

A European Tracking System for Electricity (E-TRACK)

<http://www.e-track-project.org>

The E-TRACK Standard

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Christof Timpe, Herbert Ritter, Chris Pooley, Dominik Seebach, Diane Lescot, Mike Sandford

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1 Background and General Approach

In the following, the features of the tracking standard for electricity as proposed by the E-TRACK project are outlined. The description is held on a high level, in order to keep the document relatively short and readable. More details and justifications for the recommendations are provided in the E-TRACK Final Report and in the Work Package reports, which are available on the project website.¹

As it is important to understand the terms correctly which are used in this document, a glossary of the most relevant terms has been added in Annex 2.

1.1 Objectives

The objective of the project “A European Tracking System for Electricity (E-TRACK)” is to draft a harmonised standard for tracking of electricity attributes in Europe. Such a standard will help to increase market transparency and support the implementation of electricity disclosure as well as other energy policies. At the same time it will reduce transaction cost and the risk of multiple counting of attributes.

The term “standard” is used in an informal way. It denotes a set of rules which can be applied in European countries in order to implement a tracking system. If required, additional national regulations can be added. The standard is not meant as a formal standard, e.g. under CEN or Cenelec rules (see section 4).

For the avoidance of misunderstandings: This document uses the term “tracking” as a synonym for any kind of accounting system for electricity attributes. This certainly does not imply that physical electricity flows are to be followed. Rather it is a principle of the E-TRACK standard that information should be separated from physical energy at the point of generation, and therefore the accounting mechanism (the tracking system) should exist separately from the electricity flows. In general, the tracking system will also be separated from electricity trading activities.

1.2 Schemes – Using Tracking Results

There are different policies for which results of tracking can be used. Such policies are called schemes in this document.

There are three standard types of schemes:

- Disclosure (Labelling): Based on Directive 2003/54/EC electricity retailers must disclose to their customers the origin of their electricity and related emissions. In order to determine this information, an accounting system must be installed which allows to keep track of generated and consumed volumes of electricity, and to create linkages between generation and supply. This is the most comprehensive tracking requirement, because it covers the whole electricity market.

Any specific claims of retailers about electricity sold to certain customers (e.g. green power) can be interpreted as product differentiation within the general disclosure system.

¹ See <http://www.e-track-project.org>.

The Guarantees of Origin (GO) for electricity from renewable energy sources (RES-E) and electricity from high-efficient cogeneration (CHP-E), which are introduced based on Directives 2001/77/EC and 2004/8/EC are not formally linked to the disclosure requirement. However, under the standard this link is established and GO for RES-E and CHP-E should be integrated into the explicit tracking system for disclosure. RES-E GO and CHP-E GO thus become part of a more comprehensive system of Guarantees of Origin for all kinds of electricity generation. In a broader sense, the terms “Guarantee of Origin” and “GO” are therefore used for standardised certificates which are associated to electricity disclosure. The GO in a broader sense are not (yet) regulated by European legislation, whereas RES-E GO and CHP-GO retain their specific legal status, which is stipulated by the two Directives.

- **Support:** Systems for financial support of certain technologies for electricity production, e.g. from renewable energy sources (RES-E) or high-efficient cogeneration (CHP-E) are implemented in most European countries. Some support systems require a proof of generation to receive support. Others define an allocation of supported electricity to certain consumers (e.g. on a pro rata basis). In order to avoid over-subsidisation, it is necessary to record whether certain instances of electricity generation have already received support or not. These tasks can be fulfilled by a tracking system.
- **Quantitative targets:** Directive 2001/77/EC requires the EU Member States to reach certain indicative targets for the shares of RES-E production in relation to domestic consumption until 2010. Further targets for 2020 are currently under discussion. So far, it is not fully clear how compliance with these targets will be measured. The tracking system can help in monitoring production, cross-border transfer and consumption of RES-E.

Compared to the three schemes listed above, the European Carbon Emissions Trading system (ETS) is not regarded as a scheme which requires electricity tracking. This is due to the fact that the ETS is an allowance scheme which is upstream of the electricity market, and electricity consumers are not required to deal with the emission allowances themselves. However, there can be synergies with regards to emissions information from the ETS which could be used by the disclosure scheme.

