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1 Implementation of Tracking Systems

1.1 Electricity Disclosure

1.1.1 Disclosure Figures

Although the disclosure of the energy mix is provisioned by the Supply Code, there is no legal provision yet for the methodology of the calculation of the energy mix. RAE, the regulator, has already consulted the methodology with the Market Operator (LAGIE), and intends to include it in the relevant Codes in the coming months. At the moment, the supplier mix is calculated by LAGIE according to the actual national production of electricity. The intention is that LAGIE calculates a Residual Mix that will be used for electricity for which no GOs will be available.

Currently, the relevant legislation for disclosure is Law 3426/2005, article 17 (Official Government Gazette B'309/25-12-2005) and the Supply Regulation, article 13 (Official Government Gazette B'832/9-4-2013).

Table 1: Compared composition of national mixes as calculated by RE-DISS for 2014

		Production Mix	Final Residual Mix	Total Supplier Mix
Renewables	Total	26,96%	23,08%	24,42%
	Unspecified	0,00%	0,02%	0,02%
	Solar	8,57%	7,12%	6,99%
	Wind	7,25%	6,17%	6,06%
	Hydro&Marine	10,65%	9,34%	10,92%
	Geothermal	0,00%	0,00%	0,00%
	Biomass	0,50%	0,44%	0,43%
Nuclear		0,00%	3,95%	3,88%
Fossil	Total	73,04%	72,97%	71,70%
	Unspecified	0,00%	0,74%	0,73%
	Lignite	54,70%	51,63%	50,73%
	Hard coal	0,00%	2,68%	2,63%
	Gas	18,34%	17,85%	17,54%
	Oil	0,00%	0,07%	0,07%
CO2 emissions (gCO₂/kWh)		760,22	749,65	736,59

Source: RE-DISS 2015

1.1.2 Environmental Information

The disclosure of environmental information is not complete. CO2 information should be disclosed, but not radioactive waste.



1.1.3 Suppliers Fuel-Mix Calculations

The Code for Power Exchange provides for the following :

1. The Electricity Market Operator (LAGIE) calculates annually the residual energy mix of the country and the related CO2 emissions and communicates the results to the electricity suppliers by 10th of June each year. The detailed methodology for the residual energy mix calculation is described in the Manual of Power Exchange Code.
2. By 10th of June each year, the Electricity Market Operator calculates and communicates to each Supplier, the energy mix corresponding to the customers of the Supplier and the related CO2 emissions. The detailed methodology for the calculation of the Supplier energy mix is described in the Manual of Power Exchange Code.
3. By 1st of July each year, the Electricity Market Operator displays in the website information concerning the energy mix for each Supplier and the related CO2 emissions, regarding the preceding year.
4. In order for the Electricity Market Operator to fulfill its obligations arising from the provisions of this Chapter:
 - a) the designated Administrators for the Interconnected System, the Distribution Network and the Non Interconnected Islands should send annually by the 30th of March to the Electricity Market Operator, data concerning the production, the consumption, the import and export of electricity during the preceding year.
 - b) the GO Issuing Bodies should send annually by the 15th of April to the Electricity Market Operator, data concerning the GOs that were issued, cancelled, imported or exported during the period from 1st of April of the preceding year until 31st of March of the current year.

As there is no provision yet for the methodology to calculate supplier mix, the national production mix is used instead. The provision should come in an amendment to the Manual of the Power Exchange Code.

1.1.4 Acceptance of GOs

No provision for acceptance of GOs are available yet. Although it is specifically provisioned in Ministerial Decision Δ6/Φ1/οικ.8786 (Official Government Gazzette 646/14.05.2010) that the Competent Body should reject GOs from countries which do not apply secure GO systems, there are no specific criteria listed. If a GO is not accepted then it cannot be imported into the registry.

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

1.2.1 RES-GO and CHP System

Relevant legislation for RES-GO is the following:

- Ministerial Decision Δ6/Φ1/οικ.8786 from 14th May 2010 (government Gazette 646/14.05.2010) http://www.lagie.gr/fileadmin/user_upload/Files/quarantee/fek_646.pdf. Article 2 of this decision provides that Go should only be used for disclosure, and article 3 defines it as an electronic document. This decision regulates the administration of GOs (issuing and all operations)
- RAE Decision 1599/2011 (government Gazette 179/6.02.2012)

Relevant legislation for CHP-GO is the following:

- Law 3734 (government Gazette 8/28.01.2009)
- Ministerial Decision Δ5-ΗΛ/Γ/Φ1/οικ.15606 (government Gazette 1420/15.07.2009)
- Ministerial Decision Δ5-ΗΛ/Γ/Φ1/οικ.15641 (government Gazette 1420/15.07.2009)
- Ministerial Decision Δ5-ΗΛ/Γ/Φ1/749 (government Gazette 889/22.03.2012)
- Ministerial Decision Δ5-ΗΛ/Γ/Φ1/οικ.23278 (government Gazette 3108/23.11.2012)

There are three Competent Bodies, which have different geographical scopes:

- LAGIE, which is responsible for the following domain: mainland and islands connected to mainland grid, since 2010
- HDNO which is responsible for the following domain: islands not connected to mainland grid, since 2010
- CRES which is responsible for the following domain : autonomous units, since 2010 but only for RES GOs, for CHP GOs, LAGIE is responsible.

