Requirements of electricity end-users on tracking of electricity generation attributes and related policies

D7 of WP 5 of the E-TRACK II project (Final Report)

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„A European Tracking System for Electricity – Phase II (E-TRACK II)"

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Abstract

For designing future policies regarding tracking of electricity generation attributes and related issues, the opinions of end-users of electricity matter. To that effect, the E-TRACK II project team has made intensive consultation efforts among representatives of a wide diversity of electricity end-users. The consultation processes included knowledge transfer activities through preparation and targeted distribution of briefing papers, the organisation of meetings and workshops, surveys and interviews. Target groups for the consultations fall into two main categories:

a) reprentatives of domestic consumer associations, notably the European umbrella organisation Bureau Européen de Consumateurs (BEUC) an its members;

b) representatives of non-domestic consumers, notably business companies and public agencies.

This report:

- provides an overview of key issues outstanding on which feedback from electricity end-users has been solicited
- sets out the approach adopted to obtain feedback from the two main categories of electricity end-users
- presents main survey results; and
- winds up with conclusions and recommendations.

Summary

This report highlights the results of the activities undertaken in WP5 of the E-TRACK II project on requirements related to tracking of electricity attributes from the perspectives of electricity end-users. WP5 considers the perspectives of domestic consumer organisations on the one hand and non-domestic consumers (the business and public sectors) on the other.

WP5 activities regarding domestic consumers sought to engage representatives of domestic consumer organisations in the MS and at European level to articulate opinions on tracking of electricity generation attributes and tracking-related information transfer by suppliers to their customers. Some aspects were identified as being of particular relevance, especially with regard to green energy offerings. Communications with domestic consumer organisations proceeded by way of two workshops in close association with the European umbrella organisation BEUC, national E-TRACK II consultations and bilateral contacts. Although engagement of domestic consumer organisations proved challenging, the project had notable but modest impact on consumer organisations to develop and articulate relevant opinions. The group of non-domestic consumers was separately addressed particularly by interviews with responsible representatives in the field of electricity procurement. The interviews covered a selection of different types of organisations from different sectors and business fields in eight European countries.

The research reveals a very heterogeneous picture of the expectation of consumers in general. For domestic consumers, most importance turned out to be attached by interested representatives of domestic consumer organisations to the requirement that green energy offerings should have at least some real, transparent, and verifiable additionality. Other issues considered highly relevant by interested representatives are:

- Reliable tracking systems should be in place;
- No green product offerings based on subsidised energy;
- The public sector is to enforce standardised displays for disclosure of supplier energy mixes and for marketing of energy product offerings.

Part of this group also showed concerns about:

- Renewable energy statistics, which may give rise to confusion and credibility problems among consumers;
- Ex post specification of green power products might be at odds with additionality of green power generation (lack of impulse of buying these products for greening electricity supply as Guarantees of Origin refer to past production);
- Concerns about false carbon reduction claims to domestic consumers by green power end-users by the business sector;
- The legal disconnection of consumer choices in favour of green premium energy products with MS target compliance accounting;

- The use of non-standardised disclosure displays by (retail) suppliers of energy products which may blur product transparency for the consumer's choice
- The premature introduction of disclosure of power from HE-CHP (high-efficient combined heat and power) plants.

For the case of non-domestic consumers, the focus slightly changes. Economical aspects get more relevant, and preferences and ambitions in the field of green electricity depend strongly on the individual view of the interviewed organisations respectively the representatives. For the case of public authorities, a stronger motivation to actively contribute to a more sustainable electricity system can be noted compared to business companies. Interest in the technical details is mostly limited, even for the case of the interviewed energy experts. This applies both for the assessment of the tracking method as well as for the interaction between the fields of disclosure, support and target accounting. A general expectation is to have a reliable tracking system in place which is agreed amongst involved experts and ready to use. Expectations on the potential of such a tracking system e.g. in terms of complexity needed for market differentiation differ – while "low interest" consumers are afraid of high cost for the tracking system, the "high interest" consumers are afraid that their individual preferences can not be sufficiently taken into account by the tracking system. The main motivation, however, for supply of green electricity is the consideration of low emissions in carbon reporting.

Recommended actions are:

- Assure that product claims relating to particular fuels are only valid when GO as a reliable tracking instrument are accordingly used. Until such tracking approach is fully standardised, an easy-to-use (but correct) alternative for provision of further explicit or implicit tracking information should be available for low-interest consumers (regulation by national legislator);
- Definition of standard additionality criteria which can be applied to green products, preferably in different levels of ambitions (EU regulation/national legislators; preferably in consultation with stakeholders such as domestic consumer and environmental NGOs);
- Introduce obligation for a supplier of a green energy offering to communicate to his green-product customers a transparent explanation of the character of the product's green additionality and how this can be verified (regulation by national legislator / regulatory agency);
- The generation attributes of energy produced with *de facto* coverage of the full additional cost of renewable energy over the commodity market price by way of support mechanisms are to be transferred from the support beneficiary to a Member State default allocation, e.g. by way of a pro-rata allocation for all consumers (regulation by national legislator / regulatory agency);
- Consider implementation of ex ante specification of green energy offerings with proper reconciliation procedures after the accounting year to make this possible (regulation by national legislator / regulatory agency);

- Enforce that claims in product information, SCR reporting, or green-image commercials alluding to a reduction of the carbon footprint by a power supplier or corporate power end-users through sale or procurement of green energy offerings have to be properly substantiated (regulation by national legislator / regulatory agency);
- More specifically for the case of corporate carbon reporting, a standard shall be implemented clarifying the accounting of particular electricity products. Product specific lower emissions compared to the regional/national default emission factor may only be taken into account, if prove for an according degree of additionality by that electricity product is provided (ISO/EU and national legislator);
- Prescribe standardised energy product information displays showing the product's fuel mix, the supplier's fuel mix, and the national fuel mix in accordance with the E-TRACK standard (regulation by national legislator / regulatory agency);
- Consider – at least in MS with advanced stage of electricity market liberalisation – the introduction of a mandatory green quality label for green energy offerings with a A-G scale based on transparent, unambiguous criteria (regulation by national legislator / regulatory agency);
- Consider ways to improve consistency of renewable energy statistics, including aggregated ones based on GO issued and cancelled and other tracking information for disclosure (evaluation by the European Commission mandated by Directive 2009/29/CE; ultimo 2013)
- A tracking standard has also to find a solution for interaction between individual supply for own consumption and usage of GO for disclosure purpose by suppliers (regulation by national legislator / regulatory agency).

