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1 Implementation of Tracking Systems

1.1 Electricity Disclosure

Electricity disclosure is legally implemented in Luxembourg by the electricity law from 2007 and the grand-ducal regulation on electricity disclosure from 2010¹. Detailed regulations have been published by the national regulator *Institut Luxembourgeois de Régulation* (ILR), which is the Competent Body both for disclosure and for GO, in September 2010².

The disclosure information comprises shares of the following fuels:

- Renewable Energy Sources
 - Wind
 - Hydro
 - Solar
 - Biomass
 - Other Renewable Energy Sources
- Fossil
 - Lignite
 - Hard Coal
 - Natural Gas
 - High-efficient CHP
 - Other Fossil
- Nuclear
- Non Identifiable

As explicit tracking instruments, not only cancelled official GO can be used, but also national generation contracts or other certificates which are established by independent organisations or a competent authority. Therefore, no statistics are available on the total use of explicit tracking. Furthermore, ILR is auctioning the disclosure attributes of supported generation, which then can be explicitly disclosed by the successfully bidding suppliers.

As implicit tracking mechanism, ILR annually publishes a residual mix which is based on ETSO-E production mix from which all RES is deducted.

Suppliers' disclosure statements have to comprise the product mix, the total supplier mix and the national reference mix (i.e., the total of all product mixes delivered to consumers in Luxembourg as shown in Table 1). Reference period is the calendar year, and figures have to be published with invoices as of September 1st of the following year. The supplier's mix does not only have to cover national supply, but also supply by the respective company to end-consumers in other domains. In case no reliable figures for such international supply mix are available, or that no explicit information for the product mix can be provided by the supplier, the residual mix as published by ILR and shown in Table 2 is applied for these volumes.

¹ Loi du 1er août 2007 relative à l'organisation du marché de l'électricité, Art. 49; Règlement grand-ducal du 21 juin 2010 relatif au système d'étiquetage de l'électricité

² Règlement E10/23/ILR du 21 septembre 2010: Concernant la détermination de la composition et de l'impact environnemental de l'électricité fournie.



1.1.1 Disclosure Figures

ILR publishes as specification of the national regulation on disclosure the annual supply mix for the total delivery of electricity by suppliers to end-consumers in Luxembourg³. The national supply mix for 2011, 2012 and 2013 published by ILR is shown in Table 1.

Table 1: National Supply Mix for Luxembourg for 2011, 2012 and 2013 as published by ILR

Energy Source Category	Share in the National Mix		
	2011	2012	2013
Fossil	54.80%	37.00%	32.1%
Hard coal	4.80%	1.70%	5.1%
Lignite	4.20%	1.20%	4.1%
Natural Gas	28.90%	27.00%	12.7%
High-Efficient Cogeneration	3.40%	2.90%	3.3%
Other Fossil	13.50%	4.20%	6.9%
Nuclear	24.4%%	6.30%	9.6%
Renewable	20.20%	50.6%%	57.9%%
Biomass	0.90%	1.10%	1.3%
Wind	2.60%	3.50%	4.2%
Hydro	16.30%	45.8%%	51.1%%
Solar	0.40%	0.20%	1.2%
Other Renewable Energy Sources	0.00%	0.00%	0.1%
Others and Non-Identifiable	0.60%	6.1%	0.4%
Total	100.00%	100.00%	100.00%

As default mix for non-explicitly tracked products, ILR provides a default residual mix based on the European ENTSO-E mix with all RE shares being deducted.

Table 2: Default residual mix for 2011, 2012 and 2013 as published by ILR (European ENTSOE mix minus RES attributes)

Energy Source Category	Share in the National Mix		
	2011	2012	2013
Fossil	64.57%	63.92%	62.07%
Hard coal	13.27%	15.91%	19.06%
Lignite	11.73%	13.37%	14.18%
Natural Gas	18.64%	16.51%	16.69%
High-Efficient Cogeneration	0.00%	0.00%	0.00%
Other Fossil	20.93%	18.13%	12.14%
Nuclear	34.99%	35.60%	37.47%

³ Règlement E12/13/ILR du 6 juillet 2012 portant publication de la composition et de l'impact environnemental du mix national pour l'année 2011 and Règlement E13/04/ILR du 10 juillet 2013 portant publication de la composition et de l'impact environnemental du mix national pour l'année 2012

Energy Source Category	Share in the National Mix		
	2011	2012	2013
Renewable	0.00%	0.00%	0.00%
Biomass	0.00%	0.00%	0.00%
Wind	0.00%	0.00%	0.00%
Hydro	0.00%	0.00%	0.00%
Solar	0.00%	0.00%	0.00%
Other Renewable Energy Sources	0.00%	0.00%	0.00%
Others and Non-Identifiable	0.44%	0.48%	0.46%
Total	100.00%	100.00%	100.00%

1.1.2 Environmental Information

ILR provides default environmental values for CO₂ and nuclear waste for each energy source and technology, based on Probas database from *German Umweltbundesamt*. National average values are published together with national disclosure figures (see paragraph 1.1.1). The figures for 2011, 2012 and 2013 as published by ILR are shown in the table below.

