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1 Implementation of Tracking Systems

1.1 Electricity Disclosure

Legislation for disclosure is complete. A Decree-Law (n°29/2006 of 15th February) first transposed the obligation of disclosing the electricity mix on electricity suppliers (art 45). It was republished by Decree-Law n.º 215-A/2012, October 8, of the Ministério da Economia e do Emprego (article 45). The requirement deals with origin of electricity for the year past and the environmental impacts in the form of CO2 emissions. If suppliers buy their electricity from an organised market or a company outside the EU, they can use the statistics of this market or company for the past year.

A further text from ERSE, the "Regulation of commercial relationships" (Commercial Regulations Code from 12 November 2012 (ERSE article 206(4e)) which specifies the legislative obligations in the commercial relations sets additional requirements concerning environmental impacts. Environmental impacts include production of CO2 and radioactive waste. CO2 has to be expressed in g/kWh and radioactive waste in µg/kWh. Sources used for the data have to be disclosed to ERSE. It has to be noted that in a previous version of this text, the production of SO2 and nitrogen oxides were included in the environmental impacts to be disclosed, but were then dropped in the 2012 version.

Then the secondary legislation, Law nº. 51/2008, makes this information mandatory on the bills sent to the consumers from end of 2008 onwards.

The calculation method to obtain the disclosed mix is described in a document, "Electricity Disclosure, Principles and Best Practices", which was published by ERSE in March 2008 and then modified in January 2009 and in December 2011. Sources to be disclosed are the following:

- Hydro,
- Wind power,
- Cogeneration from renewable energy sources,
- Geothermal energy,
- Other Renewables,
- Municipal Solid Waste,
- Cogeneration from fossil fuel,
- Natural Gas,
- Oil,
- Coal,
- Nuclear,
- Diesel (diesel generator sets that operate on diesel or fuel oil.)

The suppliers have to calculate their own supply mix based on the following information: PRE share (FIT electricity), electricity bought on the market (OMIE), electricity bought in bilateral contracts with Spain or in Portugal. For the two first elements, they need information provided by ERSE which is available on its website. On the invoices, suppliers disclose the last calendar year. But on the internet, the calculations have to deal with a 12-month rolling period (supply mix related to the 12 months prior to the invoice with 2 months delay to enable calculation to be done) and so need to be done on a monthly basis.

Suppliers have to calculate product mix, default product mix and total supply mix.

Suppliers should follow the recommendations from ERSE, (Commercial Regulations Code 12 November 2012, ERSE (article 206(4e)). If suppliers do not follow them, they have to justify to ERSE what alternative measures they have taken in order to comply with the disclosure objectives. ERSE produces

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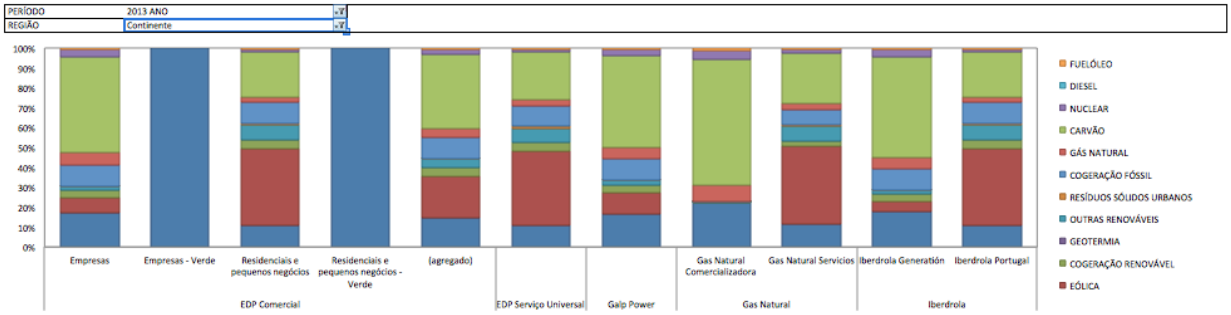
every year a compliance report, which reviews suppliers' practices. The latest issue for disclosure of year 2013 establishes that the majority of consumers have their electricity disclosed according to ERSE's recommendations.

