracking mechanisms for other fuel types, such as bilateral contracts with specified origin of electricity, GO and private quality labels which verify the origin of energy. There are no specific requirements about these explicit mechanisms, and it is not clear how double counting can be prevented. 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**).

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

1.2.1 RE-GO and CHP-GO System

Regulations for RES-E GO in Germany are laid out in the German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG). The latest revision (EEG 2012) has legally implemented the respective requirements of the Renewables Directive 2009/28/EC, together with secondary regulation (GO Ordinance - Herkunftsnaehweis-Verordnung, and GO Executive Ordinance – Herkunftsnaehweis-Durchfuhrungsverordnung). The Federal Environmental Agency (Umweltbundesamt – UBA) has been appointed as Competent Authority. The GO registry is currently still under preparation and is expected to start operation with beginning of 2013, and the possibility for international transfers as of April 2013. Until this new registry comes into operation, the old GO regulations (as defined by the EEG in its status of April 2011) apply, and also the mandatory use of GO for electricity disclosure in Germany will only refer to GO which are issued after the UBA GO registry has come into operation.²

So far, EECS GO had been implemented as a voluntary system with Öko-Institut as EECS Issuing Body, while formally auditors, which are qualified for electricity production under the EMAS scheme, had to act as Competent Body in the legal sense. This group of qualified auditors comprises some 50 actors in Germany. It has to be stated that all these auditors also had the legal competence to issue GO outside EECS, and that the existence of several Issuing Bodies without a joint registry system or other effective safeguards had opened up a significant danger of multiple counting. At least for EECS, this has been restricted by comprehensive contractual obligations by the EECS users.

With the new central GO registry at UBA, RES GO will be issued on a monthly basis for net production, and only for volumes which do not benefit from public support (being either a feed-in tariff or a market premium). Like the current EECS registry, the UBA GO registry will allow for electronic transfer and cancellation, and RES GO will 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 this is verified by independent auditors. It is also worth mentioning that the use of GO is limited to electricity disclosure in the sense of the IEM Directive (i.e., it is not possible for an end

² This means in practice that this regulation will only be fully applied by 1st November 2014, when all German suppliers have to publish their electricity disclosure for 2013.

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, and currently UBA is considering connecting their registry to the AIB Hub as a non-member. Criteria for recognition of foreign GO according to Art. 15 (9) of the Renewables Directive are currently under development.

The registration details of production devices have to be performed by environmental auditors, which are qualified for electricity production under the EMAS scheme.

CHP GO are implemented in Germany by the CHP law (latest version came into force 1 January 2009). 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.

1.2.2 GO Statistics

Public GO statistics are only available for EECS GO. Due to the exclusion of all RES-E which has benefited from public support and the common practice to use bilateral contracts as explicit tracking instrument, issuing volumes have been marginal, while large volumes of RES GO have been imported for voluntary green electricity markets, as the following figures for 2011 show:

- Issuing: 0,0 TWh
- Import: 37,5 TWh
- Export: 2,2 TWh
- Cancellation: 29,8 TWh

1.3 RES-E Relevant Support Schemes

The German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG) offers fixed feed-in tariffs and a market premium for most RES-E production (excluding old hydro and co-firing of biomass). Plant operators can decide on a monthly basis which support scheme they would like to take 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,³ which have been agreed by the Participating Domains of the RE-DISS Project.

2.1 Proposals regarding general regulation on tracking systems

2.2 Proposals regarding Disclosure

1. Currently, calculation of the Residual Mix is not clearly regulated. As one element of further regulations, GO which have reached their maximum lifetime and expire should be collected into the Residual Mix (BPR [3])
2. 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 [5]).

³ Version 2.0 (draft), 7 September 2012

3. 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 [17]; [23]; [24]; [32])
4. 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 [30])

5. Green power quality labels should use GO as the unique tracking mechanism. (BPR[18])
6. The calculation of the Residual Mix should follow the methodology developed in the RE DISS project. As part of this methodology, competent bodies should ensure that double counting between GO they have issued, other Reliable Tracking Systems in use in their country and the Residual Mix is excluded. (BPR [26])
7. Competent bodies from all countries in Europe should cooperate in order to adjust their Residual Mixes in reflection of cross border transfers of physical energy, GO and RTS. For this purpose, competent bodies should use data provided by RE-DISS. They should also support the collection of input data for the related calculations by the RE-DISS project team. (BPR [27])
8. 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 (BPR [31]; [38]).
9. Germany should support a coordination of the timing of the calculation of the Residual Mix across Europe:
 - a. By 30 April X+1 all countries should determine their preliminary domestic Residual Mix and whether they have a surplus or deficit of attributes.
 - b. By 15 May X+1, the European Attribute Mix should be determined.
 - c. By 31 May X+1, the final national Residual Mixes should be published.
 - d. As of 1 July X+1 the disclosure figures relating to year X can be published by suppliers.