Table 3: CO₂ emissions and nuclear waste figures on the National Energy Mix for 2011, 2012 and 2013 as published by ILR

Environmental parameters	2011	2012	2013
CO ₂ emissions	359.13 gCO ₂ /kWh	231.29 gCO ₂ /kWh	235.60 gCO ₂ /kWh
Nuclear Waste	1.48 mg/kWh	0.51 mg/kWh	0.58 mg/kWh

1.1.3 Suppliers Fuel-Mix Calculations

Suppliers fuel mix is calculated using: cancelled GO, national generation contracts other certificates which are established by independent organisations or a competent authority and the default mix for non-explicitly tracked products. As already referred the default mix for non-explicit tracked products is calculated based on the European ENTSO-E mix with all RE shares being deducted. The default national residual mix is supplied every year by ILR in their website.

In terms of timings used in Luxembourg:

- The deadline for cancellation of GO for purposes of disclosure of a given year X is 15 May of year X+1;
- Disclosure figures of year X must be published on 1st September of year X+1.

1.1.4 Acceptance of GOs

As already referred, Luxembourg has a disclosure system in place which transposes the RES Directive, with an electronic register for the issuance, transfer and cancellation of issued RES-GO. The RES-GO system implemented is an EECS system

Luxembourg imports GO only through EECS, and the imported GOs are treated equally as the national GO for disclosure purpose. Thus Luxembourg does not have in place any criteria for acceptance of foreign GO at national level; this is done based on a case by case check by ILR.

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

1.2.1 RE-GO and CHP-GO System

Legislation that fully implements the GO-specific regulations of the Renewables Directive 2009/28/EC is in place since August 2014. A national RES-GO system is implemented within EECS with the national regulator ILR as officially appointed Competent Body. Regulations on RES-GO are defined in the grand-ducal regulation from 2014 on renewable electricity⁴.

RES-GO are issued electronically within EECS for net production and for a standard volume of 1 MWh, and only on demand by the producer for the specifically requested period. The expiry regulation has been put in place since November 2014. No limitations apply in terms of unbundled use of the GO, which can be used for electricity disclosure only after cancellation in the ILR registry.

The CHP-GO system in Luxembourg was created through the grand-ducal regulation of the 26th September 2012⁵ and this legislation appoint ILR as the competent body responsible for the issuing, transfer and cancellation of CHP-GO in this system. However, no certificates have been issued yet.

No GO for non-RES-E are issued in Luxembourg.

1.2.2 GO statistics

Table 4: National EECS GO Statistics for Luxembourg as published by AIB for 2011, 2012 and 2013

Transaction Type	Volume [MWh]		
	2011	2012	2013
Issue	375	358	12,384
Export	26,830	277,960	274,518
Import	933,702	2,065,924	3,478,411
Cancel	514,365	936,133	2,820,272

1.3 RES-E Support Schemes

Luxembourg applies a feed-in system for support of RES-E production. No GO are issued for plants which operate under the national support system. The attributes of supported electricity are auctioned by ILR to domestic suppliers; residual quantities are allocated on a market share pro-rata basis to suppliers.

2 Proposals for Improvement of the Tracking System

2.1 Proposals regarding general regulation on tracking systems

The following proposals are made in accordance with the RE-DISS Best Practice Recommendations⁶, which have been agreed by the Participating Domains of the RE-DISS Project.

⁴ Règlement grand-ducal du 1^{er} août 2014 relatif à la production d'électricité basée sur les sources d'énergie renouvelables. Art. 3.
<http://www.legilux.public.lu/leg/a/archives/2014/0154/a154.pdf>

⁵ Règlement grand-ducal du 26 décembre 2012 relatif à la production d'électricité basée sur la cogénération à haut rendement, Art.4,
<http://www.legilux.public.lu/leg/a/archives/2012/0300/a300.pdf#page=65>