1.1.1 Disclosure Figures

ERSE presents on its website a page the disclosure figures (http://www.erse.pt/pt/desempenhoambiental/rotulagemenergetica/comparacaoentrecomercializadores/Paginas/default.aspx) where the mix of all electricity suppliers can be compared. There is a monthly mix presented for each supplier. Below an example with the values for September 2012.

Table 1: Comparison of suppliers' mixes for 2013



COMERCIALIZADOR	Produto/Ilha	Valores											
		HÍDRICA	EÓLICA	COGERAÇÃO RENOVÁVEL	GEOTERMIA	OUTRAS RENOVÁVEIS	RESÍDUOS SÓLIDOS URBANOS	COGERAÇÃO FÓSSIL	GÁS NATURAL	CARVÃO	NUCLEAR	DIESEL	FUELÓLEO
EDP Comercial	Empresas	30%	6%	4%	0%	1%	0%	12%	8%	29%	9%	0%	0%
	Empresas - Verde	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Residenciais e pequenos negócios	13%	53%	4%	0%	6%	2%	12%	2%	7%	2%	0%	0%
	Residenciais e pequenos negócios - Verde	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	(agregado)	27%	15%	4%	0%	2%	1%	12%	7%	25%	7%	0%	0%
EDP Serviço Universal		14%	50%	4%		5%	2%	12%	2%	8%	2%		0%
Endesa													
Galp Power		30%	11%	2%	0%	2%	0%	6%	9%	31%	8%		0%
Gas Natural	Gas Natural Comercializadora	26%	0%	0%	0%	1%	0%	0%	16%	46%	11%	0%	0%
	Gas Natural Servicios	20%	34%	4%	0%	4%	1%	12%	5%	16%	5%	0%	0%
Iberdrola	Iberdrola Generatión	30%	6%	4%	0%	1%	0%	12%	8%	29%	9%	0%	0%
	Iberdrola Portugal	13%	53%	4%	0%	6%	2%	12%	2%	7%	2%	0%	0%

There is presentation of calendar year values or monthly values. The last available calendar year when this report was drafted was 2014.

1.1.2 Environmental Information

Environmental information consists in production of CO2 and radioactive waste linked to the mix of electricity a supplier sells. CO2 has to be expressed in g/kWh and radioactive waste in µg/kWh. Sources used for the data have to be disclosed to ERSE. It has to be noted that in a previous version of the Code for commercial relations (June 2007) the production of SO2 and nitrogen oxides were included in the environmental impacts to be disclosed, but were then dropped in the 2012 version.

Each supplier will indicate their specific emissions, which depend on the energy sources used. In addition, each supplier must also provide each customer the total CO2 emissions corresponding to the consumption of each invoice.

1.1.3 Suppliers Fuel-Mix Calculations

The calculation method to obtain the disclosed mix is described at length in the guidelines (pp. 5-10) "Recommendation n°2/2011 Electricity Disclosure", which was published by ERSE in January 2012. The calculation should be done on a monthly basis. It is considered that a supplier can obtain electricity from the following sources: feed-in contracts, purchases from MIBEL (joint market with Spain), bilateral contracts from Portugal and bilateral contracts from Spain, energy covered by GO or another certification system.

To calculate its mix, the supplier calculates the contribution in volume of each source in each category of the 4 possible mentioned sourcing's.

Total Portuguese feed-in production is attributed in volume according to the supplier's low voltage consumers' weigh in the Portuguese overall low voltage consumption (this is done for each of hydro, wind, CHP, other categories of feed in production). The volume per technology is then weighted according to the importance of feed-in production attributed to the supplier in volume in the total of its sourcings (markets, bilaterals and feed-in).

For GO and other certification systems (including RECS), the supplier needs to first cancel GO and other certificates. In order to avoid double counting, when GO are coming from abroad, the supplier should be able to prove that they have effectively been exported from the mix of the exporting country.