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1 Introduction

1.1 The 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.

1.2 Scope of this report

This report brings out the key results of project activities undertaken within Work Package 5 entitled: “Consumer requirements for tracking-related policies”. The precursor E-TRACK project had shown that at least at the level of domestic electricity end-users a knowledge gap existed on tracking systems to account for the origin of delivered electricity and related policy issues.

The main objective of WP5 is to effectively assist European and Member-State consumer organisations in developing and articulating their views on key E-TRACK II issues. These comprise tracking instruments and related policies such as support mechanisms and electricity disclosure as well as interaction with voluntary markets. Moreover, both domestic and non-domestic electricity consumers were to be consulted on their respective requirements regarding tracking systems for the origin of electricity. For consumer organisation the emphasis was on information sharing and consultations by way of notably two workshops; for non-domestic electricity users a survey was conducted to obtain information on prevailing opinions within the latter main category of electricity end-users regarding origin of electricity tracking systems and related issues.

1.3 Report outline

Chapter 2 provides an overview of key issues on which feedback from electricity end – users is targeted. Chapter 3 addresses the WP5 activities aimed at European domestic electricity users. It explains the project approach adopted and the feedback obtained regarding requirements of the domestic electricity users. Chapter 4 gives a treatise on the approach adopted and results obtained regarding the requirements expressed by representatives consulted within the group of European non-domestic electricity users. Chapter 5 finally rounds off this report with conclusions and recommendations.

2 Key issues and research questions

2.1 Introduction

The first phase of the E-TRACK project has developed a set of recommendations for the design of tracking systems and related policies in Europe.[1] These comprise recommendations concerning the choice of tracking instruments, coordination of different tracking systems and governance structures as well as recommendations e.g. for application of tracking instruments in the field of support and disclosure. Several Member States have implemented at least part of these recommendations. Although consumer organisations were invited to different meetings and workshops in the course of the first project phase, their active contribution remained limited. Therefore, one of the objectives of the second project phase is to engage domestic consumer organisations to familiarize themselves with issues on tracking the origin of (particularly renewable) electricity and to articulate their views on the subject matter. Furthermore, Work Package 5 sets out to carry out a survey among non-domestic electricity end-users to generate information on views on the subject matter by the latter category end-users as well.

The value of electricity generation attributes is dependent on the legal framework conditions regarding their content, applications and the robustness of procedures to certify their veracity. Moreover the requirements and perceptions of electricity end-users are a key determining factor. This chapter provides a brief overview of the relevant EU legal framework (Section 2.2). This framework sets the stage for the identification of issues on which feedback from end-users is warranted. These are introduced in Section 2.3.

2.2 Disclosure and product marketing: EU legal framework

The legal framework is relevant as reference for stakeholders, notably consumers, to articulate their information requirements with regard to the electricity they buy from their suppliers. Before proceeding to identify focal issues on which to gauge consumer positions it is therefore in order to briefly set out recent developments of the relevant EU legal framework.

Introduction of guarantees of origin in EU legislation

Guarantees of origin for renewables (RE-GO) to certify that a certain quantity of electricity was produced from a renewable source were introduced in Directive 2001/77/EC on renewable electricity. These guarantees were introduced in distinction to “tradable green certificates” for compliance accounting purposes in Member States with a renew-

[1] These can be found on the project website: http://www.e-track-project.org/index_phase_I.php.

able portfolio standard as market support mechanism for renewable electricity. Preamble 10 of Directive 2001/77/EC indicates its intended functions:

– *« To facilitate trade in electricity produced from renewable energy sources and to increase transparency for the consumer's choice between electricity produced from non-renewable and electricity produced from renewable energy sources, the guarantee of origin of such electricity is necessary. »*

Article 5 of this Directive stated that Member States or the competent bodies designated by them are to put in place appropriate mechanisms to ensure that guarantees of origin are both accurate and reliable. Yet it left in accordance with the subsidiarity principle the design details of "the appropriate mechanisms" and the interpretation of what is "accurate and reliable" to the Member States.

The new Renewables Directive 2009/27/EC clarifies the role of GO. GO are defined as the carriers of origin of electricity attributes for use as evidence of disclosure information provided to customers. Regarding the design of the tracking mechanism for GO, Directive 2009/27/EC stipulates the following:

- GO has to be an electronic document
- GO has a have a well-defined lifecycle (issuing, transfer, cancellation)
- Usability of GO has to be clearly restricted to disclosure: the use of GO for target compliance purposes is not allowed
- Member States have the possibility to forbid issuing of GO on supported generation of energy carriers from renewable sources of energy
- GO can not be used later than 12 months after the production date of the quantity certified by them of a specified energy carrier
- Cancellation of GO is mandatory upon use.

Guarantees of Origin to certify that a certain quantity of electricity was produced by a high efficient combined heat and power (CHP) installation – i.e. CHP-GO – were introduced in Directive 2004/8/EC on high efficient cogeneration. The only purpose mentioned for CHP-GO in this Directive was *« to increase transparency for the consumer's choice »* (preamble 21). No explicit allusion to promotion of trade in electricity from high efficient CHP plants was made.

Furthermore, after a long negotiation process *"harmonised efficiency reference values" as required by the EU Directive* were agreed upon ultimo 2008 as a valuable reference 2008 by the Council. Yet, on the interpretation of "high-efficient" CHP plant Member States were allowed to deviate from the negotiation results of the "comitology process" (See also the Final Report of Work Package 4 on CHP of the E-TRACK II project (Schoots 2009)). The subsidiarity principle also holds for the interpretation for CHP-GO to be "accurate and reliable", as required by Directive 2004/8/EC.