It is the intention of the E-TRACK standard to provide a consistent framework for all three standard types of schemes, and for any additional tracking requirements on the national and European level, which might arise. Depending on the characteristics of the schemes involved, it might be necessary to separate the different uses of tracking (see section 3.6 on multi-certificate schemes), but even then, tracking would be based on one consistent system.

The final report of the E-TRACK project contains a set of recommendations for the design of European and national policies which are related to tracking.

1.3 Domains – Organisational Entities for Tracking

Within the E-TRACK standard, all tracking activities are organised in domains. A domain consists of a geographical area (e.g. a Member State) and one or more schemes, which makes use of tracking results (see above).

Examples: The disclosure scheme in Austria is operated within one domain. The Swedish “Elcert” support system for RES-E is another domain.

The actor, who is responsible for a scheme, is called the scheme authority. It usually sets up the domain, defines all necessary rules and appoints the relevant actors to operate the tracking system (see section 3.1).

All domains in the E-TRACK standard must be defined clearly.

1.4 Attributes – Information to be Tracked

The different schemes define the information which needs to be tracked. This information is called the attributes, which usually relate to electricity generation.

Examples: The fuel source “coal” used by a fossil power plant is one of the attributes which will be used in the tracking system for purposes of disclosure. Another attribute could be the specific CO₂ emissions from this power plant.

In order to reduce the barriers for cross-border tracking of attributes, all countries should agree on common (minimum) sets of information, which are provided by the tracking systems in all domains. The E-TRACK standard proposes a list of attributes (see section 3.2). If required, this list can be expanded for certain national purposes. However, any tracking information based on the minimum list of attributes should be accepted within all countries which are using the proposed standard.

1.5 Explicit and Implicit Tracking

The E-TRACK standard distinguishes two generic options for tracking, explicit and implicit tracking.

- Explicit tracking is based on a mechanism, which uses or creates a link between generation and consumption of electricity. There are two options for explicit tracking:
 - Contract-based tracking: In this case, electricity generation attributes are allocated to consumers based on bilateral contracts concluded in the electricity market. This tracking option is used in many countries as the basic method for tracking of disclosure information. Although this tracking option can work well in case of generation owned by retailers and bilateral long-term contracts between generators and retailers, it is difficult to implement this option in the framework of liquid electricity markets. The reason for this is that in such markets, electricity is seen as a commodity (without attributes) and it is usually traded several times before it is actually produced. In this framework, contract-based tracking of attributes would be complex and, even more important, would split up the electricity market into several sub-markets, which would reduce market liquidity. More specifically, trading on power exchanges can not easily be covered with contract-based tracking, because in this case there are no bilateral links between two market participants.
 - De-linked tracking is using transferable certificates for purposes of tracking. With these certificates, it is possible to allocate attributes from generators to consumers independently from the physical electricity market. Certificates are issued based on the volumes and attributes of electricity generation. After issuing, they can be transferred independently from the physical energy market. The attributes represented in a certificate are used by redeeming the certificate, which is then removed from circulation in the market.

The most comprehensive certificate system for electricity in Europe is the European Energy Certificate System (EECS).² On the national level, several European countries have introduced certificate systems as support schemes in combination with demand obligations. Examples for such schemes are the “Elcert” system for renewable electricity in Sweden and the Renewable Energy Obligation Certificates in the UK.

- In contrast to these two options for explicit tracking, implicit tracking is using a default set of attributes for purposes of tracking. In this case, no bilateral link is created between generation and consumption of electricity. Instead of this, statistical data or averages from a (potentially large) group of power plants are being used as attributes for a certain volume of electricity consumption. Implicit tracking is vital for all tracking systems for disclosure, because it has proven practically impossible to cover 100% of any electricity market with explicit tracking.

In many disclosure schemes, the generation statistics of the respective country or of the larger UCTE or NORDEL systems are used as the basis for determining the default set of attributes for implicit tracking. However, in this case the coexistence of explicit and implicit tracking usually leads to multiple counting of attributes. For the correction of generation statistics into a residual mix see section 2.2.

Another effect of using implicit tracking for electricity disclosure is that all retailers who rely on the default attributes will display the same disclosure information to their customers (fuel mix and emissions). This prevents consumers to choose between retailers on the basis of the electricity attributes.