After the accounting of feed-in production and certification systems, the market mix is applied to the volume of electricity bought on the market. These data are supplied by ERSE on its website. The same is done for bilateral contracts, but in this case, the data is not supplied by ERSE. Bilateral contracts mention a technology or a mix of technologies, which is what should be used by the supplier.

There should be monthly statistics for the purchase on MIBEL that have to be applied to the share that MIBEL holds in the supplier's sourcing. A distinction is made for the purchases when MIBEL operates on a bi-national basis and the moments when it operates as a national market.

Once a year, in April, the supplier has to send, with the invoice to the final consumer, information on the past calendar year. These data have to be sent to ERSE before 31st April. There is no required format, apart from the fact that all sources have to be listed and that their contribution should be presented as a share. On the internet however, they have to provide the mix of the 12 latest months.

1.1.4 Acceptance of GO

ERSE will accept GO from abroad on the condition that they are imported into the Portuguese registry and cancelled in the national registry. In order to avoid double counting, when GO are coming from abroad, the supplier should be able to prove that they have effectively been exported from the mix of the exporting country. They do not have further acceptance criteria.

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

Legislation for guarantees of origin from RES electricity and CHP has been passed.

1.2.1 RES-GO System

Guarantees of origin for RES electricity, according to Directive 2009/28 EC, were introduced by Decree-Law 141/2010 from 31st December 2010. The purpose of the GO is disclosure: to prove the origin of electricity to the final consumer. GO can be traded. All subsidised production is excluded (e.g. all electricity supported by Special Regime, PRE, is excluded). This Decree Law appointed as issuing body LNEG, the National Laboratory of Energy and Geology. This decision was replaced by Decree-Law n.º 39/2013, of 18 March, which appointed REN (Portuguese TSO) as the issuing body. Then this decision was modified by Decree Law 68 A 2015, which transferred EEGO competence to DGEG, the directorate general for energy. DGEG can decide that the duty of EEGO will be exercised by a 3rd party after a call for tender.

No registry was created while LNEG was issuing body and hence no RES-GO were issued. REN did not issue any GO either since the Ministry never approved their Operations Manual for RES GOs.

1.2.2 CHP-GO System

Guarantees of origin for CHP were introduced by Decree-Law 23/2010 from 25th March 2010. REN has been designated as the issuing body. It can issue CHP-GO for electricity from high efficiency cogeneration. It can also issue certificates of origin for electricity produced under efficient cogeneration.

The purpose of CHP-GO is to certify the origin of electricity, to certify primary energy savings. Feed in Tariff is only paid after delivery of the GO or the certificate of origin to the CUR, the last resort supplier, responsible for purchasing feed-in electricity.

The system came into operation after the approval of a Procedures Manual by DGEG – General Department of Energy and Geology, on 30/11/2011. Decreto-Lei n.º 23/2010, 25 march was modified by DL 68 A 2015 and transferred the competence for CHP GOs to DGEG, chapter IV, art 23 in the same way as for CHP GOs REN had stopped issuing GOS for CHP at the time this report was revised.

It is interesting to note that when REN was designated as competent body for both types of GOs, REN was planning to use the same registry for RES-GO as for CHP-GO and to issue only one certificate for biomass fuelled cogeneration. The procedures manual of the CHP-GO[1] issuing body states that a given quantity of energy from a given production plant can only be issued a single GO or a certificate of origin or any other certificate. It is also important to know that REN was issuing body for EECS RECS certificates and that probably RES GOs were going to be issued under the EECS format if REN had been maintained as competent body.

1.2.3 GO Statistics

No RES GOs were issued. No figures were collected for CHP GOs.

1.3 RES-E Relevant Support Schemes

Producers who benefit from a FIT for their electricity production have to transfer the GOs related to this production to DGEG. DGEG can decide to sell these GOs in order to lessen the costs of supported electricity. DGEG has to establish by ordinance how the information contained in these sold GOs will be disclosed to end consumers.

2 Proposals for Improvement of the Tracking System

2.1 Proposals regarding general regulation on tracking systems

The GO system that is legally implemented should become operational.

