

The state of implementation of electricity disclosure and Guarantees of Origin across Europe

D1. of WP 2 from the E-TRACK II project

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The E-TRACK II project

Phase I of the E TRACK project has investigated the feasibility of a harmonised standard for tracking of electricity generation attributes in Europe. Such tracking is required by electricity disclosure (also called labelling) and can also be used for support schemes and for accounting for the 2010 targets of Member States for electricity from renewable energy sources (RES-E). Phase II of the project continues the process of harmonisation of tracking systems across Europe, including the new Guarantees of Origin for high-efficient cogeneration (HE-CHP-E). It also focuses on the specific situation of New Member States in the implementation of tracking systems and supports consumers and their organisations to define their requirements on tracking systems and the related policies. Based on intensive discussions with stakeholders across the EU, Norway and Switzerland, the project is giving recommendations for the design of tracking schemes and for measures to be taken at European and national levels.

This report

This report is the first report of the E-TRACKII report and as such aims to set the scene by providing insight in the current situation with regard to tracking related policies in 29 European countries. The key aim of this report is to present the status in the 29 countries, highlighting the major issues with regard to tracking related policies, i.e. disclosure, renewable energy guarantees of origin (RE-GO) and combined heat and power guarantees of origin (CHP-GO).

The Country Monitoring Reports will act as a pool of information which will provide guidance to the work packages on New Member States (WP3), combined heat and power (WP4), and consumer requirements (WP5). The analysis as described in this report will enable to sharpen the focus towards the key issues, thus sourcing the work packages in the later phases of the project, i.e. on long term developments (WP6) and policy recommendations (WP7).

The status in each of the 29 European countries is presented in the “Country Monitoring Reports” as an Annex to this report.

This report is part of a research project with the aim to analyse and improve the tracking schemes at national and European level. The methodology and criteria to assess the current status and formulate according recommendations are chosen and developed by the authors only and do not represent the opinion of the European Commission, by whom this project is funded.

EXECUTIVE SUMMARY

For 29 European countries, i.e. 27 Member States (MS), Norway and Switzerland, the current situation and level of implementation was analysed with regard to tracking related policies, i.e. disclosure, Guarantees of Origin for Renewable Energy (RE-GO) and Guarantees of Origin for High-Efficient Cogeneration (CHP-GO). Based on the data from the inventory a cross-cutting analysis of the situation in the given countries was carried out, i.e. the countries were categorised based on progress made, putting best practices against common problems. The analysis shows that a significant number of MS fail to properly implement the regulations on electricity disclosure. Similarly, many MS did not yet implement appropriate national regulations on RE-GO and CHP-GO. On the other hand, there is a number of European countries which have chosen an advanced implementation of GO and/or disclosure, which exceeds the requirements of the respective Directives and in most cases contains significant elements of the E-TRACK standard recommendation of August 2007. Tailored recommendations were formulated to improve the systems in place, both at national and cross-border level.

Background and rationale

The E-TRACKI project has investigated the feasibility of a harmonised standard for tracking of electricity generation attributes in Europe. Tracking is a general term for the accounting of electricity generation attributes. It usually implies an allocation of attributes from generators of electricity to consumers (or their suppliers). Such tracking is required by electricity disclosure (also called labelling) and can also be used for support schemes and for accounting for the targets of Member States (MS) for electricity from renewable energy sources (RES-E).

The widely varying initiatives among EU MS to implement legislation on Guarantees of Origin (GO) and disclosure greatly complicate cross-border transfers of generation attributes. Also the varying degree of market opening matters, because the usefulness of disclosure is lower in a market where a customer cannot switch among suppliers.

There are currently no minimum standards or requirements for national disclosure systems to comply with, leading to several problems in the field, e.g. when UK Climate Change Levy exemption certificates (LECs) are issued for green energy production in Norway, but the same volumes may be accounted for disclosure in Norway; or Nordic countries who exported large volumes of Guarantees of Origin for Renewable Energy (RE-GO), but did not always reflect them in their domestic disclosure system. In addition there is little or no coordination between national tracking policies leading to inconsistent use of default data for disclosure (e.g. some Nordic countries use the Nordel production statistics for disclosure, but Denmark uses national production) or regional imbalances between attributes and physical energy (e.g. Austria, Denmark and the Netherlands have imported large volumes of RES-E certificates, but it is not clear how to deal with their surplus of attributes).

The E-TRACK I project developed a standard offering a pragmatic and flexible solution to address those issues, at the same time providing accurate results (e.g. avoid multiple

counting), provide meaningful information to the users (e.g. enable consumer choice based on disclosure) at reasonable cost, and being compatible with the existing economic, regulatory and legislative framework.

The key concepts of tracking uses and the recommendations of the E-TRACK standard are briefly described below. Three potential “uses” of tracking can generally be distinguished:

- Disclosure of information towards final consumers, i.e. use for *disclosure* purposes;
- Proof of public support for RES-E and CHP (e.g. feed-in or quota obligations), i.e. for *support* purposes;
- Proof of compliance with quantitative targets, e.g. indicative targets for RES-E for 2010 or 2020 or national targets, i.e. for *target* purposes;

The different uses of these tracking requirements obviously interact and must be carefully coordinated in order to avoid counteractive policies and a potential loss of accuracy and reliability in the tracking systems. The following elements represent the core of the E-TRACK standard:

- *Certificate systems*: The explicit tracking attributes are recorded as transferable electronic certificates only. The ownership of attributes can be tracked and transferred both within a registry and to other registries. Certificates are accounting units which are detached from the physical energy flow and usually also from electricity contracts;
- *Registries for explicit tracking*: Explicit tracking is based on electronic registries, which are operated per domain, and only one authority (usually the government) is in charge of the issuing of certificates per domain. A domain usually equals a country, but it could be smaller (e.g. Flanders and Walloon region in Belgium) or larger (e.g. Nordic region);
- *Residual Mix for implicit tracking*: As a supplement to the explicit tracking of electricity generation attributes based on certificates, the E-TRACK standard also features the calculation of a Residual Mix which is offered to electricity retailers as a default set of attributes for disclosure purposes. The Residual Mix should be used for disclosure of those energy volumes which the retailer does not match with GO. The calculation of the Residual Mix is based on the attributes of total power generation in a geographic region, corrected by all GO which have been used and also by exports and imports of energy and attributes.

The key benefit of the E-TRACK standard is the operation of a coordinated and reliable system for the accounting of electricity attributes across Europe, which supports disclosure, product differentiation (such as green power products), but can also facilitate support schemes and target accounting.

Scope

Phase II of the E-TRACK project (E-TRACKII) continues the monitoring of tracking systems across Europe, including the Guarantees of Origin for High-Efficient Cogeneration (CHP-GO), with a view to formulate tailored recommendations on an improved

(and wherever possible harmonized) implementation of tracking policies across Europe. The key aim of this article is to provide insight in the current situation and level of implementation in 29 European countries (i.e. 27 MS, Norway and Switzerland), highlighting the major issues with regard to tracking related policies, i.e. disclosure, RE-GO and CHP-GO.

Legal framework

Three European Directives currently govern policies on disclosure, electricity from renewable energy sources (RES-E) and cogeneration (CHP) including the use of GO, i.e. the Internal Electricity Market Directive 2004/54/EC (further referred to as the Disclosure Directive), the RES-E Directive 2001/77/EC and the CHP Directive 2004/8/EC respectively.

The Disclosure Directive includes provisions on what MS should do to provide electricity consumers with relevant information on the electricity product they are buying, and had to be implemented by MS into national legislation by July 2003. The RES-E Directive was adopted in 2001 and had to be implemented by October 2003 (by the EU-15 MS). The CHP Directive entered into force in February 2004. It was scheduled that MS had to adopt the directive by 21 February 2006, however due to delays resulting out of the Comitology process the deadline for MS to adopt the first obligations of the directive was moved 6 August 2007. The Comitology Process on CHP was finished early 2009 and the guidelines have now been published, but still need to be implemented by (most) MS.

These three Directives form the legal framework by which tracking related policies are currently shaped.

Note on the proposal for a new RES-E Directive 2009/28/EC

In January 2008 the European Commission (EC) published its proposal for a new RES-E Directive, which is currently in co-decision procedure, i.e. by the European Parliament and the Council. This proposed Directive is expected to significantly reshape the renewable energy markets and sectors in Europe, with most notably the targets on renewable heating and cooling and biofuels. Once approved the Directive will replace the current RES-E Directive and has to be transposed into national legislation by 31st March 2010. How the proposed Directive will impact on RE-GO in particular and tracking related policies in general will be taken up in a later stage of the E-TRACKII project, i.e. in the reports on long term developments (WP6) and policy recommendations (WP7).

Methodology

In order to obtain updated data for each of the 29 countries a detailed questionnaire was developed, focusing on legislation and secondary regulation, plus selected features of the systems in operation for disclosure, RE-GO and CHP-GO respectively. Feedback was obtained through project partners and major national stakeholders (e.g. regulators, governments, market actors...) throughout Europe.

The recommendations of the E-TRACK standard and the key elements of the Directives have been translated into a number of criteria and/or features against which the systems in place in each of the 29 countries were evaluated. A tailored set of criteria and features was developed for each of the three tracking policies (i.e. disclosure, RE-GO and CHP-GO). These criteria are not described in this summary but are detailed in the full report. It is emphasized that the methodology and the criteria to assess the current status and formulate according recommendations are chosen and developed by the authors only, and do not represent the opinion of the European Commission.

Based on this evaluation three different levels of implementation are distinguished:

Incomplete level of implementation: the system in place in the MS is not yet fully operational, and deemed *“behind”* the minimum requirements of the Directive - ☹;

Sufficient level of implementation: the MS has a fully operational system in place, and deemed *“in line”* with the minimum requirements of the Directive - ☺;

Advanced level of implementation: the MS has an advanced system in place, and deemed *“advanced”* compared to the minimum requirements of the Directive - ☺.

The application of these criteria to the situation in each of the 29 countries resulted in the outcomes as described in the section below.

Results

The analysis shows that the disclosure systems in a significant number of MS are not fully in place. Similarly, many MS did not yet implement appropriate national regulations on RE-GO and CHP-GO. On the other hand, there is a number of European countries which have chosen an advanced implementation of GO and/or disclosure, which exceeds the requirements of the respective Directives and in most cases contains significant elements of the E-TRACK standard recommendation of August 2007.

Several New MS show a very slow development of actual competition in the electricity market, associated with the existence of low regulated tariffs. In this framework, electricity disclosure can only have the meaning of consumer education about statistical data on the national electricity supply. Still, many New MS have made good progress in implementing RE-GO (as have some on CHP-GO).

The results are discussed in further detail below for each of the tracking policies, electricity disclosure, RE-GO and CHP-GO.

The recommendations for improvement get more detailed for countries with a more advanced level of implementation, thus offering a step-wise approach to improve the existing tracking scheme in a given MS. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place.

Electricity disclosure

Based on the disclosure Directive 2003/54 electricity suppliers in Europe must disclose to their customers the origin of their electricity and related emissions. Disclosure policy is meant to enable informed choices by consumers based on supplier mix information or specific products.

The analysis has shown that from the 29 European countries, 14 plus Flanders and Wallonia have in line or even advanced disclosure (i.e. ☹ and ☺) systems in place. Furthermore the systems in 10 countries plus Brussels-Capital region are not yet fully in place. The remaining weaknesses vary significantly, i.e. some countries are only at the start of taking the necessary steps to implement a disclosure system, whereas others have fully operational systems which fail though on one or two remaining criteria. A schematic overview of the current status for the investigated countries is given in Table 1 below.

Table 1 State of implementation of electricity disclosure across Europe (IT Power, June 09)

<u>Disclosure</u>	<u>Behind</u> ☹	<u>Mostly in line</u>	<u>In line</u> ☺	<u>Advanced</u> ☺
EU-15	BE-Bxl, FR, GR, IT		BE-Fla, BE-Wa, LU, DE, DK, IE, PT	AT, ES, FI GB, NL, SE
EU-12	BG, CY, CZ, EE, LT, LV, MT	PL, SK	HU, RO, SI	
CH & NO		CH, NO		
	10 + Brussels-Capital	4	8 + Flanders and Wallonia	6

The countries which do not have a fully implemented disclosure system either did not pass legislation on disclosure yet, or the disclosure system is not fully or properly implemented.

The reasons why fully operational systems (i.e.☺) are not evaluated as advanced mainly have to do either with the foreseen use of the GO (e.g. disclosure is not based on GO, GO are used for support purposes only), or there are remaining weaknesses in terms of the accuracy and reliability of the tracking system (e.g. GO import and exports are not tracked or reflected in the Fuel Mix Calculation, no Residual Mix calculation is foreseen).

None of the systems currently in place in Europe are fully accurate and reliable. Some of the systems are getting close to the highest standard of accuracy and reliability, implying that the remaining sources of inaccuracy and unreliability in the systems have to do not with the national system, but rather with a lack of a coordinated approach on how cross-border traded attributes (e.g. GO) should be handled in Fuel and Residual Mix calculations in the respective importing and exporting countries.

A number of countries are in the specific situation where a fully operational disclosure system is in place but it fails on the disclosure of the key environmental indicators, i.e. the CO₂ emissions and the nuclear waste related to the energy production (CH, NO, PL, SK). The disclosure systems in these countries are therefore evaluated as “mostly in line”.

Based on the shortcomings observed in the disclosure systems currently in place throughout Europe, according recommendations are summarised in Table 1 to 5, differentiated per level of implementation and individual country. The recommendations for improvement get more detailed for countries with a more advanced level of implementation, thus offering a step-wise approach to improve the existing tracking scheme in a given MS. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place.