⁶ Version 2.2, August 2014

2.2 Proposals regarding Disclosure

- BPR [5b]: Deadline for cancellation of GO should be set to the 31st March X+1. At the moment the deadline is set for the 15th May X+1.
- BPR [6]: the same allocation rule as set in BPR [5a] and BPR [5b] should apply for expire GO. The date of expiry thus determines the disclosure period for which information from expired GO will be used.
- BPR [8]: In case 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 should be established by Luxembourg. 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. (at the moment for GOs not transferred through the EECS registry, the reliability and accuracy of the GO is assessed by ILR on a case by case basis.
- BPR [18]: Green power quality labels should use GO as the unique tracking mechanism.
- BPR [19]: Luxembourg should clarify whether and under which conditions the use of GOs by end consumers is allowed. Such GO use should not be based on ex-domain cancellations performed in other countries. If consumers are allowed to use GOs themselves, a correction should be implemented in the disclosure scheme which compensates for any “double disclosure” of energy consumed.
- BPR [23, 24]: (Other) Reliable Tracking Systems (RTS) should be defined where appropriate based on criteria of added value, reliability and transparency. RTS can comprise, where applicable:
 - a. Homogenous disclosure mixes for regulated market segments where no choice of supplier or different products exists,
 - b. Support systems whose interaction with disclosure requires a certain allocation of the attributes of supported generation (e.g. a pro-rata allocation to all consumers in a country where RES electricity is supported by a feed-in tariff),
 - c. Contract based tracking.
- BPR [25]: Luxembourg should provide a Residual Mix (RM) as a default set of data for disclosure of energy volumes for which no attributes are available based on cancelled GO or based on other Reliable Tracking Systems. The use of uncorrected generation statistics (e.g. on national or UCTE, Nordel etc. levels) should be avoided.
- BPR [26a]: The calculation of the Residual Mix should follow the methodology developed in the RE DISS project.
- BPR [27]: For purposes of this cross-border adjustment, ILR should use data provided by RE-DISS.
- BPR [28]: As part of this methodology, ILR 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. ILR should cooperate with competent bodies from all countries in Europe in order to adjust their Residual Mixes in reflection of cross border transfers of physical energy, GO and RTS.
- BPR [34]: The deadline for cancelling GO for purposes of disclosure in a given year X should be 31 March of year X+1.
- BPR [35]: ILR should strive to coordinate the timing of the calculation of the Residual Mix with other competent bodies across Europe according to the following timeline:
 - 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.

2.3 Proposals regarding RE-GO and CHP-GO

- BPR [1a, 1b, 2]: The metered production periods for purposes of issuing GO should not be longer than a calendar month and where possible should not run across the start and end dates of the disclosure periods. If possible, issuing of GO should be done directly after the end of each production period, except for small scale PV which should be issued yearly.
- BPR [3b]: GO which have reached this lifetime should be collected into the Residual Mix.
- BPR [4]: An extension to this lifetime can be granted if a GO could not be issued for more than [six] months after the end of the production period for reasons which were not fully under the control of the plant operator. In this case, the lifetime of the GO might be extended to [six] months after issuing of the GO.
- BPR [11a]: The GO system should be extended beyond RES & cogeneration to all types of electricity generation.
- BPR [11c]: Competent bodies should consider to make the use of GOs mandatory for all electricity supplied to final consumers

2.4 Proposals regarding Acceptance of GO

- BPR [20, 20a, 20b, 21]: 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 Luxembourg. Within the rules set by the respective Directives, Luxembourg 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 Methodology of Residual Mix Calculation) 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. European countries should 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.

2.5 Further proposals regarding Disclosure

- BPR [38]: All electricity products offered by suppliers with claims regarding the origin of the energy (e.g. green or low-carbon power) should be based exclusively on cancelled GO. No other tracking systems should be allowed, with the exception of mechanisms defined by law, e.g. a pro-rata allocation of generation attributes to all consumers related to the national support scheme.
- 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.
- BPR [44]: Suppliers should apply the steps provided by the RE-DISS BPR in order to determine their disclosure figures.

2.6 Matrix of disclosure related problems and country-specific proposals

Problem	Country-specific proposal
Possible double counting in different explicit tracking instruments	BPRs: [8], [11a], [16], [17], [18], [23], [24], [38]
Double counting of attributes in implicit tracking mechanisms	BPRs: [5b], [6], [11a], [23], [24], [25], [26a], [27], [28], [44]
Double counting within individual supplier's portfolio	BPR: [42]
Loss of disclosure information	BPRs: [3b], [11a], [19]
Intransparency for consumers	BPRs: [11a], [11c], [23], [40], [41], [42]
Leakage of attributes and/or arbitrage	BPRs: [1a], [1b], [2], [5b], [6], [19], [28], [34], [35]
Unintended market barriers	BPRs: [4], [8], [20], [20a], [20b], [21]

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