2.2 Proposals regarding Disclosure

The country should introduce all BPRs dealing with Residual Mix.

- BPR [25]: All countries 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 [26b]: As part of this methodology, 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.
- BPR [27]: For purposes of this cross-border adjustment, 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 [28]: As a default, the Residual Mix should be calculated on a national level. However, in case that electricity markets of several countries are closely integrated (e.g. in the Nordic region), a regional approach to the Residual Mix may be taken. This should only be done after an agreement has been concluded amongst all countries in this region which ensures a coordinated usage of the regional Residual Mix.
- BPR [31]: 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 instead of contract based tracking (see also BPR [36]).

[1] http://www.mercado.ren.pt/PT/Electr/ActServ/GarantiasOrigem/Documentacao/EEGODoc/Manual%20de%20Procedimentos%20EEGO.pdf

- BPR [33]: Electricity disclosure should be based on calendar years.
- BPR [34]: The deadline for cancelling GO for purposes of disclosure in a given year X should be 31 March of year X+1 (see BPR 5b).
- BPR [35]: The timing of the calculation of the Residual Mix should be coordinated across Europe:

  - By 30 April X+1 all countries should determine their preliminary domestic Residual Mix and whether they have a surplus or deficit of attributes.
  - By 15 May X+1, the European Attribute Mix should be determined.
  - By 31 May X+1, the final national Residual Mixes should be published.
  - As of 1 July X+1 the disclosure figures relating to year X can be published by suppliers.
- 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 which is related to a support scheme (see BPR [22]).

2.3 Proposals regarding GO

- BPR [1a]: Metered production periods for issuing GOs should not be longer than a calendar month.
- BPR [1b]: Metered production periods for issuing GOs should not run across the start and end of disclosure periods. Longer intervals up to one year are acceptable for very small plants, for example (new 1b on BPR)
- BPR [2]: If possible, issuing of GOs should be done directly after the end of each production period.
- BPR [3a]: Lifetime of GO should be limited to 12 months after the end of the production period.
- BPR [3b]: GOs that 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 [5a, 5b]: Cancellations of GO relating to production periods in a given year X which take place until a given deadline in year X+1 should count for disclosure in year X. Later cancellations should count for disclosure in year X+1. (In case that disclosure periods differ from the calendar year (see item [31]), the deadline should be defined accordingly.) Deadline is set on 31 March X+1.
- BPR [6]: The same allocation rule should apply for expired GO (see item [3]): The date of expiry thus determines the disclosure period for which information from expired GO will be used.
- BPR [7,8]: 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 national GO systems are established outside of EECS, then EECS should at least be used for transfers between registries. (BPR [7]). Reliable linkages should be established with countries which are not EECS members. (BPR [8]).
- BPR [9a]: Market participants of the respective domain should be provided the possibility to export their GOs and thus participate in the European internal market for electricity.
- BPR [9b]: So-called ex-domain cancellations of GO, where a GO is cancelled in one registry and a proof of cancellation is then transferred to another country in order to be used there for disclosure purposes, should only be used if there is no possibility for a secure electronic transfer and if there is an agreement on such ex-domain cancellations between the

competent bodies involved. Statistical information on all ex-domain cancellations should be made available in order to support Residual Mix calculations.