Table 2 Overview of weaknesses and according recommendations for not fully operational disclosure systems across Europe - © (IT Power, June 09)

	Major weaknesses in disclosure system	Country ⊗	Recommendation
1	No national legislation was yet passed / proposed	BG, CY, LV, LT	Develop or pass primary legislation on disclosure of generation attributes
2	Primary legislation was passed but no secondary regulation has yet been developed or (fully) implemented,	Brussels-Capital, EE, FR, GR, IT, MT	Develop/adopt/improve secondary regulation to put in place a disclosure system (incl. tracking of GO transfers/imports/exports)
3	The disclosure system is operational but fails on a number of essential elements, e.g.:		
3a	CO ₂ and/or nuclear waste are not disclosed	CZ, IT	Include CO ₂ emissions & nuclear waste as environmental impact of electricity generation
3b	Disclosure is not mandatory	CZ	Make the disclosure requirements mandatory; and allow for the import and export of GO
3c	Transfers and exports/imports of GO are not accepted	CZ	Allow GO trade/import/export; make sure they are tracked/reflected in Fuel/residual Mix Calculations

Table 3 Key weakness and recommendation in “mostly in line” disclosure systems (IT Power, June 09)

	“Mostly in line” disclosure systems	Country	Recommendation
1	The system is fully operational but does not disclose environmental indicators (i.e. CO ₂ and/or nuclear waste are not disclosed)	CH, PL, NO, SK	Disclose CO ₂ emissions and nuclear waste as environmental indicators of electricity generation

Table 4 Overview of weaknesses and according recommendations for fully operational disclosure systems across Europe - ☹ (IT Power, June 09)

	Remaining weaknesses in fully operational disclosure systems	Country ☹	Recommendation
1	Design of the tracking system		
1a	The existing disclosure system is not based on GO	HU, IE, PT, RO	Use GO as the basis of the disclosure system
1b	Secondary regulation is voluntary and not uniformly applied by energy industry	DE	Make secondary regulation mandatory
2	Accuracy and reliability of the tracking system		
2a	The implicit and explicit tracking schemes are not fully aligned	NO	Align and improve the implicit and explicit tracking systems in place
2b	The explicit and implicit tracking mechanisms in place are not fully reliable and overall (too) complex	DE, PT	Introduce the use (& publication) of a Residual Mix at national/regional level
2c	No Residual Mix calculation is in place or foreseen	Flanders, Wallonia, DE, DK, HU, LU, SI	Introduce the use (& publication) of a Residual Mix at national/regional level

Table 5 Overview of weaknesses and according recommendations for advanced disclosure systems across Europe - © (IT Power, June 09)

	Scope for improvement in the countries with an “advanced” disclosure system	Country 😊	Recommendation
1	Design of the tracking system		
1a	Other electricity labels than GO are used for disclosure purposes	FI, SE, SI	GO should ideally be the only label for disclosure
2	Fuel Mix Calculation and cross-border aspects		
2a	It remains unclear if and how exactly GO import and export are reflected in the Fuel Mix calculation	AT, GB	Clarify and/or improve how exactly GO imports and exports are reflected in the Fuel Mix calculation
2b	Double counting risks remain in Fuel Mix calculations	GB	Exclude remaining double counting risks
2c	Lack of a standardised way to deal with imports and exports of GO in Fuel and Residual Mix calculations	All	Introduce a standardised way to deal with imports and exports of GO in Fuel and Residual Mix calculations (at EU level)
2d	Lack of a standardised methodology for Fuel and Residual Mix calculations	All	Introduce a standardised methodology for Fuel and Residual Mix calculations (at EU level)

RE-GO

The RES-E Directive was adopted in 2001 and had to be implemented by October 2003 by the EU-15 MS. The analysis shows that from the 29 countries, 17 have fully operational or even advanced RE-GO (i.e. ☹ and ☺) systems in place. Furthermore the analysis shows that the systems in 12 countries are not yet fully operational. A schematic overview of the level of implementation for the investigated countries is given in the table below.

Table 6 State of implementation of RE-GO across Europe (IT Power, June 09)

<u>RE-GO</u>	<u>Not fully operational</u> ☹	<u>Fully operational</u> ☺	<u>Advanced</u> ☺
EU-15	GR, IE, LU, PT	DE, FR, GB, IT, SE	AT, Brussels-Capital, DK, ES, FI Flanders, NL, Wallonia
EU-12	BG, CY, CZ HU, LV, MT, PL RO	EE LT SK	SI
CH & NO			CH NO
	12	8	9

The countries which do not have a fully operational system in place either did not pass legislation on RE-GO yet, either the RE-GO system is not properly implemented yet.

RE-GO are primarily used for disclosure purposes. Often there is a link with the national support scheme, either through the indication on the RE-GO of support received, either through a linked (and clearly regulated) use of the RE-GO and the support/quota certificate (e.g. Flanders, Wallonia, Brussels-Capital). Hungary plans to use the RE-GO only for support purposes (i.e. to verify the eligibility for the feed-in tariff), rather than for disclosure.

The RE-GO systems in a number of countries, in principle, are technically capable of allowing for (cross border) target accounting. Still, RE-GO as such have not been directly used as an instrument for target compliance (with EU indicative targets).

A clear definition and a (more) standardised use of RE-GO above national state level are highly recommended, especially with regard to cross-border aspects. On the uses of RE-GO the following can be put forward:

- Disclosure should be the default and minimal use for RE-GO;
- If there is a link with support this needs to be clarified and clearly regulated at national level, and rules need to be agreed above national level on cross-border trade (either through a voluntary system, either through European legislation);
- The use for target accounting remains a (technically feasible) option, and can be relevant especially with regard to the cooperation mechanisms as described in the new RES-E Directive.

Based on the shortcomings observed in the disclosure systems currently in place throughout Europe, according recommendations are summarised in Table 7, Table 8 and Table 9, differentiated per level of implementation and individual country. The recommendations for improvement get more detailed for countries with a more advanced level of implementation, thus offering a step-wise approach to improve the existing tracking scheme in a given MS. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place.

Table 7 Overview of weaknesses and recommendations for not fully operational RE-GO systems across Europe - ☹ (IT Power, June 09)

	Major weaknesses in RE-GO systems	Country ☹	Recommendation
1	No national legislation has yet been passed or proposed on RE-GO	PT	Develop or pass primary legislation on RE-GO
2	No (sufficient) secondary regulation has been developed or passed with regard to the RE-GO system	BG, CY, GR, HU, IE, LU, LV, MT, RO	Develop and/or adopt secondary legislation to effectively put in place an accurate and reliable RE-GO system (including tracking of GO transfers, imports and exports)
3	RE-GO transfers and imports are not accepted or recognized	CZ, PL, RO	Allow for RE-GO transfers and recognize RE-GO imports
4	RE-GO are not (properly) being issued	CZ	Introduce a system of (electronic) issuing for RE-GO, preferably using an electronic registry

Table 8 Overview of weaknesses and recommendations for fully operational RE-GO systems across Europe - ☺ (IT Power, June 09)

	Remaining weaknesses in RE-GO systems	Country ☺	
1	Design of the RE-GO system		
1a	The use of RE-GO for disclosure and support (and target) is not (fully) defined and regulated	EE, LT, SE	Define and/or clearly regulate the use of RE-GO for disclosure and support (and target)
2	Accuracy and reliability of the RE-GO system	EE, DE, FR, GB, IT, LT	Improve the accuracy of the tracking system, especially with regard to transfers, imports and/or ex-

			ports of RE-GO
2a	An (electronic) RE-GO registry is in place but RE-GO cannot be transferred (electronically)	EE, FR, IT, LT	Introduce an electronic registry with RE-GO as electronically transferable certificates
2b	Double counting is not (sufficiently) excluded	EE, DE, FR, GB, IT	Make sure remaining double-counting risks are excluded
2a	RE-GO transfers, imports and/or exports are not (sufficiently) tracked		
2b	Double counting is not (sufficiently) excluded	DE, FR, GB, IT	
2c	An electronic RE-GO registry is in place but RE-GO can be transferred only in paper form	FR, IT, LT	
3	Transfer, imports and exports of RE-GO		
3a	RE-GO transfers, imports and/or exports are not (sufficiently) tracked	DE, FR, GB, IT, LT,	Improve and expand the existing tracking system for all RE-GO transfers, imports and exports
3b	Transfer, import or export of RE-GO is not foreseen, not regulated or conditional	EE, LT, SK	Allow for RE-GO transfers and exports, and simplify RE-GO imports

Table 9 Overview of weaknesses and recommendations for advanced RE-GO systems across Europe - © (IT Power, June 09)

	Remaining weakness in RE-GO systems	Country ☺	Recommendation
1	Inconsistent definition and use of RE-GO among different EU countries resulting in trade barriers and double counting risks	All	A standardised use of RE-GO and agreed rules on its use for disclosure, support (and target) purposes above national state level




CHP-GO

Similarly to the analysis on Disclosure the situation in the 29 countries has been assessed with regard to the level of implementation of the CHP-GO systems in place, looking at institutional, managerial and operational aspects of CHP-GO, based on roughly the same criteria as used for RE-GO. The analysis shows that the CHP-GO systems in a significant number of countries are not yet fully operational, due to different reasons:

- No legislation on CHP-GO has been passed yet:
 - o From the EU-15: FI, PT
 - o Also CH did not pass legislation on CHP-GO
- Legislation on CHP-GO has passed, but the according regulation has not yet been passed or fully or properly implemented:
 - o From the EU-15: GR, IE, LU and Brussels-Capital;
 - o From the EU-12: BG, CY, LV, MT, SK;
 - o Also the system in NO is not fully implemented
- A lot of countries have a CHP-GO system in place, of which a number of critical requirements for a decent tracking system are not yet fulfilled, e.g. no central registry is in place, there is no (sufficient) alignment with the RE-GO system, no redemption process is in place, transfers are not allowed, or import and/or export are not accepted, no high-efficiency rules are in place etc. This largely has to do with the recent implementation of CHP-GO systems (i.e. the experience in any country is still rather limited, e.g. hardly any CHP-GO has been transferred, imported or exported thus far), and the limited use of CHP-GO for disclosure (and support) purposes to date.

Finally, the CHP-GO systems in Flanders, SI and Wallonia can be considered as ahead of the others. Further analysis and recommendations on CHP-GO systems in the different countries will be carried out in Work Package 4 which is specifically dedicated to CHP-GO. A schematic overview of the level of implementation for the 29 countries is given in the table below.

Table 10 State of implementation of CHP-GO across Europe (IT Power, June 09)

	<u>Behind</u> 	<u>In line*</u> 	<u>Advanced</u> 
EU-15	Brussels-Capital, FI, GR, IE, LU, PT	AT, DE, DK, ES, FR, GB, IT, NL, SE	Flanders, Wallonia

EU-12	BG, CY, LV, MT	CZ, EE, HU, LT, PL RO, SK	SI
CH & NO	CH, NO		
	11 + Brussels-Capital	16	1 + Flanders and Wallonia

*Although most countries have not yet fully implemented all elements of a proper CHP-GO tracking system

Conclusion

Retailers of electricity have to annually disclose their energy mix cf. Art 3(6) of Directive 2004/54/EC, including the fuel mix and environmental parameters (i.e. average CO₂ emissions and nuclear waste). This disclosure is meant to enable informed choices by consumers, but in order to determine fuel mix and emissions, an accurate and reliable tracking system is required. Guarantees of Origin are designed exactly to account for volumes of high-efficient CHP and RE. Still, the current implementation of tracking policies is not sufficient in many European countries. The analysis has shown that the disclosure systems in a significant number of MS are not fully in place. Similarly, many MS did not yet implement appropriate national regulations on RE-GO and CHP-GO. On the other hand, there is a number of European countries which have chosen an advanced implementation of GO and/or disclosure, which exceeds the requirements of the respective Directives and in most cases contains significant elements of the E-TRACK standard recommendation of August 2007.

Several New MS show a very slow development of actual competition in the electricity market, associated with the existence of low regulated tariffs. It was observed that the interest in disclosure is highly related to the level of competition and awareness of electricity generation in a given country. In such a framework, electricity disclosure can only have the meaning of consumer education about statistical data on the national electricity supply. Still, many New MS have made good progress in implementing RE-GO (as have some on CHP-GO).

From the analysis this E-TRACKII report has developed recommendations to improve the existing tracking systems and to make the tracked information more reliable, with a view to increase credibility and market value of power products and portfolios. This is relevant as consumers are becoming increasingly interested in how their electricity was produced. An EU market for green power has already been established and is growing fast, both at industrial and domestic level. The recommendations for improvement of the systems get more detailed for countries with a more advanced level of implementation. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place. The resulting set of recommendations thus offers to policy-makers and regulatory authorities a

step-wise approach to gradually increase the level of implementation of the tracking schemes in a given MS.

An overall overview of the level of implementation on tracking-related policies throughout Europe is given in the table below.

Table 11 Overview of levels of implementation on disclosure, RE-GO and CHP-GO for 29 European countries (IT Power, June '09)

	D	REGO	CHPGO		D	REGO	CHPGO
AT				IE			
BE-Brussels-Cap				IT			
BE-Flanders				LV			
BE-Wallonia				LT			
BG				LU			
CY				MT			
CZ				NL			
DE				PL	Mostly		
DK				PT			
EE				RO			
ES				SE			
FI				SI			
FR				SK	Mostly		
GB				NO	Mostly		
GR				CH	Mostly		
HU							



Disclaimer: All findings, recommendation and interpretations of this project are based on the data as available to the project consortium at the time of publication, and are for the purpose of research only. The E-TRACK II project has no mandate from the European Commission to assess the implementation of tracking-related policies in Member States. Nevertheless the project consortium aims at giving sensible recommendations to the Member States and to the Commission.

Glossary

As a memory aid and to allow for a correct understanding of this report the major concepts of the E-TRACK standard are described below.

(Electricity) Attributes

Information on electricity, which is to be allocated through tracking; details are specified by the respective schemes. For example for disclosure, the following attributes are required: Fuel source and technology, CO₂ emissions and nuclear waste created.

Certificate

An instance of evidence (normally in units related to 1 MWh) for one or more schemes which can be transferred between different owners. Certificates are usually held as electronic records in a database (registry).

(Electricity) Disclosure

Based on Directive 2003/54/EC electricity retailers must disclose to their customers the origin of their electricity and related CO₂ emissions and the production of nuclear waste. This requires the installation of (some form of) a tracking system for electricity; the E-TRACK standard offers clear recommendations on how this tracking system should be designed and operated.

Disclosure certificates

Certificates which can be used for purposes of disclosure i.e. which are associated to the disclosure scheme. In the report, the term Guarantees of Origin (in its broader sense) is used for this kind of certificates.

Electricity from high-efficient cogeneration (CHP-E)

Electricity from high-efficiency cogeneration, as defined in Directive 2004/8/EC

Electricity from renewable energy sources (RES-E)

Electricity from renewable energy sources as defined in Directive 2001/77/EC.

European Energy Certificate System (EECS)

A harmonised European system for the handling of certificates for electricity attributes, which is operated by the Association of Issuing Bodies. EECS is the only standardised tracking system for electricity in Europe. Currently, EECS integrates Guarantees of Origin for RES-E and CHP-E, RECS certificates and generic Guarantees of Origin in their broader sense (disclosure certificates).

Explicit tracking

A mechanism which allows the bilateral allocation of electricity attributes from a generator to a retailer or final consumer. This can be based on electricity contracts or de-linked from these. Both types of explicit tracking can be implemented based on certificates.

Guarantee of Origin (GO)

In a specific sense: A means of proving the origin of electricity, which was generated from renewable energy sources or from high-efficient cogeneration, which was introduced by Directives 2001/77/EC (for RES-E) and 2004/8/EC (for CHP-E). Their use is optional. In a broader sense: General term for certificates which are associated to disclosure.