The E-TRACK standard requires all domains to provide facilities for explicit and also for implicit tracking of the attributes of electricity generation. Implicit tracking has been introduced in order to reduce the burden of tracking for those parts of the market, where explicit tracking information is not available or is not required (by consumers, legislation or regulators).

Because of the levelling effect of implicit tracking mentioned above, the E-TRACK standard aims at reducing the share of implicit tracking to the extent necessary. Implicit information should therefore be used only where explicit evidence is not available.

The E-TRACK standard is compatible both with contract tracking and de-linked tracking. Technically, the E-TRACK standard requires setting up a registry system for handling of attributes, which is similar to a certificate system for de-linked tracking (see section 2.1). However, this technical infrastructure can also be used for allocating attributes along the contracts in the physical market. For this, contracts about delivery of physical electricity are simply extended by a commitment of the seller to transfer a number of certificates to the account of the buyer within the registry, which corresponds to the volume of electricity under the contract. Therefore, both explicit tracking options (contract and de-linked) can be implemented based on the same technical infrastructure, which supports a proper accounting of attributes.

² See the website of the Association of Issuing Bodies: <http://www.aib-net.org>.

1.6 Tracking Standard vs. Tracking Systems

The objective of the E-TRACK standard is to support the coordination between the tracking systems used across Europe. It is not aiming for one uniform tracking system in all countries, but rather to allow for a certain variety of national or regional tracking systems, which reflects existing variations in regulatory and market framework conditions. As long as the individual tracking systems developed by these actors comply with the standard, they will deliver a reliable and cost-efficient service to the electricity industry, consumers, governments and regulators. Existing tracking systems, which do not comply with the standard, should be developed further to meet the standard in the future. It must be emphasised that the use of any tracking systems outside of the standard could lead to multiple counting and therefore should be avoided.

2 Basic Elements of the E-TRACK Standard

2.1 Principles of Explicit Tracking

Explicit tracking is based on registries, which allow the ownership of attributes to be tracked and which support transfers of ownership both within a registry and to other registries under the tracking standard. Explicit tracking attributes are recorded as transferable electronic certificates only.³ Issuing of certificates is based on information on the production devices, which is held permanently in the registries, and additional information about individual generation episodes. (For more details, see section 3.3.)

The life cycle of a certificate consists of the three steps: Issuing, transfer and redemption.

Generally, the issuing of certificates is voluntary for plant owners and operators. They can decide whether to register their plants in the registry or not. After registration, they can take a decision for each generation episode to issue certificates for all electricity produced, or for only part of it. They can also abstain from issuing certificates.

The attributes represented in a certificate may only be used by its current owner. Consequently, transfers of certificates within the E-TRACK standard must be initiated by the seller. The action which triggers a transfer is outside of the scope of the standard, but besides manual transfer orders via a secure internet-based user interface it would also be possible to create direct interfaces between trading platforms and the registries if appropriate and economic.

In order to make use of a certificate for one or several schemes, the owner must redeem the certificate. This removes the certificate from circulation in the market. The owner must specify for which scheme or schemes the redemption is made for, and in case of disclosure, for which retailer and which electricity product, if applicable, the attributes are redeemed for. After redemption, the registry operator will produce a redemption statement, which gives proof of the volume of electricity generation and attributes represented by the redeemed certificates, and of the redemption purpose specified by the owner. This redemption statement should be regarded as a receipt and it can be used by the owner to prove compliance with a scheme towards the relevant scheme authority.

³ This does not imply a preference for de-linked tracking over contract-based tracking, as certificates can be re-bundled with contracts if desired, see above.

Guarantees of Origin for RES-E and CHP-E should be implemented as tracking certificates, which can be used for disclosure purposes. Although European legislation does not directly specify the use of GO for disclosure, it can be concluded from the definition of GO in the respective Directives that disclosure is their main intention. If Guarantees of Origin would exist independently of a tracking system for disclosure, their use could lead to multiple counting of the relevant attributes.

Besides Guarantees of Origin, certificates can also be issued for any type of electricity production. This means that all Guarantees of Origin are integrated into a comprehensive system of tracking certificates.⁴ However, GO for RES-E and CHP-E retain their specific legal status.