Introduction of "electricity disclosure"

Directive 2003/54/EC on the internal electricity market mandates specific disclosure obligations to (retail) suppliers of electricity to their customers. Article 6 requires to disclose to them:

- *"the contribution of each energy source to the overall fuel mix of the supplier over the preceding year"*
- *"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"*.

The same article also stipulates that Member States shall ensure that the information provided in this regard is reliable. Again, the subsidiarity principle holds for the way this is to be done.

Directive 2009/28/EC on renewable energy sources introduces some new requirements regarding "electricity disclosure". That is:

- It is necessary to make a clear allocation of green attributes for supported electricity (Preamble 40).
- Requirements that the same unit of energy from renewable sources of energy is taken into account only once (Art 15.2)

The new requirements stipulated by Directive 2009/28/EC on disclosure and on the character of a GO should lead to a certain improvement of the currently weak and non-harmonised interpretation of "ensuring reliability" of disclosed information on the origin and environmental attributes of electricity delivered by a supplier.

Introduction of EU legislation on "green energy products"

Directive 2009/28/EC states the following:

- "*Where energy suppliers market energy from renewable sources to consumers with a reference to environmental or other benefits of energy from renewable sources, Member States may require those energy suppliers to make available, in summary form, information on the amount or share of energy from renewable sources that comes from installations or increased capacity that became operational after 25 June 2009*" (Art. 15 (12))

Hence, in this regard the subsidiarity principle prevails. This Directive explicitly allows Member States to require within their jurisdiction energy suppliers marketing "green energy products" to disclose certain specified information. It does not mandate Member States to do so, nor does it forbid Member States to require disclosure by marketers of "green energy products" of other information than which is specified in Art. 15 (12).

2.3 Focal issues for consultations with the end-users

Evidently, the perspectives of electricity end-users depend on their socio-economic background. The background of domestic consumers is highly diverse. To certain consumers, especially but not only in the new Member States, energy poverty and power pricing issues will be all important, whereas to others concerns for environmental issues might be highly relevant as well. Highly different levels of market liberalisation and therefore practical possibility for doing a choice and according experience also influence the attitude of consumers. The same goes for non-domestic end-users. For electricity-intensive companies electricity-related expenses are a major cost element which makes these organisations highly sensitive to the price. In contrast, companies with relatively modest electricity intensity might also be interested in building a green image among their customers at limited extra cost. In the public sector, political considerations may play a role. For example, in countries or sub-country regions with a relatively environmentally-concerned constituency the public sectors concerned may wish to pursue green procurement.

Although it is clear from the above that no one-size-fits-all end-user requirements framework will hold, it is in order to identify potentially relevant issues for electricity end-users. Given *inter alia* the legal framework outlined in Section 2.2, the issues that can be identified a priori as likely to be of main relevance from the consumers' perspective include the following ones:

1. **Multiple counting of green power:** Multiple counting of green power means that more power from renewable sources is disclosed and sold to consumers than was actually produced. There are several reasons why multiple counting can occur:

   In many Member States, different mechanisms can be used for tracking electricity from production to consumption, e.g. Guarantees of Origin, electricity contracts, production statistics and one of the flexible mechanisms in Directive 2009/29/EC, called "statistical transfers". These mechanisms are often not harmonised and not mutually exclusive, which means that attributes of a particular electricity volume can be covered by different mechanisms in parallel.

   Some Member States, e.g. Austria and Germany, are using uncorrected production statistics as a default data set for disclosure of the residual quantity of electricity of unknown origin. If these statistics are not corrected for the green power which has been allocated to consumers by law or by commercial delivery of green (renewable) electricity products, then the share of renewable energy will be overestimated. Countries which export renewable energy do also not always make corresponding (negative) adjustments for the amount of renewable energy in their national disclosure system. As a solution for these problems, E-TRACK has recommended to use consistent systems for the bilateral allocation of electricity attributes for green power and electricity disclosure, plus a "residual mix", which contains all attributes of electricity which have not been allocated yet. This effectively prevents multiple counting.

Another multiple counting problem is that suppliers, which are selling green power products and other electricity, have to disclose an overall company fuel mix. This information will be misleading for those consumers which do not buy the green product, because it also contains the green energy which is allocated exclusively to the buyers of the green product. In order to solve this, some Member States require suppliers which differentiate one or more products based on their fuel mix to disclose product-specific information also to their "grey" energy consumers.

Furthermore, in several countries exporting large shares of renewable electricity this export and the mutual import of conventional electricity remains unperceived by the domestic consumers even if the electricity disclosure system give the correct information. As example, if volumes of renewable electricity generation, the GO of which have been exported, or volumes of imported "grey" electricity (which is likely to replace exported RES-E) is disclosed as "unknown origin", this conceals the probable fact that this unknown origin actually differs from the disclosed mix. This is due to the fact that consumers are used to being supplied by large shares of renewable energy for decades, and many of them might not notice or not believe recent disclosure information stating that the share of conventional energy has increased significantly. This could apply particularly to Scandinavian countries like Norway and Finland. In such case, export of renewable electricity leads to a form of double counting even if correct tracking methods are applied. Therefore this has mainly to be tackled by improving national disclosure regulations and rising public awareness in the exporting countries. Still, consumer organisations might have an interest in discussing how tracking of electricity attributes can support this development.

2. **Renewable energy statistics may give rise to confusion among consumers.** There are different inconsistencies in public figures on renewable electricity. First, there are diverging official MS-level and EU-level renewable energy statistics pertaining to a certain reference year regarding among others:

   - "*production*"[2] (i.e. extraction of primary energy sources and conversion into secondary energy carriers, notably electricity generation): in terms of primary energy supply units where 'thermal electricity' (based on fuels, nuclear, biomass) gets a multiple weight on account of conversion losses compared to electricity from hydro power, wind power and solar PV

[2] According to the first law of thermo-dynamics, no de facto production of energy takes place.