Implicit tracking

A mechanism which allows the allocation of electricity attributes from a group of generators to usually a large group of retailers or final consumers. The simplest way of implicit tracking is the use of statistical data on electricity generation in a certain area, e.g. national or UCTE or NORDEL system mixes. The E-TRACK standard requires the use of a Residual Mix instead of production statistics.

Issuing Body

The organisation which is appointed by the scheme authority to manage a tracking domain. The issuing body can delegate several tasks, e.g. to a registry operator, production device accreditation body, data collector (for meter readings etc.).

Multiple counting

The use of attributes from the same instance of electricity generation for more than one uses, which are conflicting. For example, if the attributes of a hydro plant from Austria are used for disclosure both in Austria and in Italy, this is a case of multiple counting. Multiple counting can be distinguished into multiple issuing, multiple sale and multiple use of attributes. The question whether certain uses of attributes are conflicting or not, must be regulated clearly, e.g. by the scheme authorities.

RECS International

The European organisation of market participants which use the European Energy Certificate System (EECS). RECS International and the AIB have jointly developed the RECS System, which can be seen as a predecessor of Guarantees of Origin for RES-E.

Renewable Energy Certificate System (RECS)

A voluntary scheme which was developed in order to track electricity attributes from-RES-E for purposes of green electricity supply. The RECS System can be seen as a predecessor of Guarantees of Origin for RES-E.

Residual mix

A set of attributes for use in electricity disclosure, which has been determined based on the attributes of all electricity generation in one or several disclosure domains and corrected by all attributes which have been used for explicit tracking or by ERTS, and also for exports and imports of attributes and physical energy. Each residual mix stands for a certain volume of attributes and should not be used for the disclosure of a larger volume of electricity consumption than this volume.

Support

A policy by which a country promotes the generation of electricity from certain energy sources (e.g. renewable energies) or by certain technologies (e.g. cogeneration) through financial incentives.

Support certificate

A transferable certificate which is used for the implementation of support schemes. Such certificates can be used e.g. in quota obligation systems, where producers, retailers or consumers are obliged to redeem support certificates which represent a certain share of their production, sales to final consumers or consumption. The allocation of support can either be linked to the Guarantee of Origin, in which case the support system has a connection to electricity disclosure, or it can be separated from the GO. In the latter case, the separate support certificates are a purely financial instrument and have no relation to disclosure.

Targets

Quantitative targets for certain types of electricity generation which have been set on a European level and have been broken down on the national level. Currently, indicative targets have been set for the shares of RES-E in total electricity consumption of EU Member States by 2010. More ambitious overall targets for renewable energy sources, for RES-E for the year 2020 are formulated in the Proposal for a new RE Directive. There are currently no EU-wide targets foreseen for CHP-E.

Tracking

General term for the accounting of generation attributes. It usually implies an allocation of attributes from generators of electricity to consumers or their retailers. This can be done for purposes of different schemes, e.g. disclosure, support or target accounting.

UCTE

Union for the Coordination of Transmission of Electricity in continental Europe (<http://www.ucte.org>). Note that the Nordic region is covered by Nordel, whereas Britain and Ireland have separate transmission systems.

List of abbreviations

CHP	Combined Heat and Power (Cogeneration)
CHP Directive	Directive 2004/8/EC (11 February 2004) on the promotion of cogeneration based on a useful heat demand in the internal energy market
CHP-E	High Efficiency Cogeneration
CHP-GO	Guarantees of Origin for High-Efficient Cogeneration
Disclosure Directive	Directive 2003/54 (26 June 2003) concerning common rules for the internal market in electricity and repealing Directive 96/92/EC
DNOs	Distribution Network Operators
EC	European Commission
EU	European Union
EU-15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom
EU-12	Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia, Slovakia, (which joined the EU in 2004), and Bulgaria and Romania (which joined in 2007), also referred to as New Member States (NMS)
GO	Guarantee of Origin (certifying the renewable origin of electricity or heat)
IB	Issuing Body
NMS	New Member States, see EU-12
MS	Member State
MW	Megawatt (electricity generation capacity)
MWh	Megawatt hour (electricity generation)
NMS	New Member States, also referred to as EU-12
RE	Renewable Energy
RE-GO	Guarantee of Origin for Renewable Energy
RE Directive	Directive 2001/77/EC (27 September 2001) on the promotion of electricity produced from renewable energy sources in the internal electricity market

RES-E

Electricity from renewable energy sources

TSO

Transmission System Operator

Country codes (following ISO 3166)

AT	Austria	FI	Finland	MT	Malta
BE	Belgium	FR	France	NL	Netherlands
BG	Bulgaria	GB	United Kingdom	NO	Norway
CH	Switzerland	GR	Greece	PL	Poland
CY	Cyprus	HU	Hungary	PT	Portugal
CZ	Czech Republic	IE	Ireland	RO	Romania
DE	Germany	IT	Italy	SK	Slovakia
DK	Denmark	LT	Lithuania	SI	Slovenia
ES	Spain	LU	Luxemburg	SE	Sweden
EE	Estonia	LV	Latvia		

1 Introduction

1.1 Aim of this report

The E-TRACKI project has investigated the feasibility of a harmonised standard for tracking of electricity generation attributes in Europe. Such tracking is required by electricity disclosure (also called labelling) and can also be used for support schemes and for accounting for the targets of Member States (MS) for electricity from renewable energy sources (RES-E). Phase II of the project continues the process of harmonisation of tracking systems across Europe, including the new Guarantees of Origin for high-efficient cogeneration (CHP-GO). This report will set out the first results of the E-TRACKII project and will provide insight in the current situation and level of implementation in 29 European countries (27 EU MS + Norway and Switzerland).

In order to obtain updated data for each of the 29 countries a detailed questionnaire was developed, focusing on disclosure, RE-GO and CHP-GO respectively. The aim of this questionnaire was to obtain detailed insight in the situation in each of the countries, focusing on legislation and secondary regulation, plus selected features of the systems in operation. The questionnaires were completed by project partners and their contacts with national stakeholders (e.g. regulators, government officials, market players...).

The data from this extensive inventory formed the basis of the analysis and lead to the two following outcomes as they will be described in this report:

- A cross-cutting analysis of the situation in the given countries, i.e. categorising countries based on progress made, putting best practices against common problems. This will enable to identify trends and develop recommendations for governments on improvements and coordination of tracking-related policies and for a better coordination and harmonisation of tracking systems across Europe;
- Country monitoring reports for each of the 29 countries describing in brief the national situation with regard to disclosure, RE-GO and CHP-GO. These country reports are added as a separate annex to this report.

1.2 Legal framework

Three European Directives currently govern policies on disclosure, electricity from renewable energy sources (RES-E) and cogeneration (CHP) including the use of guarantees of origin (GO), i.e. the Internal Electricity Market Directive 2004/54/EC (further referred to as the Disclosure Directive), the RES-E Directive 2001/77/EC and the CHP Directive 2004/8/EC respectively.

The Disclosure Directive includes provisions on what Member States (MS) should do to provide electricity consumers with relevant information on the electricity product they are buying, and had to be implemented by MS into national legislation by July 2003.

The RE Directive was adopted in 2001 and had to be implemented by October 2003 by the EU-15 MS.

The CHP Directive entered into force in February 2004. It was scheduled that MS had to adopt the directive by 21 February 2006, however due to delays resulting out of the Comitology process the deadline for MS to adopt the first obligations of the directive was moved 6 August 2007. The Comitology Process on CHP was finished early 2009 and the guidelines have now been published, but still need to be implemented by (most) MS.

These three Directives form the legal framework by which tracking related policies are currently shaped.

Note on new RES-E Directive 2009/28/EC

In January 2008 the European Commission (EC) published its proposal for a new RES-E Directive, which is currently in co-decision procedure, i.e. by the European Parliament and the Council. This proposed Directive is expected to significantly reshape the renewable energy markets and sectors in Europe, with most notably the targets on renewable heating and cooling and biofuels. Once approved the Directive will replace the current RES-E Directive and has to be transposed into national legislation by 31st March 2010. How the proposed Directive will impact on RE-GO in particular and tracking related policies in general will be taken up in a later stage of the E-TRACKII project, i.e. in the reports on long term developments (WP6) and policy recommendations (WP7).

1.3 The E-TRACK Standard

Most of the EU-15 MS complied with the disclosure requirements but as could be expected, MS have adopted different tracking¹ systems for electricity disclosure. Current national systems for tracking electricity are mainly focused on national markets and support schemes. The widely varying initiatives among EU MS to implement legislation on GO and disclosure greatly complicate cross-border transfers of generation attributes. Also the varying degree of market opening matters, because the usefulness of disclosure is lower in a market where a customer cannot switch among suppliers.

There are currently no minimum standards or requirements for national disclosure systems to comply with, leading to several problems the field, e.g. when UK Climate Change Levy exemption certificates (LECs) are issued for green energy production in Norway, but the same volumes may be accounted for disclosure in Norway; or Nordic countries who exported large volumes of RES-E GO, but did not always reflect them in their domestic disclosure system.

In addition there is little or no coordination between national tracking policies leading to inconsistent use of default data for disclosure (e.g. some Nordic countries use the Nor-

¹ Tracking is a general term for the accounting of electricity generation attributes. It usually implies an allocation of attributes from generators of electricity to consumers (or their suppliers).

del production statistics for disclosure, but Denmark uses national production) or regional imbalances between attributes and physical energy (e.g. Austria, Denmark and the Netherlands have imported large volumes of RES-E certificates, but it is not clear how to deal with their surplus of attributes).

The E-TRACK I project developed a standard offering a pragmatic and flexible solution to address those issues, at the same time providing accurate results (e.g. avoid multiple counting), provide meaningful information to the users (e.g. enable consumer choice based on disclosure), and be compatible with the existing economic, regulatory and legislative framework. As a brief reminder the key concepts of tracking uses and the recommendations of the E-TRACK standard are described below².

Three potential “uses” of tracking can generally be distinguished:

- Disclosure of information towards final consumers, i.e. use for *disclosure* purposes
- Proof of public support for RES-E and CHP (e.g. feed-in or quota obligations), i.e. for *support* purposes
- Proof of compliance with quantitative targets, e.g. indicative targets for RES-E for 2010 or 2020 or national targets, i.e. for *target* purposes;

The different uses of these tracking requirements obviously interact and must be carefully coordinated in order to avoid counteractive policies and a potential loss of accuracy and reliability in the tracking systems, (e.g. risk for multiple counting).

The following elements represent the core of the E-TRACK standard:

- *Certificate systems*: The explicit tracking attributes are recorded as transferable electronic certificates only. The ownership of attributes can be tracked and transferred both within a registry and to other registries. Certificates are accounting units which are detached from the physical energy flow and usually also from electricity contracts; they are handled exclusively in electronic registries. This enables a simple and standardised way of accounting for electricity attributes. Certificates can be used both for de-linked and contract based tracking (re-bundling them with physical contracts);
- *Registries for explicit tracking*: Explicit tracking is based on registries, which are operated per domain, and only one Authority (usually the government) is in charge of the issuing of certificates per domain. A domain usually (but not necessarily) equals a country. A domain could be smaller (e.g. Flanders and Wallonia in Belgium) or larger (e.g. Nordic region);

² The full document “A European Tracking System for Electricity (E-TRACK), Final report from the E-TRACK project, is available for download from the project website www.e-track-project.org

- *Residual Mix for implicit tracking:* As a supplement to the explicit tracking of electricity generation attributes based on certificates, the E-TRACK standard also features the calculation of a Residual Mix which is offered to electricity retailers as a default set of attributes for disclosure purposes. The Residual Mix should be used for disclosure of those energy volumes which the retailer does not match with GO. The calculation of the Residual Mix is based on the attributes of total power generation in a geographic region, corrected by all GO which have been used and also by exports and imports of energy and attributes. Market participants are free to decide whether to use the certificate system or rather to rely on the Residual Mix.

The key benefit of the E-TRACK standard is the operation of a coordinated and reliable system for the accounting of electricity attributes across Europe, which supports disclosure, product differentiation (such as green power products), but can also facilitate support schemes and target accounting.

2 Disclosure

2.1 Assessment of implementation level of disclosure Directive 2003/54

Based on the disclosure Directive 2003/54 electricity suppliers in Europe must disclose to their customers the origin of their electricity and related emissions. Disclosure policy is meant to enable informed choices by consumers based on supplier mix information or specific products. Article 3.6 of the Directive states:

“Member States shall ensure that electricity suppliers specify in or with the bills and in promotional materials made available to final customers:

(a) The contribution of each energy source to the overall fuel mix of the supplier over the preceding year;

(b) At least the reference to existing reference sources, such as web-pages, where information on the environmental impact, in terms of at least emissions of CO₂ and the radioactive waste resulting from the electricity produced by the overall fuel mix of the supplier over the preceding year is publicly available.

With respect to electricity obtained via an electricity exchange or imported from an undertaking situated outside the Community, aggregate figures provided by the exchange or the undertaking in question over the preceding year may be used.

Member States shall take the necessary steps to ensure that the information provided by suppliers to their customers pursuant to this Article is reliable.”

In order to determine the disclosure information, MS by 1st July 2004 had to install accounting systems allowing them to keep track of generated and consumed volumes of electricity, and to create linkages between generation and supply. It is exactly this linkage and the provision of the information on electricity generation attributes to the end customer which electricity disclosure (or electricity labelling) and tracking related policies are all about.

With regard to tracking systems the E-TRACK standard states that:

- Disclosure must be based on a (national or regional) Residual Mix, if no attributes from explicit tracking (or similar) are available; uncorrected generation statistics are not sufficient;
- Product differentiation and green claims should always be based on the use and redemption of GO
- The ultimate objective is to use GO for all kinds of energy production

Specifically on the calculation and use of the Residual Mix the E-TRACK standard introduced the principle of calculating a Residual Mix in a certain region, i.e.

Attributes of all electricity generation

+/- corrections for imports and exports

– all attributes which have been used e.g. redeemed certificates, feed-in systems etc.)

= Residual Mix

The recommendations of the E-TRACK standard and the key provisions from the Directive are translated into a number of criteria and/or features against which the systems in place in each of the 29 countries will be evaluated. Based on this evaluation three different levels of implementation are distinguished:




Incomplete level of implementation: the system in place in the MS is not yet fully operational, and deemed “*behind*” the minimum requirements of the Directive - ☹;

Sufficient level of implementation: the MS has a fully operational system in place, and deemed “*in line*” with the minimum requirements of the Directive - ☺;

Advanced level of implementation: the MS has an advanced system in place, and deemed “*advanced*” compared to the minimum requirements of the Directive - 😊.

The criteria and features of the disclosure system are described in detail in **Error! Reference source not found.** below.