Other existing tracking systems, such as quality labels for green power operated by private or public entities, should make use of the E-TRACK standard in order to avoid multiple counting of attributes. Whereas many of these systems currently use own verification systems for the origin of electricity and related attributes, it is strongly recommended that they use the tracking results provided by the E-TRACK registries in the future.

However, there might be independent explicit tracking systems which continue to exist alongside with the E-TRACK standard at least for an interim period. This could comprise allocation rules for attributes from electricity supported by a national support system such as the feed-in tariffs used by many countries for supporting RES-E. Also, so-called “ex post” tracking systems for electricity disclosure can exist in parallel with the standard.⁵ Under the condition that these allocation systems are designed well and provide sufficient information about the electricity volumes and attributes covered, such systems can qualify as External Reliable Tracking Systems (ERTS). Although it would be desirable on the longer term to integrate all tracking requirements into the standard, there are no general objections to the co-existence of ERTS to the E-TRACK standard. However, it is necessary that ERTS provide transparent information about the electricity volumes covered by them and the related attributes, so that these can be taken into account by the tracking systems under the E-TRACK standard.⁶

2.2 Principles of Implicit Tracking

Implicit tracking should not just be based on production statistics from a certain region, such as those provided by national electricity statistics, UCTE or NORDEL.⁷ This is important because at least part of the overall production in each domain will be covered by explicit tracking (e.g. Guarantees of Origin) or support systems which are using an External Reliable Tracking System. In order to avoid multiple counting, a Residual Mix should be used, which corrects the generation statistics in a certain geographic region by all attributes, which have been allocated based on explicit tracking or ERTS. The Residual Mix also has to take into account the exports and imports of electricity and attributes (see section 3.4 for details).

⁴ This suggests to introduce a more general understanding of the term “Guarantee of Origin”

⁵ For a detailed description of this type of system, which is for example used in Germany, see the E-TRACK work package 3 report (Timpe et al. 2007).

⁶ For a list of criteria for the acceptance of ERTS see the Final report.

⁷ UCTE: Union for the Co-ordination of Transmission of Electricity in continental Europe (<http://www.ucte.org>), NORDEL a similar organisation in the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden, <http://www.nordel.org>).

2.3 Cross-border Transfer of Attributes

One of the major purposes of the tracking standard is to make explicit and implicit transfers between domains possible. E.g. a certificate issued in one domain can be transferred to another domain and can be redeemed there for one or several schemes. It is a principle that redemptions of certificates for compliance with a certain scheme must take place in the domain which is facilitating the respective scheme. Usually this means that the certificate must be transferred to the country in question and must be redeemed there.

Example: If a certificate has been issued in Sweden and its attributes are to be used for electricity disclosure in the Netherlands, then the certificate must be transferred to the Netherlands and must be redeemed in the registry which is linked to the Dutch disclosure scheme. It would not be correct to redeem the certificate in Sweden and to simply transfer the redemption statement from there to the Netherlands.

This regulation is necessary in order to ensure the control of the relevant scheme authorities over the verification mechanisms used for the schemes under their jurisdiction.

The determination of the Residual Mix for implicit tracking will also imply some form of cross-border transfer of attributes, see section 3.4.

2.4 Accounting Periods

Many of the schemes which make use of tracking results will be based on certain compliance periods. E.g. disclosure information is usually related to averages during one calendar year. As a principle, the total volume of attributes used for disclosure in a domain should match the total volume of electricity consumption in any compliance period.⁸ In order to not distort this balance, Scheme Authorities should only accept attributes which relate to electricity production in the compliance period. It should therefore not be allowed to use a certificate which has been issued based on electricity production in one year in order to comply with the disclosure requirement in another year. (Limited exceptions might apply for small plants or complex plant arrangements, where the issuing of certificates might be later than usual.)

However, not all schemes have to be restricted to calendar years. For example, quota obligations for RES-E might define a lifetime of obligation certificates of several years in order to stabilise the certificate market.

3 Additional Regulations of the Standard

3.1 Actors

A number of functions have been identified in providing a tracking system. These are:

- Scheme authority – responsible for scheme definition and so controls eligibility for a scheme as well as determining compliance with that scheme. Co-ordinates Issuing Bodies and registry operators.

⁸ Specific regulations might apply to account for line losses and balancing power, see section 3.5.4.