- BPR [10.1]: GOs should generally be issued only for the net generation of a power plant, i.e. gross generation minus the consumption of all auxiliaries related to the process of power production. For hydro power plants involving pumped storage this means that GOs should be issued only for the net generation which can be attributed to natural inflow into the reservoir.
- BPR [10.2]: Verification mechanisms should be implemented for ongoing control of registered data (e.g. reaudits, random checks, etc…)
- BPR [10.3]: Correct accounting of RES share of combustion plants should be assured by adequate measures such as those recommended by the EECS Rules (cf part N5.3.2).
- BPR [10.4]: The competent body can correct errors in GOs it has issued before they are exported, and this is the only one with this competence.
- BPR [11a]: The GO system should be extended beyond RES & cogeneration to all types of electricity generation, which should all be handled in one registry.
- BPR [11b]: GOs should be issued for all electricity production, unless an RTS applies for that production, e.g. for the disclosure of supported electricity
- BPR [11c]: Competent bodies should consider to make the use of GOs mandatory for all electricity supplied to final consumers.
- BPR [12.1]: All types of GO should be handled in one comprehensive registry system per country. (For an exception from this recommendation see the coexistence of national GO systems and EECS)
- BPR [12.2]: Technical changes to plants need to be registered as soon as is reasonably practicable.
- BPR [13.4]: After expiry, no further cancellation, transfer or export of the given GO should be possible.
- BPR [13.5]: An exported GO should be marked as removed from the exporting registry.
- BPR [13.6]: Processes in the registry should exclude duplication of GOs.
- BPR [13.7]: Registries should be audited on a regular basis.
- BPR [15b]: This GO should combine the functionalities of a RES-GO and a cogeneration GO.
- BPR [17]: Besides GO, only Reliable Tracking Systems (which may include contract based tracking) and the Residual Mix should be available for usage for disclosure. No other tracking mechanisms should be accepted.
- BPR [18]: Green power quality labels should use GO as the unique tracking mechanism.
- BPR [19]: European countries 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...

2.4 Proposals regarding Acceptance of GO

- BPR [20a]: European countries should choose one of the two following options and apply it consistently for all foreign GO :
  - Rejection of GOs only relates to the cancellation of GOs and subsequent use for disclosure purposes in the respective country and should not restrict the transfers of GOs between the registry of the considered country and the registries of their countries. This means that the decision about the recognition of a GO should not hinder its import into the considered country.

- Rejection of GOs implies blocking their import to the national registry

- BPR [20b]: The choice of one or the other option should be transparent for all market parties and clearly communicated.
- BPR [21]: Within the rules set by the respective Directives, Member States should consider to reject the recognition of GO from other countries for disclosure in case that these countries have not implemented adequate measures which avoid double counting, e.g. a proper determination of a Residual Mix for disclosure.

2.5 Further proposals regarding Disclosure

Disclosure could further be improved by the implementation of the following BPRs:

- 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 which is related to a support scheme (see BPR [22]).
- BPR [40]: There should be clear rules for the claims which suppliers of e.g. green power can make to- wards 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 [43]: The following recommendations should be followed with respect to the relation of disclosure to cooperation mechanisms (Art 6 - 11 of Directive 1009/28/EC):

  a) If EU MS or MS or any other country agree on Joint Projects, such agreements should also clarify the allocation of atributes (via GO, RTS or Residual Mix) issued from the respective power plants
  b) b) If EU MS agree on Joint Support Schemes, such agreements should also clarify the allocation of atributes (via GO, RTS or Residual Mix) issued from the power plants supported under these schemes

- BPR [44]: Suppliers should follow the RE-DISS methodology for the calculations of 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: [7a], [7b], [8] [9b], [10.1], [10.2], [10.3], [10.4], [11a], [12.1], [12.2], [13.4], [13.5], [13.6], [13.7], [14a], [14b], [17], [18], [21], [31], [38],
Double counting of attributes in implicit tracking mechanisms	BPRs: [5a], [5b], [6], [9b], [11a], [13.4], [13.5], [13.6], [21], [25], [26a], [26b], [27], [28], [43], [44]
Double counting within individual supplier's portfolio	[42]

Loss of disclosure information	BPRs: [11], [15b], [19]
Intransparency for consumers	BPRs: [11a], [11b], [11c], [12.2], [13.4], [13.5], [13.6], [40], [41], [42],
Leakage of attributes and/or arbitrage	BPRs: [1a], [1b], [2], [3a], [5a], [5b], [6], [9b], [19], [28], [34], [35]
Unintended market barriers	BPRs: [4], [7a], [7b], [8], [9a], [9b], [11b], [11c], [20a], [20b], [21]

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Note: This Country Profile expresses the interpretation of the RE-DISS project team of the qualitative data collected from the respective Competent Bodies of the domain and/or other sources.