Table 12 Description of the criteria used to distinguish the levels of implementation with regard to Disclosure



			
Legislation	No legislation for implementing electricity disclosure in place	Relevant legislation in place	Idem
Regulation	No regulation (i.e. on rules and implementation) is in place	Accordinging regulation is ready and available	Idem
Mandatory	Disclosure not mandatory	Disclosure is mandatory	Idem
Disclosed information	The minimum required information (i.e. CO ₂ emissions and nuclear waste) is not frequently disclosed to consumers	Minimum information on the environmental impact of the supplier's energy portfolio is frequently provided	More than the minimum required information is disclosed to consumers
Portfolio/Product	The supplier's energy portfolio nor individual products are disclosed	The supplier's energy portfolio is disclosed but no individual products	Differentiation of individual products is possible or mandatory
Basis for disclosure	No proper disclosure system is in place, i.e. there is no fuel mix calculation, implicit or explicit tracking mechanism in place	A proper disclosure system is in place, although not necessarily based on GO. An explicit and/or an implicit (e.g. bilateral contracts, generator's and supplier's declaration, TSO and DNO statistics, UCTE) tracking mechanism are in place for RE and/or CHP	Disclosure is based on GO for RE and/or CHP. A reliable explicit tracking mechanism is in place and based on GO for RE and/or CHP. Fuel and Residual Mix calculations are in place
GO import and export	Imported/exported GO are not (fully) reflected in fuel or residual mix calculation	Imported/exported GO are reflected in the fuel mix calculation	Imported/exported GO are reflected in the fuel and residual mix calculation

The criterion “Basis for disclosure” is further differentiated into three sub-criteria, i.e. the disclosure system being based on GO or not, and the reliability of the explicit and implicit tracking mechanisms, as is shown by the three yellow columns in Table 13 below.

2.2 Comparison of level of implementation in the 29 countries

The application of each of the criteria to all 29 countries is presented in the table below.

Table 13 Overview of performance of 27 Member States (and Norway and Switzerland) with regard to the disclosure Directive 2003/54. Source: IT Power (June 09)

	DISCLOSURE										
	Legislation	Regulation	Mandatory	Disclosed information	Portfolio / Product	Basis for Disclosure	Based on GO	Explicit Tracking Mechanism	Implicit Tracking Mechanism	GO import & export	OVERALL SCORE
MAXIMUM SCORE:											
Austria											
BE-Brussels-Capital											
BE-Flanders											
BE-Wallonia											
Bulgaria											
Cyprus											
Czech Republic											
Denmark											
Estonia											
Finland											
France											
Germany											
Greece											
Hungary											
Ireland											
Italy											
Latvia											
Lithuania											
Luxemburg											
Malta											
Netherlands											
Poland											Mostly
Portugal											
Romania											
Slovakia											Mostly
Slovenia											
Spain											
Sweden											
United Kingdom											
Norway											Mostly
Switzerland										n/a	Mostly
											
											
											

Based on the analysis it is concluded that from the 29 European countries, 14 plus Flanders and Wallonia have in line or even advanced disclosure (i.e. ☹ and ☺) systems in place. In detail:

- Out of EU-15: AT, DE, DK, ES, GB, IE, LU, NL, PT, SE plus Flanders and Wallonia, have in line or advanced disclosure systems in place;
- Out of EU-12: HU, RO, SI have in line or advanced disclosure systems in place;

Furthermore the analysis shows that the systems in 10 countries plus Brussels-Capital region are not yet fully in place. Still, it needs to be emphasized that within this group the remaining weaknesses vary significantly, i.e. some countries are only at the start of taking the necessary steps to implement a disclosure system, whereas others have fully operational systems which fail though on one or two remaining criteria.

In four countries (i.e. CH, NO, PL and SK) an almost fully operational disclosure system is in place which from a tracking perspective is in line or even advanced. The system fails though on complying with one aspect as required by the Directive, i.e. the CO₂ emissions and the nuclear waste related to the electricity generation are not disclosed. The systems in these countries are deemed “mostly in line”.

A schematic overview of the level of implementation for the investigated countries is given in the table below. The following sections will dig deeper into each of the different levels of implementation and come up with recommendations tailored to each level and individual country.

Table 14 Grouping of countries with regard to the level of implementation of the disclosure systems

<u>Disclosure</u>	<u>Behind</u> ☹	<u>Mostly in line</u>	<u>In line</u> ☺	<u>Advanced</u> 😊
EU-15	BE-Bxl, FR, GR, IT		BE-Fla, BE-Wa, LU, DE, DK, IE, PT	AT, ES, FI, GB, NL, SE
EU-12	BG, CY, CZ, EE, LT, LV, MT	PL, SK	HU, RO, SI	
CH & NO		CH, NO		
	10 + Brussels-Capital	4	8 + Flanders and Wallonia	6

2.3 Common weaknesses and recommendations for improvement

2.3.1 ☹

Based on the analysis it is concluded that the systems in the following countries are not yet fully in place. In detail:

- Out of EU-15: the systems in FR, GR, IT plus Brussels-Capital do not have fully operational disclosure systems in place;
- Out of EU-12: BG, CY, CZ, EE, LT, LV and MT do not have fully operational disclosure systems in place;

Some countries are only at the start of putting in place the legal basis for a disclosure system, whereas others have thus far not fully or properly implemented their disclosure system:

- No legislation on disclosure has been passed yet:
 - From the EU-12: BG, CY, LV, LT;
- The disclosure system is not fully or properly implemented:
 - From the EU-15: Brussels-Capital, FR, GR, IT;
 - From the EU-12: CZ, EE, MT;

A further breakdown of the shortcomings is presented in Table 15.

In a number of countries an almost fully operational disclosure system is in place which from a tracking perspective is in line or even advanced. The system fails though on complying with one aspect as required by the Directive, i.e. the CO₂ emissions and the nuclear waste related to the electricity generation are not disclosed. This is the case in:

- From the EU12: PL, SK
- CH, NO

Further details are summarised in Table 16.

Table 15 Overview of weaknesses and according recommendations for not fully operational disclosure systems across Europe - ☹ (IT Power, June 09)

	Major weaknesses in disclosure system	Country ☹	Recommendation
1	No national legislation was yet passed / proposed	BG ³ , CY ⁴ , LV, LT	Develop or pass primary legislation on disclosure of generation attributes
2	Primary legislation was passed but no secondary regulation has yet been developed or (fully) implemented,	Brussels-Capital ⁵ , EE ⁶ , FR ⁷ , GR ⁸ , IT ⁹ , MT	Develop/adopt/improve secondary regulation to put in place a disclosure system (incl. tracking of GO transfers/imports/exports)

³ There is no system of disclosure of electricity operational in Bulgaria at the moment. A disclosure system is currently being prepared by the regulator.

⁴ Information on the share of HFO (heavy fuel oil) is available on the Ministry website. The Electricity Authority of Cyprus (EAC) is currently discussing how to implement disclosure, even in the absence of primary legislation.

⁵ Currently there are no detailed provisions for disclosure in the Brussels-Capital Region. Thus far only disclosure of the green part of the fuel mix is foreseen (based on GO).

⁶ A disclosure system is (possibly fully) in place in Estonia but it remains unclear how it is implemented (e.g. how fuel mixes are calculated, if it is based on GO etc.);

⁷ In France no secondary regulation is in place which streamlines the currently inconsistent implementation of the primary legislation by different suppliers. Double counting is not excluded as the transfer of GO (in pdf form) is not mandatorily tracked and as redemption of GO is not mandatory;

⁸ Greece has developed a national disclosure system (with the information centralised on the TSO website); still in order to improve the accuracy and reliability of the system secondary regulation is currently being prepared;

⁹ The obligation to disclose the supply mix and the according environmental impact on the invoices has been transposed in national legislation. The adoption of the according secondary regulation proposed by the Authority for Electricity and Gas (AEEG) has been delayed and has not been published yet.

3	The disclosure system is operational but fails on a number of essential elements, e.g.:		
3a	CO ₂ and/or nuclear waste are not disclosed	CZ, IT ¹⁰	Include CO ₂ emissions & nuclear waste as environmental impact of electricity generation
3b	Disclosure is not mandatory	CZ	Make the disclosure requirements mandatory; and allow for the import and export of GO
3c	Transfers and exports/imports of GO are not accepted	CZ	Allow GO trade/import/export; make sure they are tracked/reflected in Fuel/residual Mix Calculations

¹⁰ The disclosure system in Italy does mention the “environmental impact” of electricity generation to be disclosed, without specifically mentioning what this would entail. It could be assumed CO₂ emissions and nuclear waste will be part of the environmental impact, still, it remains slightly ambiguous.

Table 16 Key weakness and recommendation in “mostly in line” disclosure systems (IT Power, June 09)

	“Mostly in line” disclosure systems	Country	Recommendation
1	The system is fully operational but does not disclose environmental indicators (CO ₂ and nuclear waste are not disclosed)	CH ¹¹ , PL ¹² , NO, SK ¹³	Disclose CO ₂ emissions and nuclear waste as environmental indicators of electricity generation

¹¹ The tracked information comprises no environmental indicators, but rather consists of a detailed list of fuels including (differentiated) renewable sources.

¹² Poland has a fully operational disclosure system, which fails though on this one requirement, i.e. the disclosure of CO₂ emissions and nuclear waste of the energy generation (as explicitly mentioned by Directive 2003/54) is not foreseen.

¹³ Similar to Poland the disclosure system in Slovakia is quite advanced; still CO₂ emissions and nuclear waste of the energy generation (as explicitly mentioned by Directive 2003/54) is not foreseen. In addition issued RE-GO in Slovakia are tracked (“registered”) but it remains unclear if and how import/export of GO will be reflected in fuel mix calculations. A new Act on the promotion of electricity produced from RES and CHP, which is expected to cover CHP-GO and RE-GO in more detail, is currently under elaboration.

2.3.2 ☺

The disclosure system in a given country being deemed fully operational implies that according legislation was passed and the system was implemented up to an acceptable level of operation. The systems in these countries do not show the shortcomings as observed in the countries as described in 2.3.1 above. Still, these systems are not evaluated as “advanced” due to a number of remaining weaknesses of the systems in place, specifically regarding:

- The foreseen use of GO, e.g. disclosure is not based on GO, or GO are used only for support purposes;
- Remaining weaknesses in terms of the accuracy and reliability of the tracking system e.g. GO import and exports are not tracked or reflected in the Fuel Mix Calculation.

A more detailed breakdown of the key shortcomings and according recommendations is presented in Table 17.

Table 17 Overview of weaknesses and according recommendations for fully operational disclosure systems across Europe - ☹ (IT Power, June 09)

	Remaining weaknesses in fully operational disclosure systems	Country ☹	Recommendation
1	Design of the tracking system		
1a	The existing disclosure system is not based on GO	HU ¹⁴ , IE ¹⁵ , PT ¹⁶ , RO ¹⁷	Use GO as the basis of the disclosure system
1b	Secondary regulation is voluntary and not uniformly applied by energy industry	DE ¹⁸	Make secondary regulation mandatory
2	Accuracy and reliability of the tracking system		

¹⁴ The disclosure system in Hungary is operational but not based on GO; GO will be used to check the producer's entitlement for the feed-in tariff scheme, i.e. GO will be used for support purposes (only). Disclosure is based on supplier's and generator's declarations.

¹⁵ The fuel mix calculations per supplier and for Ireland are in place but do not imply the use of GO. It remains unclear whether an explicit tracking mechanism is currently in place in Ireland.

¹⁶ GO systems in Portugal are not yet in place.

¹⁷ There is a disclosure obligation in Romania on traders and retailers (i.e. retailer-specific fuel mix, plus product and residual product information if applicable); generators have to disclose their generating portfolio. The disclosure system is not based on GO but rather uses a contract-based electricity tracking system (based on net trading balances between market participants); the power exchange determines a disclosure mix for electricity bought from the exchange.

¹⁸ The guidelines issued by the electricity industry sector (VDEW/BDEW) are non-binding and followed by 80% of the industry. Other (competing) guidelines are in place (covering 8% of the industry), or some apply yet other rules. The government has the option to impose secondary regulation in case they would deem the BDEW guidelines not sufficient.

2a	The implicit and explicit tracking schemes are not fully aligned	NO ¹⁹	Align and improve the implicit and explicit tracking systems in place
2b	The explicit and implicit tracking mechanisms in place are not fully reliable and overall (too) complex	DE ²⁰ , PT ²¹	Introduce the use (& publication) of a Residual Mix at national/regional level
2c	No Residual Mix calculation is in place or foreseen	Flanders ²² , Wal- lonia ²³ , DE ²⁴ , DK ²⁵ , HU, LU, SI	Introduce the use (& publication) of a Residual Mix at national/regional level

¹⁹ The disclosure system in Norway could be deemed “advanced” were it not for the not fully aligned implicit and explicit tracking schemes, especially with regard to cross border trade. A supplier/producer/trader can choose to either rely on the national residual mix or on explicit information which has to be provided by means of redeemed GO. This implies a producer can sell (e.g. export) all his explicit attributes (GO) but still retain a high share of RE in the fuel mix.

²⁰ The default tracking option in Germany is an ex-post contract-based allocation mechanism as described in the sector guidelines. Therefore, the guidelines allow using a variety of explicit tracking mechanisms, such as bilateral contracts with specified origin of electricity, GO, RECS and private quality labels. The procedure is somewhat complex and there are no specific requirements about the explicit mechanisms, nor is it clear how double counting is prevented.

²¹ The disclosure system is being implemented up to a very detailed (and seemingly rather complex) level. The Portuguese system aims to avoid the use of a Residual Mix due to the monthly declarations of suppliers’ contracts and purchases (i.e. some form of explicit tracking). In theory this could be an option to be considered; still due to the high level of complexity the main concern is the feasibility and the practicability of such a system.

²² The Fuel Mix calculation in Flanders takes into account all issued RE-GO and CHP-GO. The methodology of this calculation goes a long way in respecting the principles of the E-TRACK standard; still the exercise is not completed up to the regional or national scale (i.e. the Residual Mix calculation), although in principle the necessary figures from DNO and TSO are available. Apart from the lack of a Residual Mix calculation the system in Flanders can be deemed “advanced”.

²³ The Fuel Mix calculation in Wallonia is based on supplier declarations, corrected for redeemed GO. No Residual Mix calculation is foreseen.

²⁴ There is no overall calculation of a residual mix in the VDEW/BDEW guidelines in Germany. Based on the published documents, the plain UCTE generation mix is used as a default value for implicit tracking.

²⁵ The general electricity labels in Denmark are not calculated as a residual mix; most importantly no correction for explicitly tracked attributes is foreseen.