- *final energy "consumption"*[3] (i.e. use of energy carriers for energy applications by economic agents within a MS or region including transport/distribution losses): excludes inter alia biomass-based industrial feedstock and conversion losses for electricity generation; hence, using this yardstick a certain quantity of fossil fuels or biomass for heat applications is assigned a multiple weight compared to using it for electricity generation[4]
- RES target accounting statistics of *renewable energy target performance* according to Directive 2009/28/EC: based on final energy use ("consumption") after adjustment for "statistical transfers" and the other two flexible mechanisms.

Second, and this might be most relevant to environmentally-concerned end-users, aggregation to MS-level of RE-GO issued (and other tracking instruments used for disclosure) in the MS concerned during the reference year might not necessarily end up to the corresponding official "production" statistic. The same might occur when aggregating RE-GO and other tracking information for disclosure to MS-level that are "consumed", that is cancelled, in the MS concerned during the reference year and comparing this number with the official statistic on final energy "consumption". Should the government of the MS concerned use the "statistical transfer" mechanism to buy out its target deficit or to cash in on its target surplus, this further complicates the picture. Use of notably this flexible mechanism might cause negative reactions from environmentally-concerned consumers that bought "dark green" energy products at premium prices. They might not like it, that the impact of their monetary sacrifice on the EU-level renewable energy performance - as measured by RES target accounting statistics - is naught, but just helps to support the public finance position of MS in which they reside and hence free-riding compatriot tax payers.

3. **Unclear additionality of green power offerings:** Due to the existing surplus of electricity from renewable energy compared to the explicit demand, it is easily possible to meet additional Green Power demand with electricity from already existing, written off plants, e.g. large hydro power. In this case, it is very likely that the voluntary demand of consumers for Green Power does not have any impact on the greening of the electricity production in Europe; it might just change the way in which existing power generation is allocated to different groups of electricity consumers and might produce windfall profits for operators of large

[3] According to the first law of thermo-dynamics, no energy is consummated.

[4] See *inter alia* (Segers, 2008)

hydro plants. There are different concepts which aim to ensure the additionality of green products, e.g. based on a requirement to invest in or to purchase electricity from new plants which have been established outside of the scope of support schemes. However, ensuring the additionality of voluntary demand will be even more difficult under the framework of the new European RES Directive, which defines overall national renewable energy targets for Member States. In this case even voluntary demand for green power products promoting development of new production might not have an effect above the targets which have to be met by member states anyway (see also the aforementioned point) .

Furthermore, the issues around additionality of green power are complex in themselves: It might be possible that part of the consumers are fully satisfied if their energy supply is green, and they do not bother about the fact that their green choice does not directly enhance development of a sustainable energy system. However, many other consumers assume that all green products contribute to a better environment, which is often not the case. Whereas the most common definition of additionality is the stimulation of investments in new renewable production, there seems to be no clear agreement whether this production may be viable under current market conditions and whether it must be outside of existing support systems and national targets for renewable energy. One could also argue that the possibility to sell energy from existing renewable energy plants helps to extend their lifetime. In countries with a high penetration of renewable energy, additionality is sometimes defined by the reduction of the environmental impact, e.g. of hydro power plants on the river ecosystems. Other additionality concepts include energy efficiency measures, new renewable heat production and carbon offsetting, which could be financed by revenues from green energy products. The green energy market could clearly benefit from guidance of consumer organisations about the definition of additionality of green power and potential transparency rules or minimum requirements.[5]

4. **Unclear relation of support systems to disclosure and green energy markets**: Many European support systems for renewable energy do not properly define how supported electricity volumes are allocated to consumers in terms of electricity disclosure. In case that the additional costs of renewable production over non-renewable production are fully covered by market support mechanisms, the sale of this renewable production to consumers as green power could be seen as multiple counting. E-TRACK recommends that Member States clearly define the allocation of supported energy in terms of disclosure, e.g. to all consumers on a pro-rata basis. However, some Member States wish to pay only a bonus on the market price for green energy, in order to compensate for

[5] On this and related issues, see the final report from the CLEAN-E project: "www.clean-e.org".

the extra production cost, which are not viable on the voluntary green power market. It is not yet clear how such support systems can be properly coordinated with green energy markets and electricity disclosure without creating risks of double counting of renewable energy benefits. (Note that the support systems for renewable energy also have an impact on the additionality of green energy products.)

5. **Too low requirements for differentiated products:** The fuel mix and emissions information must be given to consumers under electricity disclosure regulations only *ex post*, usually referring to the preceding calendar or financial year. However, in the case that suppliers are offering differentiated products, they could be required to issue reliable claims *ex ante*, i.e. committing themselves to meet a certain fuel mix and emission level in the next year. Such commitments are currently only made on a voluntary basis and are usually verified only by private green energy quality labels. Consumer organisations could consider to ask for a mandatory system.

6. **Reduction of carbon footprint:** For reasons of environmental concerns or for green marketing/profiling towards potential environmentally-concerned clients end-users may wish to use RES-E supply e.g. as being proved by means of GO to improve the environmental footprint which is communicated to the public. Given the great societal concerns about humanity-induced climate change these wishes focus on reducing the GHG-emissions[6] footprint of the end-users concerned. Electricity suppliers may procure and cancel GO to prove the renewable origin of the electricity they sell as a "green electricity" product to customers with whom they concluded a delivery contract for such a product. In some Member States end-users (non-suppliers) are also allowed to hold GO accounts with the competent authority running the GO tracking system. These end-users can directly prove that they have used "green" electricity through procurement and subsequent cancellation of the corresponding amount of GO. This way the parties concerned can claim that their electricity consumption produced correspondingly low amounts of GHG emissions. Yet any claim that through their consumption of green electricity end-users have reduced the total level of GHG emissions is generally not true as the total emissions of participants in the EU ETS (emissions trading system) are constrained by the system emission ceiling. Total emissions of non-participants in an EU MS are constrained by the national emissions ceilings of their MS. To the extent that these limits proof binding, the consumption of green electricity will have no GHG emission impact. It is noted that electricity end-users can reduce their carbon footprint by buying GHG emission allowances themselves and withholding these from the carbon market and

[6] GHG: greenhouse gas(es)

from redemption against own emissions. As a contribution to CO2 emission reductions within the electricity sector, another possibility would be to apply a carbon accounting method reflecting additionality of RES-E products as discussed here in point 3 above. Such approach takes the principle into account that emissions should first and foremost be avoided by savings, efficiency and renewables before using offset measures. A similar reasoning can be made with respect to the claims based on the consumption of green electricity made in SCR (social corporate responsibility) reports by business companies. Green electricity consumption can not be used to offset direct GHG emissions by a company or household.