- Issuing Body – usually responsible for the overall operation of the tracking system in a Domain. Responsible for examining the evidence collected and controlling the issuing, transfer and redemption of certificates for schemes for which it has been appointed.
- Registry Operator – maintains a registry and the data contained within it. He is also responsible for ensuring the secure and timely transfer of data into and out of that registry. This function might be performed by the Issuing Body itself or by a separate actor.
- Accreditation Body – performs the verification of the plant registration details on behalf of a scheme authority.
- Data Collector – responsible for obtaining the evidence of generation episodes.
- European governance organisation – responsible for maintaining a robust and reliable infrastructure for electricity tracking through ensuring consistent standards in issuing, registry operation and data collection across Europe. This organisation would own the E-TRACK standard and would develop it further as appropriate.

It is also necessary to appoint a responsible actor for the determination of the Residual Mix for implicit tracking. This task could for example be awarded to the Issuing Body.

The registry operator, accreditation body and data collector are jointly called the agents of the Issuing Body. In order to ensure the reliability and credibility of the tracking system, all Issuing Bodies and their agents should be independent from market actors and should not have any own interests in the markets for electricity and certificates. They are also bound to strictly ensure the confidentiality of all tracking information, unless their publication is required by the scheme regulations.

3.2 Set of Electricity Attributes

The schemes which are making use of the tracking systems define which information needs to be tracked. Generally, the basic scheme to be addressed in all countries is electricity disclosure (including Guarantees of Origin). Additionally, many countries may wish to account for the quantitative targets for RES-E, and some may also want to base their support schemes on the tracking system.

It is important to define a joint European standard for the minimum information content of electricity tracking. All countries should agree to accept tracking information based on this standard for electricity disclosure. If imports are allowed for support schemes as well, then the standard should provide the relevant information as well. See Annex 1 for an indicative list of attribute information.

3.3 Registries for Explicit Tracking

The registries are able to issue certificates based on information on power generation, to track ownership of the certificates, and to facilitate their transfer to any other registry within the E-TRACK standard, which supports the scheme(s) for which the certificate is eligible. The registries also support redemption of certificates, which means that the value of the certificate is realised and credited to the current owner, and that the certificate cannot be transferred any more.

Each registry handling certificates which are eligible for disclosure will supply input to a procedure for the calculation of a Residual Mix.

A registry should provide as much open access as possible in order to provide transparency and support user assurance in the system and the accuracy of reported information. This suggests a web-enabled registry would be the most efficient solution offering a suitably broad coverage.

There are already a number of operational registries in Member States and non EU-members, some of which are handling Guarantees of Origin and related certificates on behalf of national governments. Most of those registries are connected to the EECS system. However, almost none of them handle all forms of electricity sources yet. Many of those systems would satisfy most of the requirements and specifications set out in this document. Therefore, whilst feasible, it would not be necessary to build an entirely new registry infrastructure, but rather to develop existing registries further (and to create the consistent policy framework around them).

3.4 Residual Mix Calculation 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 as a default value for implicit tracking in the context of electricity disclosure. The Residual Mix represents all attributes in a certain Residual Mix region (a disclosure domain or a group of such domains), which have not been allocated to final consumption of electricity within a certain accounting period based on explicit tracking or ERTS.

In order to perform this step, the lifetime of Guarantees of Origin must be limited. Only after the end of this lifetime, the Residual Mix calculation can be started. Any GO, which have been issued, but not redeemed until the end of their lifetime, will expire and their attributes will become part of the Residual Mix.

The principal steps for the calculation of the Residual Mix are as follows:

Attributes from all power generation in the domain

- Attributes from all Guarantees of Origin issued in the domain
(this includes the certificates which have been exported)
- Attributes from power generation covered by ERTS
- + Attributes from expired Guarantees of Origin (this includes the GO
which have been imported, but have not been used)
- +/- an adjustment of the attribute volumes in the domain with a
superior European attribute mix⁹

= Residual mix in the Domain

The Residual Mix is then allocated to all electricity sold to final consumers in the Residual Mix region, for which no attribute information is available. Explicit tracking should be used where possible. However, if no explicit tracking information is available for certain electricity volumes, the use of the Residual Mix for disclosure is binding.

⁹ For details on this see the E-TRACK Final Report.