2.3.3 ☺

The analysis shows that a number of countries have advanced disclosure systems in place, meaning they are going further than strictly required by the Directive and showing (some of) the features as recommended in the E-TRACK standard.

Still this does not imply those systems are perfect and there would be no more scope for improvement both at national level and in terms of alignment with systems in other countries. The key remaining shortcomings observed are presented in *Table 18***Error! Reference source not found.**

With regard to the Residual Mix the analysis primarily checked whether a Residual Mix was being calculated in the first place as part of the disclosure system in the given country:

- The following countries have adopted a Residual Mix calculation, i.e. ES, FI, GB, NL, PL, SE, NO;
- Brussels-Capital, Flanders, Wallonia, BG, CH, CY, CZ, DE, DK, EE, FR, GR, LV, LT, MT, PT, RO, SI thus far did not adopt a Residual Mix calculation;
- For the other countries it remains unclear whether a proper Residual Mix calculation is in place or not: AT, HU, IE, IT, LU, and SK.

A more detailed assessment of the applied methodologies (in terms of the methodological principles and according accuracy and reliability) could not be carried out as part of the analysis. This is primarily due to the methodology not being publicly available (i.e. UK), or to the lack of sufficiently detailed information for a number of countries (i.e. IE, NO, PL, SE). FI, NL and ES seem to be most advanced in their Residual Mix calculations.

Table 18 Overview of weaknesses and according recommendations for advanced disclosure systems across Europe - 😊 (IT Power, June 09)

	Scope for improvement in the countries with an “advanced” disclosure system	Country 😊	Recommendation
1	Design of the tracking system		
1a	Other electricity labels than GO are used for disclosure purposes	FI ²⁶ , SE ²⁷ , SI ²⁸	GO should ideally be the only label for disclosure
2	Fuel Mix Calculation and cross-border aspects		
2a	It remains unclear if and how exactly GO import and export are reflected in the Fuel Mix calculation	AT, GB ²⁹	Clarify and/or improve how exactly GO imports and exports are reflected in the Fuel Mix calculation

²⁶ Apart from also GO green power labels “NORPPA” and “Bra Miljöval” are in use to disclose green products. Still, if their use is coordinated and double counting is excluded, there is not necessarily a problem with regard to the reliability and accuracy of the tracking system. It is not fully clear whether these labels are also transferable (cross-border) and how this is dealt with.

²⁷ The use of GO for disclosure is recommended. Other labels are in use though, most notably “Bra Miljöval” which is a green power quality label that also serves as a transferable GO. The use of different certificates (i.e. Elcertificates, national GO and EECS, as well as physical contracts) for disclosure purposes is not fully clarified, resulting in double counting risk and loss of transparency. As long as the use of multiple “types” of GO is streamlined and double-counting is excluded the reliability of the tracking scheme in principle can be maintained (although it would be easier to use GO throughout). The issue of additionality and its relation to green labels such as “Bra Miljöval” may need dealing with.

²⁸ GO are being used as an explicit tracking mechanism for disclosure; still other labels are being used in parallel.

²⁹ When entering the United Kingdom GO are verified by Ofgem, and therefore are “tracked”. Still it remains unclear if and how these imported GO are used Fuel and in the Residual Mix calculations. Exports of GO are not monitored, as it is assumed no or very little GO are currently exported from the UK.

2b	Double counting risks remain in Fuel Mix calculations	GB ³⁰	Exclude remaining double counting risks
2c	Lack of a standardised way to deal with imports and exports of GO in Fuel and Residual Mix calculations	All ³¹	Introduce a standardised way to deal with imports and exports of GO in Fuel and Residual Mix calculations (at EU level)
2d	Lack of a standardised methodology for Fuel and Residual Mix calculations	All	Introduce a standardised methodology for Fuel and Residual Mix calculations (at EU level)

³⁰ Levy Exemption Certificates can be issued for RE production outside of the United Kingdom, resulting in a risk for double counting, because the use of the LECs is not tracked outside the United Kingdom and no information is exchanged between regulators/issuing bodies. See Case study on United Kingdom in 5.

³¹ This in principle is an issue for all 29 countries; during the analysis problems with how different countries treat GO cross-border transfers differently (leading to double-counting issues for disclosure purposes, and potentially also for national target purposes, and to restrictions in GO trade between countries) were reported for Denmark, Flanders, the Netherlands, United Kingdom and Wallonia. It can be assumed this issue is equally true for a larger number, if not all, countries that import or export GO. During the national consultation workshops in both Belgium and the Netherlands (October 2008) several stakeholders were in favour of a standardised use of GO and EU wide rules on how to deal with cross-border trade.

2.4 Conclusions and recommendations on disclosure policies in 29 European countries

The analysis has shown that from the 29 European countries, 14 plus Flanders and Wallonia have in line or even advanced disclosure (i.e. ☹ and ☺) systems in place. Furthermore the systems in 10 countries plus Brussels-Capital region are not yet fully in place. The remaining weaknesses vary significantly, i.e. some countries are only at the start of taking the necessary steps to implement a disclosure system, whereas others have fully operational systems which fail though on one or two remaining criteria. In a number of countries an almost fully operational disclosure system is in place which from a tracking perspective is in line or even advanced. The system fails though on complying with one aspect as required by the Directive, i.e. the CO₂ emissions and the nuclear waste related to the electricity generation are not disclosed. This is the case in CH, NO, PL and SK. Therefore the systems in those countries are deemed “mostly in line”.

The countries which do not have a fully implemented disclosure system either did not pass legislation on disclosure yet, or the disclosure system is not fully or properly implemented.

The reasons why fully operational systems (i.e.☺) are not evaluated as advanced mainly have to do either with the foreseen use of the GO (e.g. disclosure is not based on GO, GO are used for support purposes only), or there are remaining weaknesses in terms of the accuracy and reliability of the tracking system (e.g. GO import and exports are not tracked or reflected in the Fuel Mix Calculation, no Residual Mix calculation is foreseen).

None of the systems currently in place in Europe are fully accurate and reliable. Some of the systems are getting close to the highest standard of accuracy and reliability, implying that the remaining sources of inaccuracy and unreliability in the systems have to do not with the national system, but rather with a lack of a coordinated approach on how cross-border traded attributes (e.g. GO) should be handled in Fuel and Residual Mix calculations in the respective importing and exporting countries.

Based on the shortcomings observed in the disclosure systems currently in place throughout Europe, the according recommendations are summarised in Table 19, differentiated per level of implementation and individual country. The recommendations for improvement get more detailed for countries with a more advanced level of implementation, thus offering a step-wise approach to improve the existing tracking scheme in a given MS. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place.

Table 19 Summary of recommendations for the improvement of disclosure systems across Europe

☹	Recommendation	Applicable to
1	Develop or pass primary legislation on disclosure	BG, CY, LV, LT,
2	Develop and/or adopt and/or improve secondary regulation to effectively put in place a disclosure system (including tracking of GO transfers, imports and exports)	Brussels-Capital Region, EE, FR, GR, IT, LU, MT, RO
2a	When completing secondary regulation make sure GO transfers are tracked and GO imports and exports are reflected in the Fuel Mix calculation	HU, SK
3	Make the disclosure requirements mandatory; and allow for the import and export of GO	CZ
4	Include CO ₂ emissions and nuclear waste as part of the disclosure of the environmental impact of electricity generation	CH, CZ, (IT), PL, RO
☺	Recommendation	Applicable to
1	Make secondary regulation mandatory	DE
2	Use GO as the basis of the disclosure system	IE, PT
3	Align and improve the implicit and explicit tracking systems in place	DE, NO, PT
4	Introduce the use (and publication) of a Residual Mix at national/regional level	Flanders, Wallonia, DE, DK
😊	Recommendation	Applicable to
1	GO should ideally be the only label for disclosure	FI, SE, (SI)
2	Clarify and/or improve how exactly GO imports and exports are reflected in the Fuel Mix calculation	AT, GB, SE
3	Exclude remaining double counting risks	GB
4	Introduce a standardised way to deal with imports and exports of GO in Fuel and Residual Mix calculations (at EU level)	All
5	Introduce a standardised methodology for Fuel and Residual Mix calculations (at EU level)	All

It is emphasized that these results are the authors' assessments of the situation based on the currently available information. As mentioned before a fully detailed assessment of the Residual Mix calculations currently in place could not be carried out as part of the analysis mainly due to lack of sufficiently detailed data.

In order to make the actual systems in place more concrete, a number of case studies are described in Section 5.

Disclaimer: All findings, recommendation and interpretations of this project are based on the data as available to the project consortium at the time of publication, and are for the purpose of research only. The E-TRACK II project has no mandate from the European Commission to assess the implementation of tracking-related policies in Member States. Nevertheless the project consortium aims at giving sensible recommendations to the Member States and to the Commission.

3 Guarantees of origin - RE-GO

3.1 Assessment of implementation level of the RE Directive 2001/77

The RES-E Directive was adopted in 2001 and had to be implemented by October 2003 by the EU-15 MS. By October 2007 twelve out of EU-15 and five out of EU-12 countries had operational RE-GO systems in place. With regard to RE-GO Article 5 of Directive 2001/77 states:

“1. Member States shall, not later than 27 October 2003, ensure that the origin of electricity produced from renewable energy sources can be guaranteed as such within the meaning of this Directive according to objective, transparent and non-discriminatory criteria laid down by each Member State. They shall ensure that a guarantee of origin is issued to this effect in response to a request.

2. Member States may designate one or more competent bodies, independent of generation and distribution activities, to supervise the issue of such guarantees of origin.

3. A guarantee of origin shall:

- specify the *energy source* from which the electricity was produced, specifying the *dates and places of production*, and in the case of hydroelectric installations, indicate the capacity;

- serve to enable producers of electricity from renewable energy sources to demonstrate that the electricity they sell is produced from renewable energy sources within the meaning of this Directive.

4. Such guarantees of origin, issued according to paragraph 2, should be mutually recognised by the Member States, exclusively as proof of the elements referred to in paragraph 3. Any refusal to recognise a guarantee of origin as such proof, in particular for reasons relating to the prevention of fraud, must be based on objective, transparent and non-discriminatory criteria. In the event of refusal to recognise a guarantee of origin, the Commission may compel the refusing party to recognise it, particularly with regard to objective, transparent and non-discriminatory criteria on which such recognition is based.

5. Member States or the competent bodies shall put in place appropriate mechanisms to ensure that guarantees of origin are both accurate and reliable and they shall outline in the report referred to in Article 3(3) the measures taken to ensure the reliability of the guarantee system.

...”

With regard to GO the E-TRACK standard states that:

- A clear definition of GO is required;
- Redemption should be introduced for the use of GO;

- GO should technically be implemented as transferable certificates (and EECS should be used for implementation);
- (Countries should be able to use GO for cross-border accounting for targets if they wish;)
- Countries should clarify the relation of support schemes to the GO;
- EU Directives should link Guarantees of Origin to disclosure.

The legal provisions from the Directive and the recommendations of the E-TRACK standard are translated into a number of criteria and/or features against which the systems in place in each of the 29 countries will be evaluated. Similarly to the analysis on disclosure three different levels are distinguished:




Incomplete level of implementation: the system in place in the MS is not yet fully operational, and deemed *“behind”* the minimum requirements of the Directive - ☹;

Sufficient level of implementation: the MS has a fully operational system in place, and deemed *“in line”* with the minimum requirements of the Directive - 😊;

Advanced level of implementation: the MS has an advanced system in place, and deemed *“advanced”* compared to the minimum requirements of the Directive - 😄.

The criteria and features of the RE-GO systems in Europe are described in detail in Table 20.




Table 20 Description of the criteria used to distinguished levels of implementation with regard to RE-GO

			
Legislation	No legislation for RE-GO is in place	Relevant legislation is in place	Idem
Regulation	No secondary regulation (e.g. implementation rules & guidelines) are in place	Accordinging regulation is ready and available	Idem
Issuing Body	The IB or similar organisation is appointed to manage the GO system	An IB or similar organisation is appointed and manages the GO system through adequate operational procedures	In addition the GO system is managed through an electronic registry
Issuing	No RE-GO are issued	RE-GO are issued upon request, electronically or in paper form	RE-GO are always issued, and always electronically
Redemption	No redemption or similar process is in place; double counting is not excluded	No redemption process as such is in place, but double counting of GO is excluded	A (voluntary or mandatory) redemption process is in place
Information on GO	The minimum information as required by the RE Directive is not specified on the GO	The minimum information as required by the RE Directive is specified on the GO	Apart from the minimum required information; support (and other aspects) is on the GO
GO transfer and trade	Transfer and trade of GO is not accepted / foreseen	GO can be transferred and traded at national level	A system is in place to adequately track transfers and trade of GO
GO import and export	Import and export of GO is not accepted / foreseen	Imports and exports of GO are accepted, but not necessarily tracked	In addition, GO imports and exports are tracked in electronic registries
Use of GO for disclosure, support and target	The use of GO (for one or more purposes) is not foreseen or not properly defined and regulated	GO are used for disclosure purposes only	GO are also used for support and/or target purposes; the use of GO for different purposes is clearly defined and regulated to avoid double counting

3.2 Comparison of level of implementation in the 29 countries

The application of each of the criteria to all of the 29 countries is presented in Table 21.

Table 21 Overview of performance of 27 Member States (and Norway and Switzerland) with regard to RE-GO - Source: IT Power (June 09)

	RE-GO									
	Legislation	Regulation	Issuing Body	Issuing	Redemption	Information on GO	Import & export	GO for Disclosure	GO for Support	OVERALL SCORE
MAXIMUM SCORE:										
Austria										
Belgium-Brussels										
Belgium-Flanders										
Belgium-Wallonia										
Bulgaria										
Cyprus										
Czech Republic										
Denmark										
Estonia										
Finland										
France										
Germany										
Greece										
Hungary										
Ireland										
Italy										
Latvia										
Lithuania										
Luxemburg										
Malta										
Netherlands										
Poland										
Portugal										
Romania										
Slovakia										
Slovenia										
Spain										
Sweden										
United Kingdom										
Norway										
Switzerland										
										
										
										

The analysis shows that from the 29 countries the following countries have fully operational or even advanced RE-GO (i.e. ☹ and ☺) systems in place:

- Out of EU-15: AT, DE, DK, ES, FI, FR, GB, IT, NL, SE, UK, plus Brussels-Capital, Flanders and Wallonia have fully operational or even advanced RE-GO systems in place;
- Out of EU-12: EE, LT, SI and SK have fully operational or even advanced RE-GO systems in place;
- Also CH and NO have a fully operational RE-GO system in place.

Furthermore the analysis shows that the systems in the other countries are not yet fully operational. Still, and similar to the analysis on disclosure, within this group the remaining weaknesses vary significantly, i.e. some countries are only at the start of taking the necessary steps to implement a disclosure system, whereas others have fully operational systems that fail though on one or two essential criteria.