7. **The cost incidence of tracking and disclosure of generating attributes:** Electricity users lacking knowledge of the cost of GO tracking systems may tend to exaggerate the costs. The E-TRACK I project came to an upper limit estimate amounting to 0.2% of the wholesale baseload electricity price for a single GO tracking system (Ritter, 2007). At the low-voltage end-user level this upper limit would roughly be 0.1%. Hence, it is worth knowing the perceptions which end-users have about the cost of tracking GO. The question is who should bear the costs of the GO tracking systems for RE-GO and CHP-GO which are mandated by EU Directives: should it be those who demand green electricity or HE-CHP electricity products or should the cost be spread out to all final customers of electricity?

8. **The use of GO has no legal impact on target compliance:** Directive 2009/28/EC stipulates that the use of GO has no legal implications for target compliance. Environmentally conscious consumers might wish to buy a premium green energy product that results because of their procurement behaviour in the generation of more green energy than were the case if they did not buy the product concerned. Yet Directive 2009/28/EC facilitates a Member State to count the additional renewable energy generated within its jurisdiction solely in response to trends in the voluntary market (and hence additional to generation resulting from the Member State's stimulation policies) to its target. What is more, a Member State that is long on target compliance with respect to the share of renewables can transact bilaterally its surplus with other Member States that are short by way of the "Statistical Transfer" flexibility mechanism, defined in this Directive. The Statistical Transfer mechanism might undo the assumed "green energy additionality" of green energy products at the EU level. This, in turn, might - rightly or wrongly - raise concerns with (notably environmentally concerned) consumers regarding the functioning of the internal market on four counts: (i) condoning state monopoly trade, (ii) restrictions to the internal market in RE-GO regarding their use, (iii) restricting non-public market participants in their ability to exercise their consumer sovereignty rights into the direction of greening the energy sector, (iv) pre-empting the transparency and mutual consistency of public statistics. On the other hand, part of the consumers might also support this regulation as it does clearly assign main responsibility for ecological

improvement of the electricity sector to public authorities rather than individual consumers.

9. **The use of non-standardised disclosure displays by (retail) suppliers of energy products blurs transparency for the consumer's choice:** The interpretation of information on account of "electricity disclosure" and "green energy products" and comparison of energy suppliers and products is quite complicated for the average retail customer. Therefore, a case could be made in favour of mandatory disclosure standards. Reference might be made to the Luxembourg Ministry of Economics which mulls the imposition of the display shown hereafter (see Figure 1).