Usually the Residual Mix is calculated for disclosure in a single country or a group of countries. However, following the further integration of electricity markets in to a single market, the Residual Mix should ultimately be calculated as one mix for all countries participating in the E-TRACK standard.

3.5 Data Issues for Explicit Tracking

3.5.1 Communication between Registries

Transfers of certificates between registries require a common approach to the data format and identifiers in order to facilitate the infrastructure and to ensure uniqueness. As certificates are held in the form of electronic records, electronic transfer should be the standard method of transferring records between registries. The transfer process should be conducted using a common transfer protocol to ensure safe operation.

Inter-registry transfers as well as provision of joint information for all registries should be provided by a centralised hub (as opposed to a peer-to peer-system with dispersed information). This significantly reduces the number of bilateral interfaces between the registries and therefore cuts back the costs of tracking. For reasons of cost and availability, the transfer medium should be the internet using a commonly available XML based file format. Transfer security should be achieved using a commonly available security method.

3.5.2 Sources and Availability of Data

The E-TRACK standard should use existing data sources where possible. In Member States where Guarantees of Origin for RES-E and CHP-E are implemented, many data availability issues are already addressed and in a number of cases a tracking system for certificates associated with the GO is also in operation.

The data required to extend GO to all electricity sources exists in many countries and would be feasible to collect without incurring substantial costs. However, in other countries it might be necessary to set up new collection systems for parts of the required data, in order to obtain consistent information.

In some cases, data from different sources could be combined to provide a full set of evidence. Use of existing sources will avoid costs and inconvenience of duplicated data provision and collection. However, the project has identified a number of instances where data exists, but cannot be accessed for tracking purposes without changes in legislation.

3.5.3 Data Collection Requirements

A production plant must only be allowed to register with an Issuing Body for the domain in which the plant is located. Metered output data must be continuous throughout the period of registration to facilitate reasonableness checks. Producers must also warrant that their data is only presented to the tracking system at one entry point. These requirements reduce the scope for erroneous or fraudulent claims by generators.

Issuing must be based on net plant production throughout the E-TRACK standard. The reason for this is that for purposes of disclosure, the attributes of electricity must be displayed at the point of electric-

ity consumption.¹⁰ The metering data reference point should be such that auxiliary generator data and station consumption can be identified. Difference metering against grid connection meters should be used where necessary to achieve this.

Data collected must be verified by an independent organisation. In the case of generation identifiable through central energy settlement, meter data from that settlement process should be acceptable as independent. Data collection should also be automated wherever economic to do so.

Issuing of certificates should normally be based on full Megawatt-hours produced. Rounding up of part units of evidence should not be used as this discriminates in favour of small plant. Any remaining part units should be carried forward into the subsequent generation episode.

The attributes from multi-fuelled production devices should be allocated according to energy source factors calculated using the mass and calorific values of each fuel used.

3.5.4 Treatment of Electricity System Support Activities

The definition of metering points should be such that network losses could be identified and would enable either assignment under a residual mix allocation or active participation in disclosure by network operators.

3.6 Multi-Certificate Systems

If a certificate carries attributes which are eligible for several schemes (e.g. disclosure and support for RES-E production) then the regulations of these schemes might require the redemption of the certificate by different actors and/or at different points in time. In this case, a so-called “multi-certificate” system can be established, which introduces several transferable certificates based on the same instance of electricity generation, but carrying different associations to the individual schemes.

The E-TRACK standard provides for two alternative systems. Each scheme authority can decide to either set up a domain with a single certificate system (as it is the current standard in EECS) or to allow for the separation of support certificates from the Guarantees of Origin. In the latter case, two certificates can be issued from a single instance of generation.

Details for such separation should be regulated by the support Scheme Authority. In any case, the separated certificates must both be managed in tracking systems under the E-TRACK standard. Any association to target accounting remains with the Guarantees of Origin. Also, the domain in question must make sure that the individual certificates are distinguished clearly so that they can not be redeemed for other schemes than they were issued for. Other countries might require the re-bundling of such multi-certificates into a single certificate before accepting their import.

¹⁰ This requires an adaptation of the current regulations in the CHP Directive 2004/8/EC, which require GO for CHP-E to be issued for gross generation. Until this is achieved, CHP operators should be obliged to redeem a number of GO for CHP-E which corresponds to the volume of electricity consumed by the auxiliaries of their production devices.