A schematic overview of the level of implementation for the investigated countries is given in Table 22. The following sections will present the results of the analysis in further detail for each of the different levels of implementation, and come up with recommendations tailored to each level and individual country.

Table 22 Grouping of countries with regard to the level of implementation of the RE-GO systems across Europe (IT Power, June 09)

<u>RE-GO</u>	<u>Not fully operational</u> ☹	<u>Fully operational</u> ☺	<u>Advanced</u> ☺
EU-15	GR, IE, LU, PT	DE, FR, GB, IT, SE	AT, Brussels-Capital, DK, ES, FI Flanders, NL, Wallonia
EU-12	BG, CY, CZ HU, LV, MT, PL RO	EE LT SK	SI
CH & NO			CH NO
	12	8	9

3.3 Common weaknesses

3.3.1 ☹

The analysis shows that the systems in 12 out of 29 EU countries are not yet fully operational. A number of MS did not include any provisions on RE-GO in national legislation yet; others effectively passed primary legislation but no (sufficient) further regulation has been passed or proposed. In detail:

- Out of EU-15: the systems in GR, LU, IE, PT do not have fully operational RE-GO systems in place;
- Out of EU-12: BG, CY, CZ, HU, LV, MT, PL and RO do not have fully operational RE-GO systems in place.

The countries which do not have a fully operational system in place either did not pass legislation on RE-GO yet (EU-15: GR, LU, PT), either the RE-GO system is not properly implemented yet (EU-15: IE; EU-12: BG, CY, CZ, HU, LV, MT, RO). Finally also PL has a RE-GO system in place, which from a tracking perspective can be deemed in line or even advanced, but which fails on one aspect, i.e. it does not recognize imported RE-GO from other countries.

An overview and background information per country are presented in Table 23.

Table 23 Overview of weaknesses and recommendations for not fully operational RE-GO systems across Europe - © (IT Power, June 09)

	Major weaknesses in RE-GO systems	Country ☹	Recommendation
1	No national legislation has yet been passed or proposed on RE-GO	PT ³²	Develop or pass primary legislation on RE-GO
2	No (sufficient) secondary regulation has been developed or passed with regard to the RE-GO system	BG ³³ , CY ³⁴ , GR, ³⁵ HU ³⁶ , IE ³⁷ , LU ³⁸ , LV ³⁹ , MT ⁴⁰ , RO ⁴¹	Develop and/or adopt secondary legislation to effectively put in place an accurate and reliable RE-GO system (including tracking of GO transfers, imports and exports)

³² Legislation on RE-GO has been drafted in Portugal but not yet passed; the TSO would act as IB.

³³ Legislation was passed in Bulgaria (introducing "certificates of origin" and "green certificates" which act as GO); still the system is not (fully) implemented, and the roles of GO are not fully clear.

³⁴ Technical details, standards, procedures of how the RE-GO system will be issued are going to be included in the secondary legislation in Cyprus; no operational RE-GO system is currently place yet.

³⁵ National legislation on GO was passed in Greece; secondary regulation and the implementation of the GO system is still outstanding.

³⁶ GO will be used to check the producer's entitlement to support (i.e. feed-in tariff) in Hungary. Detailed rules are under preparation, no GO registry is yet in place. The first GO will be issued in 2009.

³⁷ The framework in principle is available for a fully operational RE-GO system in Ireland; still no GO system as such has been put in place to date. A GO system for RE and CHP is planned to be implemented as part of the transposition of the new RES Directive. A first initiative to seek views of stakeholders has recently been launched by the regulator.

³⁸ Primary legislation on RE-GO in Luxemburg is contained in Article 18 of the Electricity Act from 1st August 2007; secondary legislation remains to be implemented.

3	RE-GO transfers and imports are not accepted or recognized	CZ ⁴² , PL ⁴³ , RO	Allow for RE-GO transfers and recognize RE-GO imports
4	RE-GO are not (properly) being issued	CZ	Introduce a system of (electronic) issuing for RE-GO, preferably using an electronic registry

³⁹ Legislation in Latvia was passed as well as (most of) secondary regulation, but the system is not yet implemented. Some regulatory aspects remain unclear, e.g. exact rules of issuing and registry.

⁴⁰ A number of aspects like GO issuing and registry seemingly are not yet regulated in Malta.

⁴¹ GO have been introduced but currently are not transferable and only used for statistical purposes only in Romania.

⁴² The RE-GO in Czech Republic is operational. Still GO are not (properly) issued, and GO are non-tradable with other European countries. It seems RE-GO are primarily used for support purposes (i.e. eligibility for the feed-in tariff system), which may explain the non-tradability of GO. It remains unclear whether there is a link to disclosure and if so whether use of GO for support and disclosure purposes are clearly aligned and regulated.

⁴³ The RE-GO system in Poland overall is quite advanced (e.g. central registry, mandatory redemption) but fails on accepting (recognizing) RE-GO from other MS as mentioned in the RE Directive.

3.3.2 ☺

Those countries with a fully operational RE-GO system in place have effectively implemented a proper system fulfilling the minimum requirements as set out by the Directive. Still, a number of weaknesses with regard to the robustness, accuracy and reliability of the RE-GO system remain. This often implies that the system, although “in place”, does not necessarily achieve the goals of RE-GO as a policy instrument in the way it potentially could or as it was intended by the Directive.

Table 24 Overview of weaknesses and recommendations for fully operational RE-GO systems across Europe - ☺ (IT Power, June 09)

	Remaining weaknesses in RE-GO systems	Country ☺	
1	Design of the RE-GO system		
1a	The use of RE-GO for disclosure and support (and target) is not (fully) defined and regulated	EE ⁴⁴ , LT ⁴⁵ , SE ⁴⁶	Define and/or clearly regulate the use of RE-GO for disclosure and support (and target)
2	Accuracy and reliability of the RE-GO system	EE, DE, FR, GB, IT, LT	Improve the accuracy of the tracking system, especially with regard to transfers, imports and/or exports of RE-GO
2a	An (electronic) RE-GO registry is in place but RE-GO cannot be transferred (electronically)	EE, FR ⁴⁷ , IT, LT	Introduce an electronic registry with RE-GO as electronically transferable certificates
2b	Double counting is not (sufficiently) excluded	EE, DE ⁴⁸ , FR ⁴⁹ , GB ⁵⁰ , IT ⁵¹	Make sure remaining double-counting risks are excluded

⁴⁴ The TSO is appointed as the issuing body for RE-GO. Still, the uses of RE-GO are not specified, nor are the rules on international trade.

⁴⁵ The RE-GO apart for disclosure could also be used for support in Lithuania. If the renewable electricity received support, the RE-GO is automatically redeemed. It was mentioned the RE-GO could also be used for target purposes but it is not fully clear how this would work.

⁴⁶ There is a national GO system which includes those plants which are supported by the quota system using Elcert support certificates, and an EECS-based GO system which excludes these plants. It remains unclear how the use of the national GO (for disclosure) relates to the use of Elcert certificates (for support) and to the EECS GO (for disclosure). In addition it remains unclear whether transfers, imports and exports of both types of GO are (properly) tracked.

⁴⁷ RE-GO in France can be transferred (in paper form) but these transfers are not tracked.

⁴⁸ Double selling is forbidden by law (including a penalty system) in Germany but the enforcement is not in place.

Overview of tracking related policies in Europe

2a	RE-GO transfers, imports and/or exports are not (sufficiently) tracked		
2b	Double counting is not (sufficiently) excluded	DE ⁵² , FR ⁵³ , GB ⁵⁴ , IT ⁵⁵ ,	
2c	An electronic RE-GO registry is in place but RE-GO can be transferred only in paper form	FR, IT, LT	
3	Transfer, imports and exports of RE-GO		
3a	RE-GO transfers, imports and/or exports are not (sufficiently) tracked	DE ⁵⁶ , FR ⁵⁷ , GB ⁵⁸ , IT ⁵⁹ , LT ⁶⁰ ,	Improve and expand the existing tracking system for all RE-GO transfers, imports and exports

⁴⁹ Redemption of GO is not mandatory.

⁵⁰ No concept of redemption is in place. It is not clear whether or how double counting is excluded.

⁵¹ The decree in Italy prescribes that a GO can be used only once, but there is no way of controlling this. There is no concept of “redemption” to exclude double counting.

⁵² Double selling is forbidden by law (including a penalty system) in Germany but the enforcement is not in place.

⁵³ Redemption of GO is not mandatory.

⁵⁴ No concept of redemption is in place. It is not clear whether or how double counting is excluded.

⁵⁵ The decree in Italy prescribes that a GO can be used only once, but there is no way of controlling this. There is no concept of “redemption” to exclude double counting.

⁵⁶ The issuing and registry keeping by the different issuing bodies in Germany is not coordinated. An EECS system is in place but this is not recognised as the official RE-GO system. The EECS system registers RE-GO imports, but it remains unclear whether the official system does.

⁵⁷ RE-GO in France can be transferred (in paper form) but these transfers are not tracked.

3b	Transfer, import or export of RE-GO is not foreseen, not regulated or conditional	EE, LT ⁶¹ , SK ⁶²	Allow for RE-GO transfers and exports, and simplify RE-GO imports
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⁵⁸ Import and export of RE-GO is possible and accepted but not necessarily recorded in registry.

⁵⁹ RE-GO in Italy can be transferred (in paper form) but these transfers are not tracked, nor are imports.

⁶⁰ RE-GO in Lithuania can be transferred but the transfer is not tracked.

⁶¹ RE-GO can be transferred or imported only in combination with the physical electricity. RE-GO export is not foreseen in legislation.

⁶² The RE-GO system in Slovakia is quite advanced; still RE-GO export is not possible, neither is (national) transfer of RE-GO. RE-GO from other countries can be imported into Slovakia.

3.3.3 ☺

The analysis shows that nine countries have advanced RE-GO systems in place, i.e. AT, Brussels-Capital, CH, DK, ES, FI, Flanders, NL, SI, NO and Wallonia.

The RE-GO systems in these countries go a long way in reaching a decent level of accuracy and reliability and show (a number of) the features as recommended in the E-TRACK standard, i.e.

- These systems are based on transferable certificates which are tracked in electronic registries; all transfers, imports and exports of RE-GO are always tracked.
- RE-GO are used at least for disclosure purposes; other uses of RE-GO, i.e. with regard to support (and target) are clearly defined and regulated.
- Double counting is minimized and redemption of RE-GO is in place upon use;

The systems in these countries, in principle, are technically capable of dealing with cross-border accounting for different uses of RE-GO, at least between countries with a similar level of implementation. Similarly to disclosure, the remaining weaknesses have to do not with the system at national level but rather with a lacking coordinated use and definition of RE-GO above national state level. This could be through European legislation (i.e. through requirements in a revised disclosure Directive and/or in the currently being revised RE Directive), or through a voluntary but commonly agreed system such as or similar to EECS.

Table 25 Overview of weaknesses and recommendations for advanced RE-GO systems across Europe - ☺ (IT Power, June 09)

	Remaining weakness in RE-GO systems	Country ☺	Recommendation
1	Inconsistent definition and use of RE-GO among different EU countries resulting in trade barriers and double counting risks	All	A standardised use of RE-GO and agreed rules on its use for disclosure, support (and target) purposes above national state level

3.4 Conclusions and recommendations on RE-GO policies in 29 European countries

The analysis shows that from the 29 countries, a significant number have fully operational or even advanced RE-GO (i.e. ☺ and ☺) systems in place. In detail:

- Out of EU-15: AT, DE, DK, ES, FI, FR, GB, IT, NL, SE, UK, plus Brussels-Capital, Flanders and Wallonia have fully operational or even advanced RE-GO systems in place;
- Out of EU-12: EE, LT, SI and SK have fully operational or even advanced RE-GO systems in place;
- Also CH and NO have a fully operational RE-GO system in place.

Furthermore the analysis shows that the systems in 12 countries are not yet fully operational. Still, and similar to the analysis on disclosure, it needs to be emphasized that within this group the remaining weaknesses vary significantly, i.e. some countries are only at the start of taking the necessary steps to implement a disclosure system, whereas others have fully operational systems that fail though on one or two essential criteria.

In detail:

- Out of EU-15: the systems in GR, LU, IE, PT do not have fully operational RE-GO systems in place;
- Out of EU-12: BG, CY, CZ, HU, LV, MT, PL and RO do not have fully operational RE-GO systems in place.

The countries which do not have a fully operational system in place either did not pass legislation on RE-GO yet, either the RE-GO system is not properly implemented yet. Finally also PL has a RE-GO system in place, which from a tracking perspective can be deemed in line or even advanced, but which fails on one aspect, i.e. it does not recognize imported RE-GO from other countries.

RE-GO are primarily used for disclosure purposes. Often there is a link with the national support scheme, either through the indication on the RE-GO of support received (e.g. DE, UK), either through a linked (and clearly regulated) use of the RE-GO and the support/quota certificate (e.g. Flanders, Wallonia, Brussels-Capital). Hungary plans to use the RE-GO only for support purposes (i.e. to verify the eligibility for the feed-in tariff), rather than for disclosure.

The RE-GO systems in a number of countries, in principle, are technically capable of allowing for (cross border) target accounting. Still, RE-GO as such have not been directly used as an instrument for target compliance (with EU indicative targets).




A clear definition and a (more) standardised use of RE-GO above national state level are highly recommended, especially with regard to cross-border aspects. On the uses of RE-GO the following can be put forward:

- Disclosure should be the default and minimal use for RE-GO;

- If there is a link with support this needs to be clarified and clearly regulated at national level, and rules need to be agreed above national level on cross-border trade (either through a voluntary system, either through European legislation);
- The use for target accounting remains a (technically feasible) option, and can be relevant especially with regard to the cooperation mechanisms as described in the new RES-E Directive.

Based on the shortcomings observed in the RE-GO systems currently in place throughout Europe, the major recommendations are summarised in Table 26, differentiated per level of implementation and individual country. The recommendations for improvement get more detailed for countries with a more advanced level of implementation, thus offering a step-wise approach to improve the existing tracking scheme in a given MS. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place.

Table 26 Recommendations on implementation of the RE-GO systems

	Recommendation	Applicable to
1	Develop or pass primary legislation on RE-GO	GR, LU, PT
2	Develop and/or adopt secondary legislation to effectively put in place an accurate and reliable RE-GO system (including tracking of GO transfers, imports and exports)	BG, CY, CZ, HU, IE, LV, MT, RO
3	Allow for RE-GO transfers and recognize RE-GO imports	PL, RO
	Recommendation	Applicable to
1	Define and/or clearly regulate the use of RE-GO for disclosure and support (and target)	EE, LT, SE
2	Improve the accuracy of the tracking system, especially with regard to transfers, imports and/or exports of RE-GO	
2a	Introduce RE-GO as electronically transferable certificates	EE, FR, LT
2b	Make sure remaining double-counting risks are excluded	EE, DE, FR, GB, IT
3	Allow for RE-GO transfers and exports, and simplify RE-GO imports	EE, LT, SK
	Recommendation	Applicable to
1	A standardised use of RE-GO and agreed rules on its use for disclosure, support (and target) purposes above national state level	All

In order to make the actual systems in place more concrete, a number of case studies is described in Section 5.