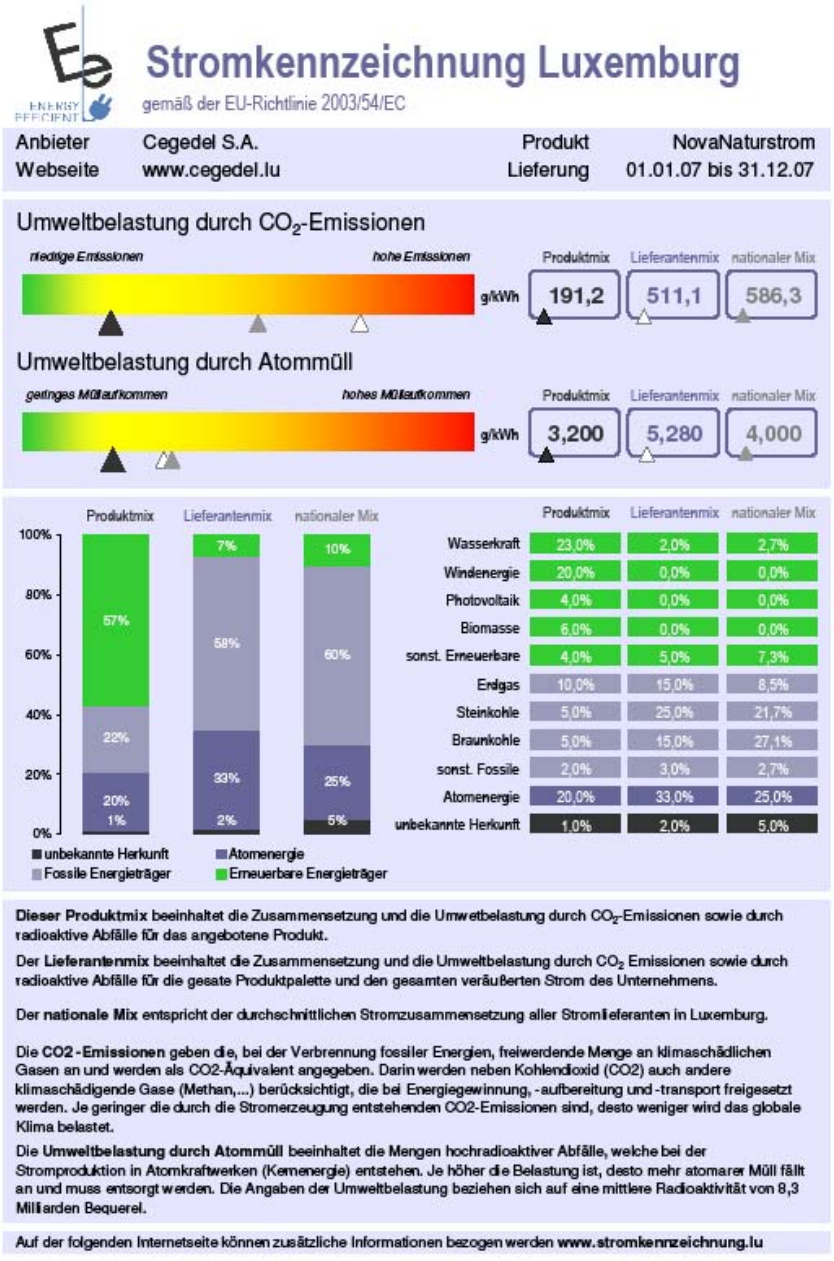


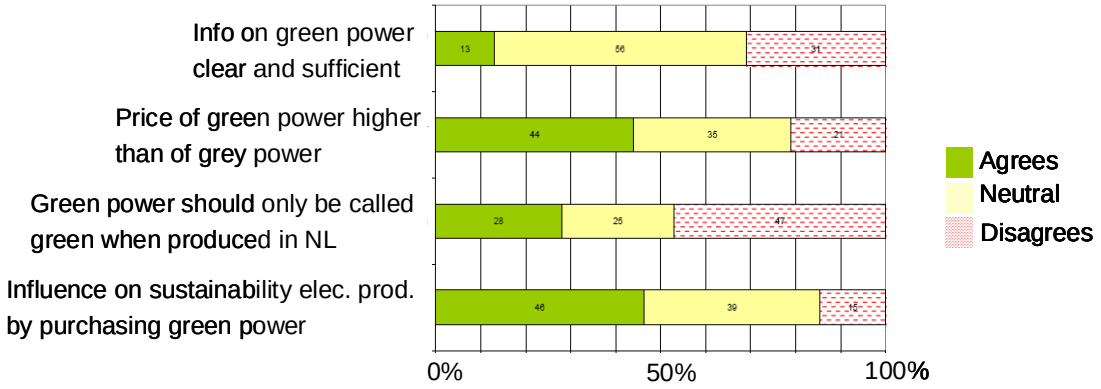
Figure 1 Mandatory disclosure display standard for electricity sold by retail suppliers in Luxembourg as proposed by the Luxembourg Ministry of Economics.

Source: Luxembourg Ministry of Economics

3 Domestic consumers

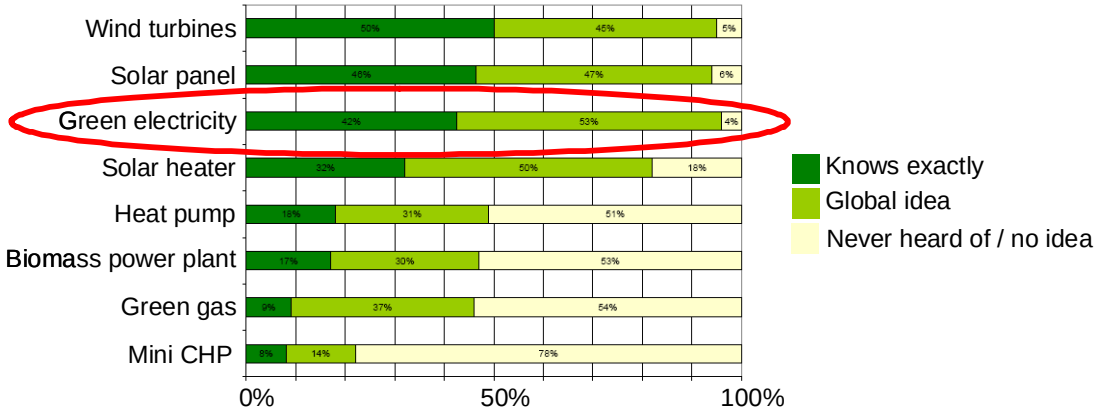
3.1 Introduction

Generally the knowledge level of domestic consumers to issues related to electricity disclosure and green electricity products is rather low. This not only holds for domestic consumers in the new Member States but also in countries in north-western Europe with a liberalised electricity market. This is for instance evidenced by results from a survey among Dutch domestic consumers (Moberg, 2009). Two graphical displays from this survey are shown hereafter.



Source: I. Mobach, 2009

Figure 2 Perceived knowledge among Dutch domestic consumers on what green electricity is.



Source: I. Mobach, 2009

Figure 3 Perceptions on green power by Dutch domestic consumers.

Moreover, tracking systems and related policies do not receive much attention from the majority of domestic consumer organisations in Europe. One of the key objectives of these organisations, though, is to facilitate electricity markets to better reflect the preferences of consumers.

The E-TRACK II project set out to address this knowledge gap situation. The project team engaged with domestic consumer associations, both at EU level and at Member State level, to improve their knowledge base and to facilitate these organisations to formulate their preferences. This chapter sheds light on the activities that have been undertaken by the E-TRACK II project to that effect. The project approach is explained in Section 3.2. Section 3.3 gives an overview of the results the of project's information exchanges with, and especially feedback from, domestic consumer organisations. Concluding observations are made in Section 3.4.

3.2 Project approach

The project approach taken to interact with domestic consumer organisations is the following:

- Establish contacts with consumer organisations at the EU level and at national level.
- Focus especially at involving the umbrella organisation at the European level, BEUC (Bureau Européen de Consommateurs); seek to co-organise workshops with BEUC and BEUC's membership on key E-TRACK II issues
- Seek to involve national domestic consumer organisations in the national consultations and gauge their opinions on key E-TRACK II issues
- Analyse, and report on, the feedback obtained from consumer organisations.

In the initial phase it proved quite challenging to bring together representatives of domestic consumer associations. In general, domestic consumer associations do not have a strong financial position as they tend to be dependent on small period voluntary contributions of their membership. Their professional staff tends to be thinly spread and has to face the need to set priorities regarding the issues to which they focus on. At least initially, E-TRACK issues did not tend to be on the top of their list. This stands in stark contrast with issues regarding unbundling and market functioning of the electricity sector (See e.g. BEUC, 2007b).