4 Governance of the Tracking Standard

It must be noted that although we use the term “standard”, this does not imply that the E-TRACK standard is intended become a formal standard following the rules of international standardisation organisations like CEN and Cenelec.

4.1 Governance at the Domain Level

Each tracking domain will be managed by the respective Issuing Body. As stated above, the Issuing Body will usually be appointed by the scheme authority, the body responsible for a scheme for which tracking results are to be used. In the case of electricity disclosure, the scheme authority would usually be the ministry responsible for the electricity sector, or a regulator acting on behalf of it. The Scheme Authority should clarify how the cost for the Issuing Body and its agents are to be covered and it should continuously supervise the operations of these actors.

It is certainly useful to incorporate the experience and expertise of market players in the design and management of tracking domains. The scheme authority should lay down rules for participation of stakeholders in the system design and further development.

4.2 Governance at the Inter-Domain Level

The E-TRACK standard will not be static, it will rather have to be adapted to developments in the markets for electricity and attributes and to the changing requirements from governments of countries participating in the standard, and of new members. Therefore a body on the European level is required which governs the standard and develops it further as appropriate. This could for example be a European association, in which all Scheme Authorities or their Issuing Bodies are members.¹¹ This European governance organisation would have to decide on its internal procedures for decision-making, handling of disputes and complaints etc.

The admission of domains into the E-TRACK group, and the ongoing quality control of the operations in the E-TRACK domains are additional tasks which need to be fulfilled by the European governance organisation. Furthermore, the following responsibilities should be placed on this organisation:

- Operation of the central hub, which facilitates the exchange of certificates and management of joint information for all E-TRACK domains
- Acceptance of External Reliable Tracking Systems
- Support for the determination of the Residual Mix through the management of a superior European attribute mix

The European governance organisation should be set up as an independent not for profit umbrella organisation under a code of practice recognised by national electricity regulators and governments.

The relationship between the governance organisation and the Commission, national governments, regulators and industry trade associations should be established as part of the implementation of the E-TRACK standard.

¹¹ The current European Energy Certificate System (EECS) is governed by the Association of Issuing Bodies. For more details, see <http://www.aib-net.org>.

Possible funding arrangements for the organisation will need to be equitable and have some relationship to the volume of use. Funding of service providers can be on an enterprise basis (paid by the users of the service) and not necessarily through the governance organisation.

Annex 1: Proposal for a set of electricity attributes

The following list is illustrative only. Details must be agreed in the course of the technical implementation of the tracking standard. Note that part of the information is only required for certain types of electricity generation. Type “M” means a mandatory element, and “O” means an optional element of the set of attributes under the E TRACK standard.

Attribute	Example for data content	Type	Comment
Basic set of information for all certificates:			
Face value	1.000 MWh	M	Volume of electricity generation, whose attributes are represented
ID code of production device	[alphanumeric code]	M	Each production device must be provided with a unique identifier
Issuing Body	Certiq (NL)	M	
Start date of generation period	1.01.2008	M	
End date of generation period	31.01.2008	M	
Date of issuing	31.03.2008	M	The actual day when the certificate has been issued
Scheme eligibility	“Disclosure” and/or “support”	M	Entries must be based on authorisation of the relevant Scheme Authorities
Support eligibility	Code(s) of support scheme(s) or “no”	M	Entries must be based on authorisation of the relevant Scheme Authorities
Support provided	Yes/no Code(s) of support scheme(s) used	M	The European governance organisation maintains a list of relevant support schemes. If one or more of these are used, this flag must be set to “yes”, and the respective codes must be entered. The flag must be set to “yes”, if separate certificates for support have been issued.

Note: “M”: Mandatory; “O”: Optional.

Attribute	Example for data content	Type	Comment
Disclosure specifications (applicable to all Guarantees of Origin):			
Fuel source	[list to be agreed, e.g. coal, natural gas, nuclear, renewable energy sources, other energy sources]	M	Fuel source used for electricity generation
CO2 emission factor	X g/kWh	O	Plant-specific emissions
Radioactive waste production	X µg/kWh	O	Plant-specific waste production
RES specifications (only applicable for RES-E):			
Detailed energy sources	[list to be agreed]	M	An entry in this fields indicates RES-E production
Detailed technologies	[list to be agreed]	M	
RES-E GO qualification	Yes/no	M	Related to the RES-E Directive
Target eligibility for country of redemption	Yes/no	M	If the country of generation agrees to accounting of RES-E production in the country of redemption, this flag may be set to "yes"
Additional RES-E GO information	[to be agreed]	M	Requirements set by EU Directive or by national legislation

Note: "M": Mandatory; "O": Optional.