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4 Guarantees of Origin - CHP-GO

4.1 Assessment of implementation level of the CHP Directive 2004/08

With regard to CHP-GO Article 5 of Directive 2004/8 states:

“1. On the basis of the harmonised efficiency reference values referred to in Article 4(1), Member States shall, not later than six months after adoption of these values, ensure that the origin of electricity produced from high-efficiency cogeneration can be guaranteed according to objective, transparent and nondiscriminatory criteria laid down by each Member State. They shall ensure that this guarantee of origin of the electricity enable producers to demonstrate that the electricity they sell is produced from high efficiency cogeneration and is issued to this effect in response to a request from the producer.

2. Member States may designate one or more competent bodies, independent of generation and distribution activities, to supervise the issue of the guarantee of origin referred to in paragraph 1.

3. Member States or the competent bodies shall put in place appropriate mechanisms to ensure that the guarantee of origin are both accurate and reliable and they shall outline in the report referred to in Article 10(1) the measures taken to ensure the reliability of the guarantee system.

4. Schemes for the guarantee of origin do not by themselves imply a right to benefit from national support mechanisms.

5. A guarantee of origin shall:

- specify the lower calorific value of the fuel source from which the electricity was produced, specify the use of the heat generated together with the electricity and finally specify the dates and places of production;
- specify the quantity of electricity from high efficiency cogeneration in accordance with Annex II that the guarantee represents;
- specify the primary energy savings calculated in accordance with Annex III based on harmonised efficiency reference values established by the Commission as referred to in Article 4(1). Member States may include additional information on the guarantee of origin.

6. Such guarantees of origin, issued according to paragraph 1, should be mutually recognised by the Member States, exclusively as proof of the elements referred in paragraph 5. Any refusal to recognise a guarantee of origin as such proof, in particular for reasons relating to the prevention of fraud, must be based on objective, transparent and non-discriminatory criteria.

In the event of refusal to recognise a guarantee of origin, the Commission may compel the refusing party to recognise it, particularly with regard to objective, transparent and non discriminatory criteria on which such recognition is based.”

Similarly to the analysis on Disclosure the situation in the 29 countries will now be assessed with regard to the level of implementation of the CHP-GO systems, looking at institutional, managerial and operational aspects of CHP-GO. Again three different levels are distinguished, based on roughly the same criteria as used for RE-GO:




Incomplete level of implementation: the system in place in the MS is not yet fully operational, and deemed *“behind”* the minimum requirements of the Directive - ☹;

Sufficient level of implementation: the MS has a fully operational system in place, and deemed *“in line”* with the minimum requirements of the Directive - 😊;

Advanced level of implementation: the MS has an advanced system in place, and deemed *“advanced”* compared to the minimum requirements of the Directive - 😄.

The criteria and features of the CHP-GO system are described in detail in Table 27 below.




Table 27 Description of the criteria to distinguish the levels of implementation with regard to CHP-GO systems

			
Legislation	No legislation for CHP-GO is in place	Relevant legislation is in place	Idem
Regulation	No regulation (e.g. implementation rules and guidelines) in place	Accordinging regulation is ready and available	Idem
High Efficiency (HE) Rules in place	No regulation to determine the HE CHP production of a CHP plant was proposed or passed	Detailed regulation has been passed comply with the CHP calculation guidelines	Idem
Issuing Body (IB)	No proper GO system is in place; no IB or similar organisation is appointed to manage the GO system.	An IB or similar organisation is appointed to manage the GO system through adequate operational procedures	An IB or similar organisation manages the GO system in a given domain; an electronic registry is used
Issuing	No CHP-GO are issued	CHP-GO are issued upon request, electronically or in paper form	CHP-GO are always issued, and always electronically
Redemption	No redemption or similar process is in place; double counting is not excluded	No redemption process as such is in place, but double counting of GO is excluded	A (voluntary or mandatory) redemption process is in place
Information on GO	The minimum information as required by the CHP Directive is not specified on the GO	The minimum information as required by the CHP Directive is specified on the GO	Apart from the minimum required information; support is also earmarked on the GO
GO transfer and trade	GO cannot be transferred or traded	GO can be transferred and traded at national level	A system is in place to adequately track transfer and trade of GO
GO import and export	GO cannot be imported or exported	Import/export of GO is accepted but not tracked or registered	Import/export of GO is tracked in compatible electronic registries
Use of GO for disclosure, support	The use of GO (for one or more purposes) is not foreseen or not properly defined and regulated	GO are used for disclosure purposes only	GO are also used for support; the different uses are clearly defined and regulated

4.2 Comparison of level of implementation in the 29 countries

The application of each of the criteria to each of the 29 countries is presented below.

Table 28 Overview of performance of 27 Member States (and Norway and Switzerland) with regard to CHP-GO (IT Power and ECN - June 09)

	CHP-GO										
	Legislation	Regulation	HE rules in place	Issuing Body	Issuing	Redemption	Information on GO - Support	GO import & export	GO for disclosure	GO for support	OVERALL SCORE
Maximum Score											
Austria											
BE-Brussels											
BE-Flanders											
BE-Wallonia											
Bulgaria											
Cyprus											
Czech Republic											
Denmark											
Estonia											
Finland											
France											
Germany											
Greece											
Hungary											
Ireland											
Italy											
Latvia											
Lithuania											
Luxemburg											
Malta											
Netherlands											
Poland											
Portugal											
Romania											
Slovakia											
Slovenia											
Spain											
Sweden											
United Kingdom											
Norway											
Switzerland											
											
											
											

4.3 Comparison of national policies and implications

The analysis shows that the CHP-GO systems in a significant number of countries are not yet fully operational, due to different reasons:

- No legislation on CHP-GO has been passed yet:
 - o From the EU-15: IE⁶³, FI⁶⁴, PT⁶⁵
 - o Also CH⁶⁶ did not pass legislation on CHP-GO
- Legislation on CHP-GO has passed, but the according regulation has not yet been passed or fully or properly implemented:
 - o From the EU-15: GR⁶⁷, LU⁶⁸ and Brussels-Capital⁶⁹;
 - o From the EU-12: BG⁷⁰, CY⁷¹, LV⁷², MT⁷³, SK⁷⁴;
 - o Also the system in NO⁷⁵ is not fully implemented

⁶³ There is no CHP-GO system in place in Ireland. A GO system (for both CHP and RE) is planned to be implemented as part of the transposition of the new RES Directive. A first initiative to seek views of stakeholders has recently been launched by the regulator.

⁶⁴ The legal basis for a CHP-GO system is currently being prepared.

⁶⁵ Legislation for implementing a CHP-GO system is in the process of being developed. At the beginning of 2008 a draft was circulated to CHP stakeholders for discussion.

⁶⁶ Switzerland has a current share of approximately 1,64 TWh of CHP. As a full RE-GO system is in place the technical capacity to deal with CHP-GO is readily available, still there is no practical need to implement CHP-GO. Therefore no legislation on CHP GO is in place or planned in Switzerland.

⁶⁷ At present there is national legislation regarding the CHP-GO system in Greece, but the system is not yet operational.

⁶⁸ In the current electricity law (from August 21st, 2007) reference to CHP-GO is available in Art. 18 (2). Detailed implementation rules will still need to be decided.

⁶⁹ Legislation has been passed for the system to start on 1st January 2007, but the CHP-GO issuing system is yet to become fully operational due to automation of the supportive IT system. Still, CHP-GO will be issued for the period since January 2007, but as all the electricity is auto-consumed by the producer, these GO are immediately redeemed.

⁷⁰ An ordinance based on Art. 159 of the Energy Act lists detailed characteristics of CHP-GO in Bulgaria. CHP-GO have not been issued yet.

⁷¹ No CHP-GO system is currently in place in Cyprus. Technical details, standards, procedures of how the CHP system will be implemented will be included in the secondary legislation.

⁷² In 2006 Regulation No. 921 regarding Electricity Production in Cogeneration established rules on CHP-GO. Still, the information on and use of the CHP-GO is not fully defined in this regulation.

⁷³ The legal basis for a CHP-GO system is provided in Malta's Resources Authority act No. 186 of 2004. Still, no CHP-GO system is currently in place.

⁷⁴ The general framework for CHP-GO is set in Act No. 656 of 26 October 2004 on Energy in Slovakia. Detailed regulations on the implementation of CHP-GO have not yet been implemented, nor has the issuing body for CHP-GO been appointed. A new decree on high efficiency of CHP production is in preparation.




- A lot of countries have a CHP-GO system in place, of which a number of critical requirements for a decent tracking system are not yet fulfilled, e.g. no central registry is in place, there is no (sufficient) alignment with the RE-GO system, no redemption process is in place, transfers are not allowed, or import and/or export are not accepted, no high-efficiency rules are in place etc. This largely has to do with the recent implementation of CHP-GO systems (i.e. the experience in any country is still rather limited, e.g. hardly any CHP-GO has been transferred, imported or exported thus far), and the limited use of CHP-GO for disclosure (and support) purposes to date.

Finally, the CHP-GO systems in Flanders, SI and Wallonia can be considered as ahead of the others. Further analysis and recommendations on CHP-GO systems in the different countries will be carried out in Work Package 4 which is specifically dedicated to CHP-GO. A schematic overview of the level of implementation for the 29 countries is given in the table below.

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⁷⁵ GO legislation is in place both for RES-E and CHP. However, the GO scheme is only operational for RES-E due to the negligible relevance of CHP in Norwegian energy supply.

Table 29 Grouping of countries with regard to the level of implementation of CHP-GO systems (IT Power and ECN - June 09)

	<u>Behind</u> 	<u>In line*</u> 	<u>Advanced</u> 
EU-15	Brussels-Capital, FI, GR, IE, LU, PT	AT, DE, DK, ES, FR, GB, IT, NL, SE	Flanders, Wallonia
EU-12	BG, CY, LV, MT	CZ, EE, HU, LT, PL RO, SK	SI
CH & NO	CH, NO		
	11 + Brussels-Capital	16	1 + Flanders and Wallonia

*Although most countries have not yet fully implemented all elements of a decent CHP-GO tracking system

5 Conclusion

Retailers of electricity have to annually disclose their energy mix cf. Art 3(6) of Directive 2004/54/EC, including the fuel mix and environmental parameters (i.e. average CO₂ emissions and nuclear waste). This disclosure is meant to enable informed choices by consumers, but in order to determine fuel mix and emissions, an accurate and reliable tracking system is required. Guarantees of Origin are designed exactly to account for volumes of high-efficient CHP and RE. Still, the current implementation of tracking policies is not sufficient in many European countries. The analysis has shown that the disclosure systems in a significant number of MS are not fully in place. Similarly, many MS did not yet implement appropriate national regulations on RE-GO and CHP-GO. On the other hand, there is a number of European countries which have chosen an advanced implementation of GO and/or disclosure, which exceeds the requirements of the respective Directives and in most cases contains significant elements of the E-TRACK standard recommendation of August 2007.

Several New MS show a very slow development of actual competition in the electricity market, associated with the existence of low regulated tariffs. It was observed that the interest in disclosure is highly related to the level of competition and awareness of electricity generation in a given country. In such a framework, electricity disclosure can only have the meaning of consumer education about statistical data on the national electricity supply. Still, many New MS have made good progress in implementing RE-GO (as have some on CHP-GO).

From the analysis this E-TRACKII report has developed recommendations to improve the existing tracking systems and to make the tracked information more reliable, with a view to increase credibility and market value of power products and portfolios. This is relevant as consumers are becoming increasingly interested in how their electricity was produced. An EU market for green power has already been established and is growing fast, both at industrial and domestic level. The recommendations for improvement of the systems get more detailed for countries with a more advanced level of implementation. This implies that in principle all recommendations are relevant for the countries at the initial stage of implementation, whereas only the more specific recommendations are applicable for those countries with more advanced tracking systems in place. The resulting set of recommendations thus offers to policy-makers and regulatory authorities a step-wise approach to gradually increase the level of implementation of the tracking schemes in a given MS.

An overview of the level of implementation for all 29 countries with regard to disclosure, RE-GO and CHP-GO is given in the table below.

Table 30 Overview of levels of implementation on disclosure, RE-GO and CHP-GO for 29 European countries (IT Power - June '09)

	D	REGO	CHPGO		D	REGO	CHPGO
AT				IE			
BE-Brussels-Cap				IT			
BE-Flanders				LV			
BE-Wallonia				LT			
BG				LU			
CY				MT			
CZ				NL			
DE				PL	Mostly		
DK				PT			
EE				RO			
ES				SE			
FI				SI			
FR				SK	Mostly		
GB				NO	Mostly		
GR				CH	Mostly		
HU							

☹
☺
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6 Case studies

6.1 ☹ France

6.1.1 Snapshot

The disclosure obligation was transposed in national legislation and suppliers have to disclose information with regard to their electricity generation since the 1st July 2004. Disclosure is ex-post and is an obligation on all suppliers to end consumers. Since 1 July 2004, suppliers have to indicate on their bill, or an attached document, the share of different primary energy sources they have used in order to produce the electricity sold during the preceding year. Disclosure applies to the supplier's portfolio. Suppliers also have to indicate in which documents consumers can find information on the quantity of carbon dioxide emissions and/or radioactive waste per kWh produced from these primary energy sources. For 2003, the fuel mix shares were estimated on the basis of available data. After that, suppliers have to send the information on their global mix each year before 31 December. Agents from the Ministry or from the regulator CRE (Commission de Régulation de l'Energie) have the power to enquire in order to verify disclosed data.

Still, no further regulation is foreseen, and the implementation of disclosure in practice is carried out by each supplier according to its own rules. Usually, they integrate their production mix and what is mentioned in bilateral contracts or the sellers' mix (if known). The rest is covered by UCTE mix. There is no national residual mix calculated by the regulator or the TSO. Powernext, the electricity exchange, does not have a specific mix because they do not receive this information from sellers. So they too direct their net buyers to the UCTE mix.

A RE-GO system is "in place". Still, GO are issued on a voluntary basis upon demand of the entitled stakeholders and in practice mainly RECS certificates are used for disclosure of green products in France. They are used to prove green offers from all suppliers, but they are not used in the suppliers' mix calculation as the RECS certificate is not explicitly mentioned in legislation as a possible source of information.