There is one unique registry regrouping RES-GO and CHP-GO, which is in operation since October 2010. LAGIE is responsible for the operation, maintenance and upgrading of the registry. RAE the regulator has the responsibility to control.

Following principles apply for GO issuing:

- GO is issued based on actual meter readings
- GO is only issued for RES-E which is then used by end-consumers (i.e. no pumped hydro)
- There are mechanisms for periodic and random control of registered installations. To that end LAGIE keeps a registry of Certifying Bodies
- RES share of combustion plants is ensured by adequate measures
- Technical changes to plants are registered in the short term
- GO specifies the energy source, as one of: solar, wind, biogas, biofuel, biomass, hydro.
- Each GO specifies the nature of the support scheme.
- Metered production period on high and medium voltage is the calendar month, whereas for low voltage it is 4 calendar months.
- All GO data are kept for 10 years after the GO is cancelled or expired.

The EECS system is not implemented currently in Greece, but LAGIE has asked in June 2015 for AIB membership with the intention to implement an EECS-GO scheme.

GOs are granted independently from the support scheme.

1.2.2 GO Statistics

Statistics concerning Greek GO activity are not known.

1.3 RES-E Support Schemes

The main support scheme for RES electricity is Feed in Tariff. RES LEGAL database thus sums up the main support schemes in Greece:

- **“Feed-in tariff.** Law No. 3468/2006 sets rules for the guaranteed feed-in tariff. Plant operators are contractually entitled against the grid operator/ electricity market operator to the payment of electricity exported to the grid. The grid operator is obliged to enter into these contracts. The amount of feed-in tariff varies for each electricity generation technology. The support scheme based on regulation FEK 1079/2009 incentivises electricity generation by small PV installations (capacity of 10 kW or less) through a feed-in tariff, which is deduced from the consumers’ electricity bill.
- **Subsidy combined with tax exemption.** RES-related projects come under the provisions of Art. 6 of Law No.3098/2011 (General Investment Plans) and are thus eligible for a combined subsidy and tax exemption scheme. PV is not eligible for that scheme.
- **Net metering.** The amendment of Law No.3468/2006 introduces net metering for PV and small wind power plants for autonomous producers.”

GO can be issued to supported electricity.

2 Proposals for Improvement of the Tracking System

2.1 Proposals regarding general regulation on tracking systems

To improve the tracking system in place the following BPRs should be applied:

- BPR [22]: Full disclosure schemes should be implemented, including the disclosure of CO₂ emissions and radioactive waste.
- BPR [23]: Other Reliable Tracking Systems (RTS) should be defined where appropriate based on criteria of added value, reliability and transparency
- BPR [24]: RTS can comprise, where applicable:
 - Homogeneous disclosure mixes for regulated market segments where no choice of supplier of different products exists,
 - 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),
 - Contract based tracking

2.2 Proposals regarding Disclosure

The country should introduce all BPRs dealing with Residual Mix. It is the intention to follow the RE-DISS methodology for this.

- 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 [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 [36]: All countries should clarify the relation between their support schemes for RES & cogeneration on the one side and GO and disclosure schemes on the other side. Where necessary, the support schemes should be defined as RTS

2.3 Proposals regarding GOs

- BPR [3b]: GOs which have reached this lifetime should be collected in 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 [5a, 5b]).
- 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 [7a, 7b, 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 [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 [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 [13.7]: Registries should be audited on a regular basis.
- 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

The following BPRs should lead to further reflexion on the criteria on the basis of which to refuse GOs from other Member States or EFTA countries.

- 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 implement adequate measures which avoid double counting, e.g. a proper determination of a Residual Mix for disclosure.

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 which is related to a support scheme (see BPR [22]).
- BPR [39a]: As required by Art. 3 (9) of the IEM Directive 2009/72/EC annual disclosure of the supplier mix on or with the bill should be mandatory. This should also include information on environmental impacts.
- BPR [39b]: Suppliers offering two or more products which are differentiated regarding the origin of the energy should be required to give product-related disclosure information to all their customers, including those which are buying the “default” remaining product of the supplier.
- 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 attributes (via GO, RTS or Residual Mix) issued from the respective power plants.
 - b. If EU MS agree on Joint Support Schemes, such agreements should also clarify the allocation of attributes (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], [11a], [13.7], [18], [21], [23], [24], [38],
Double counting of attributes in implicit tracking mechanisms	BPRs: [5a], [5b], [6], [9b], [11a], [21], [23], [24], [25], [26a], [26b], [27], [28], [36], [43], [44]
Double counting within individual supplier's portfolio	BPRs: [39b], [42]
Loss of disclosure information	BPRs: [3b], [11a], [19], [22], [39a],

Problem	Country-specific proposal
Intransparency for consumers	BPRs: [3b], [11a], [11b], [11c], [23], [39a], [40], [41], [42],
Leakage of attributes and/or arbitrage	BPRs: [5a], [5b], [6], [9b], [19], [28], [34], [35],
Unintended market barriers	BPRs: [4], [7a], [7b], [8], [9b], [11b], [11c], [21]

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