Two preparatory meetings between BEUC, Consumentenbond and E-TRACK II team members took place to discuss outstanding issues and to explore further opportunities for providing information on E-TRACK II issues to BEUC's membership and for subsequent consultations. The meetings took place in the office of the Dutch organisation Consumentenbond in The Hague on 26 February 2008 and in the office of BEUC in Brussels on 3 October 2008 respectively. This resulted in a slot for E-TRACK II in the annual energy and environment experts meeting organised by BEUC on 8 October 2008, consisting of experts delegated by the consumer associations that are member of BEUC. Prior to this meeting for BEUC energy and environment experts of 8 October last a briefing paper was written and distributed among the meeting participants (Jansen, Timpe and Seebach, 2008). The E-TRACK II team has strongly advocated the option to have a second workshop at a convenient time and place for the participants at several

occasions. After several rounds of communication a second workshop in the office of BEUC could be held on 24 March 2009.

Furthermore, based on targeted efforts by the E-TRACK II team towards participation of domestic consumer organisations some national consumer organisations delegated participants to the national E-TRACK II consultation workshops. Moreover, national consumer organisations in the respective home countries of the E-TRACK II team were contacted additionally. This resulted in some additional feedback from domestic consumer organisations.

On hindsight, the E-TRACK II team has made strong efforts to engage domestic consumer organisations. So far, as a result from efforts by the E-TRACK-II team origin of electricity tracking issues do attract at least some but apparently not extremely high priority attention from national domestic consumer organisations. For instance, in spite of the promotion efforts made the turn-up to the second workshop was disappointing in quantitative attendance, which fortunately was compensated by the quite useful qualitative exchanges of opinions (See next Section). As stated above, the relatively limited resources of these organisations are typically thinly spread. This goes especially for the domestic consumer organisations in the new Member States. Most interest has been shown by domestic consumer organisations in north-west European MS, such as Denmark, France, the Netherlands and the UK as well as from Italy.

3.3 Results from the two workshops in cooperation with BEUC

On 8 October 2008, during the BEUC workshop for 16 energy and environmental experts of domestic consumer organisations 2 E-TRACK II team members made a presentation and discussed the points advanced by the BEUC experts. (See the minutes of meeting in Jansen and Seebach, 2009). The key points of feedback given were the following:

- The experts indicated that the subject matters of tracking systems of electricity generation attributes and their disclosure to end-users of electricity are complex issues
- Most interest was shown into the additionality issue regarding the offering of green electricity products. Some participants suggested that certain offerings were more about selling “a green image” than a genuinely green product. No detailed and broadly shared views were developed during the meeting as to the nature of any additionality requirement a green power offering should meet.
- Not much interest in the technical nature of the tracking system was shown. Yet the conclusion was broadly shared that the tracking system shall guarantee that the consumer can rely on the veracity of green claims by suppliers of green power products.

The second workshop, which brought together 6 representatives from consumer organisations, was marked by a more in-depth debate with 3 representatives of the E-TRACK II team. Especially the additionality issue was discussed more intensely (for minutes of meeting see also: Jansen and Seebach, 2009). A fair amount of consensus was reached on the following:

- The Member State context is relevant to the meaning which is given to 'green additionality'. Yet it was broadly agreed that the delivery of green electricity specialty products should lead to at least "some" (not necessarily 100%) additional generation of green electricity. Also broadly agreed was that this should come from *new* renewable generation plants. The Italian participant considers the link to commitment to invest in new RES plants also as additional.
- Most participants deemed that 'green additionality' should imply additionality over and above MS renewable targets to be verified by GO for unsupported renewable electricity. They judge that consumers are already paying a lot of taxes and that the government or obligated market participants should not shift their respective responsibilities to domestic consumers who subscribe to green electricity specialty products.
- The tracking system underlying the verification of 'electricity disclosure' in accordance with the Electricity Market Directive 2003/54/EC and of 'green electricity' or 'renewable electricity' specialty products should ensure the 'green additionality' at lowest cost.
- The operation of the tracking system should be under public supervision to ensure that it can be trusted by the general public.
- The system should be kept as simple as possible. Some representatives indicated that contract-based tracking is better understood by the consumers than de-linked tracking systems. Another issue that is poorly understood is the rebalancing of green electricity deliveries with the correct volume of RE-GO. These issues reinforce the need for involvement of the public sector to foster system credibility.
- CHP-GO turned out to be a tricky topic. The direct linking of savings of primary energy sources with lower CO2 emissions was discussed. This was very much dependent on the MS-specific baseline. A Danish participant considered it misleading that in the case of Norway with an almost 100% hydropower-based generation mix 'CO_2 savings' are recorded on the HE-CHP GO. The participants inclined to the position that information on CHP on the disclosure statements are as yet a bridge too far. First the tracking systems are to ensure that the renewable features will be properly disclosed.

The Danish participant informed about the promotion by the Danish Consumer Council of a new labelling system. This system is to offer three categories of environmental specialty products: "Renewable Energy" which stands for electricity produced by renewable sources "Climate Power", i.e. electricity for which extra CO_2 emission al-

lowances are procured on behalf of the customers of such products; and "Green Power", for which a part of the electricity bill is invested in new renewable generation. The general idea behind this labelling system is that the consumer knows what he buys and what type of additional environmental impact he makes through his deliberate choice.

3.4 Conclusions

Tracking systems for tracking the origin of renewable and CHP-based electricity generation attributes, as disclosed to end-users, are considered quite complex by domestic electricity end-users and representatives of domestic consumer organisations alike. The E-TRACK II project has made substantive efforts to enhance the knowledge base on tracking-related issues among domestic consumer organisations in the Member States and the European umbrella organisation BEUC. In some northern and western European countries domestic consumer organisations have sought the public debate on additionality issues related to green electricity products (Netherlands, Denmark, United Kingdom, Italy) and the virtual character of de-linked electronic tracking mechanisms (Germany). The E-TRACK II project has certainly contributed to part of this revealed interest. After the first BEUC meeting where E-TRACK II issues were explained, also BEUC has actively engaged in the public debate on some of these issues. BEUC has made public interventions to lobby in favour of more stringent regulations about green power offerings in the new Renewables Directive. All in all, E-TRACK II has made notable but still relatively modest impact on enhancement of the knowledge base of domestic consumer organisations in articulating their views on tracking of electricity origin attributes.