(BPR [35])

10. 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 [40])
11. 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 [41])

12. 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. (BPR [42])

2.3 Proposals regarding GO

13. The implementation of GO in all countries in Europe should be based on the European Energy Certificate System (EECS) operated by the Association of Issuing Bodies (AIB). In case that the German GO system remains outside of EECS, then EECS should at least be used for transfers between registries. (BPR [7]).
14. Taking into account that not all European countries are members of EECS, appropriate connections between the EECS system and non-EECS members as well as in between different non-EECS members will need to be established. These include inter alia procedures for assessing the reliability and accuracy of the GO issued in a certain country and interfaces for the electronic transfer of GO. The AIB is developing procedures for allowing non-members of EECS to connect their GO registries to the EECS Hub. This option should be used by Germany, as this has decided not to become members of EECS. (BPR [8])
15. The GO system should be extended beyond RES & cogeneration to all types of electricity generation. (BPR [11])
16. All types of GO should be handled in one comprehensive registry system per country (this particularly includes RES GO and CHP GO). (BPR [12])
17. It has to be assured that there should be no issuing of more than one GO for the same unit of electricity. This particularly applies to CHP plants which are using RES as the energy source: Only one GO should be issued per unit of electricity, which should combine the functionalities of a RES-GO and a cogeneration GO. (BPR ([14]; [15])
18. Any rejection of GO should only relate to the actual use of cancelled GO for disclosure purposes in the respective country and should not restrict the transfers of GO between the registries of different countries. This means that the decision about the recognition of a GO should not hinder its import into a specific country. (BPR [20])
19. Within the rules set by the respective Directives, UBA should consider their criteria for the acceptance of imported GO for purposes of disclosure.
 - a. These criteria should address imports at least from all EU member states, other members of the European Economic Area (EEA) and Switzerland. The parties to the Energy Community Treaty should be considered as well, as soon as GO imports from these countries become relevant.
 - b. The criteria should specify the electronic interfaces, specifying data format and contents of GO to be imported, which the respective country accepts for imports of GO (such as the EECS Hub and any other interfaces accepted).
 - c. Conditions for the recognition of GO from other countries should be that they were issued based on Art. 15 of Directive 2009/28/EC or compatible national legislation, and that they meet the explicit requirements set in Art. 15, e.g. regarding the information content of the GO.
 - d. The recognition of GO from other countries should be rejected in case that these countries have not implemented an electricity disclosure system.
 - e. The recognition of GO from other countries should be rejected in case that the county which has issued the GO or the country which is exporting the GO have not implemented adequate measures which effectively avoid double counting of the attributes represented by the GO. Such adequate measures should ensure the exclusivity of the GO for representing the attributes of the underlying electricity generation, implement clear rules for disclosure, establish a proper Residual Mix (see chapter 5) or equivalent measures, and ensure their actual use. Furthermore, the adequate measures should ensure that attributes of exported GO are subtracted from the Residual Mix of the exporting country and cannot be used for disclosure at any time in the issuing or the exporting country by explicit mechanisms, unless the GO is re-imported and cancelled there.

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. (BPR [21])

20. The deadline for cancelling GO for purposes of disclosure in a given year X should be 31 March of year X+1 (BPR [34]).

2.4 Matrix of disclosure related problems and country-specific proposals

Problem	Country-specific proposal
Possible double counting in different explicit tracking instruments	3, 5, 6, 7, 8, 15, 16, 17
Double counting of attributes in explicit and implicit tracking mechanisms	2, 3, 4, 5, 6, 7, 8, 9, 15, 20
Double counting within individual supplier's portfolio	12
Loss of disclosure information	1, 7
Intransparency for consumers	5, 10, 11
Leakage of attributes and/or arbitrage	1, 2, 3, 7, 9, 19
Unintended market barriers	13, 14, 18, 19