Attribute	Example for data content	Type	Comment
CHP specifications (only applicable for high-efficiency CHP-E):			
Detailed energy sources	[list to be agreed]	M	An entry in this fields indicates high-efficiency CHP production
Detailed technologies	[list to be agreed]	M	
CHP-E GO qualification	Yes/no	M	Related to the CHP Directive; GO may only be issued for high-efficient cogeneration
Type of use of the CHP heat	[list to be agreed]	M	List must include the items from the list in the CHP Directive
Lower calorific value of the fuel source	X MJ/kg	M	
Primary Energy savings	X%	M	
Additional CHP-E GO information	[to be agreed]	M	Requirements set by EU Directive or by national legislation
Other information (applicable to all certificates):			
Quality label eligibility	Code(s) of quality label(s)	O	Optional information, which refers to a specific quality standard (e.g. those set up be the EUGENE network), and can also include additional specifications, e.g. the level of "additionality".

Note: "M": Mandatory; "O": Optional.

Annex 2: Glossary

Association (to a scheme)

A link to a scheme for which a certificate is eligible. Certificates can have one or more associations.

Association of Issuing Bodies

The European organisation which governs the European Energy Certificate System (EECS).

(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).

Compliance period

A period of time which is used for the verification of compliance with a scheme. E.g. for electricity disclosure, the compliance period is one year.

Contract-based tracking

An explicit tracking method where electricity attributes are allocated to consumers based on the bilateral contracts concluded in the electricity market. Contract-based tracking can be performed ex ante or ex post (in relation to the point in time when the electricity contract is concluded). In any case, contract-based tracking can be implemented based on certificates, which in this case would be allocated along the contract path.

De-linked tracking

An explicit tracking method where electricity attributes are allocated to consumers based on certificates which allow for the allocation of the attributes from generators to consumers along a path which is independent from the physical electricity market.

(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 a tracking system for electricity.

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.

Domain

A single geographic or geopolitical region defined for the purposes of a scheme. There must be only one scheme authority in a domain.

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).

Evidence

Proof of a set of generation attributes. Certificates are issued against evidence to facilitate transfers and compliance with schemes.

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.

External Reliable Tracking Systems (ERTS)

Independent explicit tracking systems, e.g. in relation to feed-in support systems, which exist alongside with the E-TRACK standard. In order to avoid multiple counting of attributes in relation to explicit and implicit tracking under the standard, ERTS must fulfil certain criteria.

Generation episode

A period in time during which electricity was generated, usually marked by two meter readings. Tracking is usually based on the average attributes of electricity generation during a generation episode.

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.

Nordel

The organisation for the Nordic transmission system operators (<http://www.nordel.org>).

OTC trading

Bilateral trading of standardised electricity contracts, which is not performed on power exchanges.

Physical electricity market

Market transactions (long-term contracts, OTC trade, trade on power exchanges) which imply physical delivery of energy into the balancing group of the buyer. Pure financial contracts can be disregarded, as they do not allocate physical energy.

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.

Redemption

The realisation of the value of a certificate. The value may be monetary, or in terms of compliance with a legislative or regulatory requirement, or fulfilling a product description. On redemption, the certificate ceases to be transferable or useable for any other purpose.

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.

Scheme

A set of rules and procedures using the results from attribute tracking for the purposes of e.g. complying with a Directive, supporting specific generation technologies, or evidencing a quality label for electricity products.

Scheme authority

A person or a body appointed by legislation or by members of a voluntary scheme to control the qualification of production devices and both the issuing, transfer and redemption of certificates for that scheme. Additionally, a scheme authority will manage the compliance process including the use of non-certificate information, e.g. based on the residual mix or ERTS. There must be only one scheme authority for a scheme in any domain.

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, and possibly also sectoral targets for RES-E, for the year 2020 are currently under discussion. There are currently no clear EU-wide targets 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 Co-ordination 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.