6.1.2 Major shortcomings

The above implies that the current disclosure system in France is behind compared to the requirements of the Directive, as it does not fulfil the requirement in the Directive which states "MS shall take the necessary steps to ensure that the information provided by suppliers to their customers pursuant to this article is reliable," due to the following reasons:

- No secondary regulation is in place which streamlines the current inconsistent implementation of the primary legislation by different suppliers;
- Double counting is not excluded as the transfer of GO (in pdf form) is not mandatorily tracked; it can be tracked if the indication that it has been used in another country is indicated in the column "counterpart" of the registry;

- No implicit tracking mechanism in place. This implies that the Residual Mix is not properly calculated, and thus disclosure statements are not fully reliable. In addition exports of GO are not reflected in the Fuel Mix and Residual Mix calculations.

Furthermore, when comparing the system against the requirements of the “advanced” level of implementation, the following shortcomings are identified:

- GO are not a mandatory tool for disclosure (i.e. contracts, UCTE mix etc. are used);
- As redemption is not mandatory there is no proof that the same GO is not used several times.

6.1.3 Recommendations for improvement

The French disclosure system could relatively easily be upgraded to the “in line” or even “advanced” level of implementation if the following changes and improvements were carried out:

- GO should be issued and tracked in electronic registries;
- A Residual Mix Calculation should be introduced which excludes GO and RECS certificates (as these are “explicit tracking mechanisms” and should be taken out of the Residual Mix – which is an “implicit tracking mechanism”);
- GO imports and exports should be tracked and reflected in the Residual Mix Calculation;
- There should be a formal clarification on where the green attribute of electricity supported by the feed-in tariff should go when it is not embodied by a GO.

More background on the French system can be found in the Annex “Country Monitoring Reports” and in the national workshop minutes (see <http://www.e-track-project.org/events.php>).

6.2 ☺ UK

6.2.1 Snapshot

The tracking systems with regard to disclosure, RE-GO and CHP-GO in UK are largely in place. The disclosure requirement is implemented at national level through the ‘Electricity (Fuel Mix Disclosure) Regulation, Statutory Instrument No. 391⁷⁶, based on Renewable Energy Guarantees of Origin (RE-GO). The use of RE-GO to demonstrate compliance with the disclosure Directive is put under an electricity supply licence condition.

The system in place is a multi-certificate system; different certificates have different functions and the different uses are generally clearly distinguished and aligned. The certificates are managed in different databases, as is shown in the table below. The databases for ROCs, RE-GO and LECs (for RE) are all managed by Ofgem. The CHP-GO database, as managed by CHPQA on behalf of Defra, has no link to the other databases.

Table 31 Overview of certificates in use in UK

	Used for	Database administered by	On behalf of
Levy Exemption Certificates (LECs) for RE	Support and disclosure purposes	Ofgem	DECC
Levy Exemption Certificates (LECs) for CHP	Support purposes	Ofgem	DECC
Renewables Obligation Certificates (ROC)	Support purposes	Ofgem	DECC
Renewable Energy Guarantee of Origin (RE-GO)	Disclosure purposes	Ofgem	DECC
CHP-Guarantee of Origin – CHP-GO	Disclosure purposes (in theory)	CHPQA	DEFRA

A CHP-GO system is in place with legal provisions and guidelines published. CHP-GO will be issued on the generator’s request, will be in paper form and will be kept by the

⁷⁶ Statutory Instruments 2005 No.391 Electricity and Gas - The Electricity (Fuel Mix Disclosure) Regulations 2005

generator. The Department for Environment, Food and Rural Affairs (DEFRA) is appointed as the competent authority to issue CHP-GO. The use of CHP-GO for disclosure purposes is foreseen; although no large interest is anticipated as the CHP-GO has no financial value (as there is no quota for CHP as there is for renewable electricity). CHP-GO have no use for support purposes. RE based CHP in principle can receive both RE-GO (in electronic form) and CHP-GO (in paper form).

As LECs are a tax instrument the issuing is a responsibility of the Treasury. There is no renewables LEC registry, but suppliers obtain confirmation from Ofgem that they have a unique claim on a LEC. Information on the ownership of LECs is not open to the public, although the list of registered production devices is now available as are aggregated issuing reports. Production devices located outside the UK can be accredited and receive LECs. CHP-LECs are associated with the CHPQA database, which can thus be regarded as the CHP-LEC registry.

The high number of different certificates and databases does not necessarily have to be a problem; still, it requires careful coordination of the different uses of the certificates, and alignment between the policy-making and regulatory authorities involved.

A number of weaknesses remain in the UK system, which will be described below, as will suggestions for improvement.

6.2.2 Remaining double counting risks

There is no concept of redemption for RE-GO; instead compliance with the disclosure licence condition is deemed by RE-GO being present in the account of a supplier at midday on 1st July following the production year ended 31st March. It is not clear whether these RE-GO are somehow earmarked as being used during this process; if not there is a risk of the same RE-GO being used once more without the option to track such double use.

Another remaining weakness is the fact that import and export of RE-GO, despite being possible, is not tracked in the database, and thus not reflected in the Fuel (and Residual) Mix Calculation, which can cause double-counting:

- In UK: as both a LEC and a RE-GO are issued for the same MWh of green electricity, in principle the same MWh of green electricity could be sold twice (at a premium) to consumers, once backed by the LEC and once backed by the RE-GO;
- LECs can (and are currently being) issued for renewable electricity generation outside the UK; this LEC can travel back to the UK (on condition that the associated physical electricity - notionally - travels back to the UK with it), while the associated RE-GO can be used to back green supply outside UK as proof of its green electricity. Currently no information is being exchanged between Ofgem's LECs/RE-GO registry and other registries in Europe, therefore double counting cannot be excluded;

- Similar double counting as in UK (i.e. both LEC and RE-GO used as proof of the same MWh of green electricity) could happen in other MS, provided the national legislation allows for the use of LECs as proof for green supply;
- The above is equally true for CHP-GO, once they would be issued.

In order to exclude double/multiple counting outside the UK it is recommended Ofgem exchanges information with those regulators and issuing bodies in countries where LECS are issued and used.

6.2.3 Fuel and Residual Mix Calculation

The evidence for Fuel Mix calculations is based on RE-GO for electricity from renewable sources generated in UK. For electricity produced by other generators evidence is based on verified generator declarations.

For supply that cannot be certified as either of these, suppliers will use the Residual Mix calculation. The residual mix is calculated by DECC. The methodology is not specified, but the data are obtained through an informal arrangement between BERR and the major suppliers (covering about 90% of supplies).

As the methodology for the Residual Mix calculation is not publicly available it can not be assessed on its accuracy. RE-GO from outside the UK are accepted as proof for disclosure purposes; still, it seems these RE-GO are not taken into account in the Fuel and Residual Mix calculations (nor is the use communicated to the relevant authority of the exporting country).

Covering a larger share of the supplies (currently at about 90%) would increase the accuracy of the Residual Mix calculation.

A standard methodology for the Residual Mix calculation would greatly improve the accuracy and reliability of Residual mixes (especially for those countries between which exports and imports take place), and minimise double counting or loss of information. Ideally this standard methodology should be recognised and applied by all EU countries; in the short term the UK should agree on a harmonised Residual Mix calculation with the countries it imports significant GO from (GO export is assumed to be on-existent at this stage).

6.2.4 Green Supply Guidelines

The rising demand of consumers for green supply, and the reported confusion of consumers about what their where actually signing up for, lead to the decision to revise Ofgem's Green Supply Guidelines, with a view to update and revise the existing Guidelines on Green Supply Offerings and to address the confusion that was reported among consumers with regard to green tariffs.

Initially a star system was suggested to distinguish different levels of environmental additionality, i.e. increased levels of environmental additionality would be labelled with a bronze, silver and golden star respectively. One of the outcomes of the consultation

process was for Ofgem to decide to “move away from financial contributions to greenhouse gas emissions (GHG) in order to demonstrate (different levels of) additionality”.

The revision as a whole has brought up a number of issues with regard to the tracking systems and the allocation of attributes (most notably the CO₂ emissions related to green supply) as the E-TRACKII UK workshop (Oct 2008) clearly demonstrated. A number of market actors and consumers is concerned that the Guidelines in their current form do not allow for green electricity consumers to claim the reduced carbon emissions related to green supply.

In terms of disclosure of fuel mixes it should be foreseen that the buying of a green product by consumer X is reflected in the fuel mix calculation, i.e. that this green product is deducted from the fuel mix, thus making the fuel mix of the remaining consumers less green, or “dirtier”.

Early February 2009 the final Guidelines were published. One of the key changes related to the scope of the guidelines, i.e. the final Guidelines cover only domestic and Small and Medium Enterprise (SME) sectors and exclude the Industrial & Commercial (I&C) sector. Another key change is the inclusion of a volume test to ensure that suppliers do not double-count the greenness of a unit of renewable electricity. Finally, a supplier must demonstrate that the environmental measure it undertakes, as part of the green tariff, results in the abatement of at least a minimum threshold of CO₂ emissions. This approach replaces the star-ranking system that was proposed in the July document based on financial contributions.

From a tracking perspective a claim of the carbon neutrality of green supply by voluntary consumption would indeed cause a double counting issue. Further refinement of the Guidelines would be necessary with regard to the ownership and unique allocation of the CO₂ reduction. How exactly the volume test will be organised is not fully clear at this point. The detailed analysis is outside the scope of this report, but could be taken up in the further E-TRACKII work.

The accreditation scheme (including detailed accreditation scheme rules) should next be implemented by the participating suppliers, overseen by Ofgem, and is expected to be run by an independent body by summer 2009.

6.2.5 Coordination of RE-GO and CHP-GO

There is currently no registry for CHP-GO, as the responsibility to keep the CHP-GO lies with the generator. As RE based CHP can receive both RE-GO (electronic) and CHP-GO (paper), there is in principle a double counting risk – as both GO can be used for disclosure purposes. Still, as no CHP-GO have yet been issued this risk is theoretic at this point.

More background on the regulations in place can be found in the Country Monitoring Reports (see the Annex to this report) and in the national workshop minutes (see <http://www.e-track-project.org/events.php>).

6.3 ☺ Belgium

6.3.1 Snapshot

Belgium is organised as a federal state in which some of the competences with regard to the energy market are delegated to the three regional governments, i.e. the Flanders, Walloon and Brussels-Capital region. The regions are in charge of renewable energy, rational use of energy, electricity distribution (below 70kV) and public gas distribution. The federal state remains in charge of the national equipment program, pricing policies, electricity transmission (above 70 kV) and the nuclear fuel cycle. Offshore production (i.e. wind) is the one renewable energy technology still regulated at the federal level.



Figure 1 Federal state of Belgium - Source: BBC

The RE-GO systems in Flanders and Wallonia are fully operational and implemented up to an (almost) advanced level. In both regions RE-GO are used for disclosure and are operated in an integrated manner with the green (support) certificates. No other proof of greenness than RE-GO is accepted, and no sale of renewable electricity is allowed without redemption of the according GO. The same is true for CHP. Import and export of GO from and into Flanders and Wallonia is possible, but clearly regulated to avoid double-counting or misuse. In Brussels-Capital national legislation has been passed and systems have been implemented with regard to the use of RE-GO and CHP-GO. Disclosure must be based on GO for RE and CHP. Still, there are currently no provisions for disclosure of generation attributes.

A snapshot of the tracking systems in place in the three regions is presented below.

Table 32 Overview of tracking schemes in place in the 3 Belgian regions – Source: IT Power

	Brussels-Capital	Flanders	Wallonia
Disclosure	Not fully in place To be based on GO (“LGO”)	Based on GO for RE and CHP	Based on GO (“LGO”) for RE and CHP
Support	Quota scheme with certificates (~CO ₂) for RE and CHP	Quota scheme with certificates (~MWh) for RE and CHP	Quota scheme with certificates (~ CO ₂) for RE and CHP

RE-GO and CHP-GO	Systems fully operational	Systems fully operational	System fully operational
Use of GO and GC	Separate but linked; clearly regulated; import from Wallonia (GC)	Separate but linked; clearly regulated	Separate but linked; clearly regulated
RE-based CHP	“GO is both a RE-GO and CHP-GO”	One GO covering both	“GO is both a RE-GO and CHP-GO”
Registries	BRUGEL	VREG	CWAPE

6.3.2 Remaining issues

The Fuel Mix calculation in Flanders takes into account all issued RE-GO and CHP-GO. In order to avoid double counting of RE the RE-share is filtered out when calculating the Fuel Mix of the production park of the generator. For electricity from import or electricity exchanges the aggregated figures from the importer or the exchange are used. For a share from unknown sources below 5% the supplier is allowed to use the average UCTE mix of the given year, or alternatively the supplier may choose to keep that share at 100% "unknown". The methodology of this calculation goes a long way in respecting the principles of the E-TRACK standard; still the exercise is not completed up to the regional or national scale (i.e. the Residual Mix calculation), but are rather determined per generator and supplier, although in principle the figures from DNO and TSO are available. For the "green products" the figures provided by the suppliers are checked against the number of redeemed RE-GO, thus balancing the physical electricity and the attributes. The lack of a Residual Mix calculation in Flanders remains the key reason why the system cannot (yet) be deemed “advanced”. This is equally true for Wallonia. In the case of Brussels-Capital, the lack of a fully implemented disclosure system renders the disclosure system not yet in line with the European disclosure requirements.

The use of a Residual Mix based on a mutually (or even EU wide) agreed methodology proves particularly important in the case of Belgium, e.g. for both Flanders and Wallonia cases were reported in which the exporting MS did not accept the deduction of the exported GO in their (national) fuel mix calculation, thus creating double counting issues.

6.3.3 Conclusions and recommendations

Overall it can be concluded the RE-GO systems and tracking systems in general are generally decent or even advanced in Flanders and Wallonia. A remaining weakness is the not fully operational disclosure system in Brussels-Capital. Still, as the framework (e.g. in terms of GO for RE and CHP) is largely in place it seems relatively easy to improve the system up to the minimally required or even advanced level.

Although consumer demand is not (yet) very strong in Belgium this seems to be changing, triggering further discussions with regard to GO import and additionality.

The lack of a Residual Mix calculation remains the major weakness especially relevant for Flanders and Wallonia.

More background on the Belgian system can be found in the Annex “Country Monitoring Reports” and in the national workshop minutes (see <http://www.e-track-project.org/events.php>).

7 References

- Communication from the Commission, 07/12/2005; The support of electricity from renewable energy sources COM (2005) 627 final, http://ec.europa.eu/energy/res/legislation/support_electricity_en.htm
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- Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC concerning common rules for the internal market; <http://europa.eu.int/eur-lex>
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8 Annex: Country Monitoring Reports for 27 Member States, plus Norway and Switzerland

See separate document.