What perspires from articulations of opinions from domestic consumer organisations that have acquired at least some basic knowledge is summarised in Table 1.
The main points they make are the following ones:

- most importance is attached to the requirement that green energy offerings should have at least some real, transparent, and verifiable additionality.
- other issues considered highly relevant by interested representatives are:
    - reliable tracking systems should be in place;
    - no green product offerings based on subsidised energy;
    - the public sector is to enforce standardised displays for disclosure of supplier energy mixes and for marketing of energy product offerings.

Table 1 Extent of importance attached by representatives of domestic consumer organisations in Europe to selected issues related to the tracking of electricity origin attributes

#	Issue	Extent of importance [1)]	Observations
1	Multiple counting	***	No great interest in the technical nature of tracking. Public supervision on design and implementation to ensure that tracking systems function reliably, so as to mitigate multiple counting problems.
2	Renewable energy statistics	**	Issue considered technical. Informed representatives made public statements that additional renewable generation induced by consumers of green power product should not to be counted towards target compliance nor sold by MS with long positions to incompliant MS by way of "Statistical Transfers".
3	Additionality of "green" products	***	Issue considered most relevant. At least some real additionality of "green power" offerings expected. Most common perception of additionality relates to additional power from new renewable power installations, brought about by consumer choices in favour of green power offerings. Other concept include generating additional renewable investment funding and reducing carbon footprint (buying and not using, i.e. expiring, EUA). Clear info to be provided by green power product providers on the nature of their claimed green additionality.

4	Relation with support systems	***	Green products not to be based on fully supported renewable energy.
5	Requirements to "green" products	**	Ex ante versus ex post disclosure considered rather technical. Informed representatives stressed importance of ex ante disclosure for achieving additionality.
6	Reduction of carbon footprint	**	Concerns about false carbon reduction claims to domestic consumers by green power end-users by the business sector. More interest in bringing about additional green power generation than in reducing carbon footprint by way of green power products.
7	SCR[2)] image	*	Less relevant to domestic consumers, apart from possibly false green claims by corporate end-users.
8	Costs of tracking / disclosure	*	Costs of well-designed tracking and disclosure systems not considered prohibitive, especially not by representatives from "old" MS.
9	GO legally unrelated to target compliance	**	See comments sub issues 2 and 4

10	Standard for disclosure displays?	***	Standardisation at least at MS-level considered important for market transparency.
11	Postponement of CHP disclosure	**	Concerns about claims on CO_2 emissions reductions by high-efficient CHP plants. Suggestions to postpone disclosure of electricity from high-efficient CHP plants and to prioritise adequate disclosure and marketing of energy products from renewable sources. Reasons: more focused disclosure approach; more transparency for consumers

1) * = Low relevancy ** = Fairly high relevancy *** = Very high relevancy
2) Social and corporate responsibility

4 Non-domestic consumers

4.1 Background of addressing non-domestic consumers within E-TRACK II

Electricity supply of non-domestic consumers like industrial, small commercial and public consumers is characterised by some very fundamental differences to supply of domestic consumers. First of all, much higher electricity volumes are consumed compared to private households and the particular technical needs for power supply are more complex. Therefore, usually particular departments for technical issues and for purchase are responsible for purchasing activities. Therefore, decisions related to power supply are backed by more expert knowledge on electricity than in an average household. Furthermore, due to organisation structures and financial controlling large consumers usually have a particularly strict control of cost and a thorough evaluation of best value for money. This does not necessarily mean that only the cheapest offer has to be chosen, but willingness to pay an extra price for a green offer is probably strictly related to a particular (expected) added value. Motivation for green supply comprises, besides individual motivation due to Corporate Social Responsibilty (CSR), also the marketing value of green supply. For public authorities, of course political arguments are also relevant.

These particularities generally suggest that the requirements from non-domestic consumers on tracking system and related policies differ from the expectations of private households. Addressing the needs of this target group individually is of particular value as supply decisions for large volumes of electricity can be influenced by addressing a limited number of decision makers.

4.2 The methodical approach

Based on a desktop study, a selection of non-domestic consumers covering the expected variety of positions of different actors has been selected. Interviews have been carried out basing on common interview guidelines and structures. The results of the interviews have been compiled and evaluated in order to assess the particular requirements of non-domestic consumers and to develop adequate policy design with respect to tracking and relating policies.

Selection of Interview Partner

Based on a thorough desktop study, 23 different non-domestic consumers have been selected for interviews. In order to gain comprehensive and meaningful results, the selection has been based to cover interview partners covering the expected range of actual or expected positions with respect to various criteria:

- The type of organisation or company including business sectors and size of the consumer
- Expected positions with respect to supply of green electricity basing on available information on current green electricity supply or general environmental performance
- Regional coverage of various European regions

The selection covers interview partners in Belgium, France, Germany, Lithuania, Netherlands, Slovenia, Sweden and UK:[7]

The weighted set of interview partners according to organisation types and business sectors and known supply of at least partly green electricity is shown in Table 2. The electricity consumption of the respective consumers is shown in

Table 2: Selected interview partners according to organisation types and business sectors and known supply of at least partly green electricity

Organisation Type / Business Sector	**Green**	**Non-green**
Big Industrial Enterprises	4	4
SME & Small Commercial	1	6
Services (Bank/Insurances)	0	1
(Large) Retailers	1	0
Supermarkets	1	0
Public Sector – National	2	0
Public Sector – Local	1	2
Total	**10**	**13**

[7] Please note that international organisations are counted to the country in which the offices of the responsible person being interviewed are located.

Table 3: Annual electricity consumption of the interviewed consumers

Annual electricity consumption [MWh]	Nr of respective interviewed consumers
< 100	3
100- 1.000	0
1.000 – 10.000	3
10.000 – 100.000	7
100.000 – 1.000.000	6
> 1.000.000	4

Contents and methods of the Interviews

Interviews were conducted based on standard interview guidelines and supporting documents for illustration of the covered issues. The interview guidelines and supporting documents are provided in the Annex of this report (page 43). For every interview, relevant facts and figures about the respective company or organisation were collected. The contents covered expected and experienced effects of market liberalisation, the free choice of electricity supply and the corresponding criteria of choice. The respective perception of disclosure as main consumer oriented policy was a second main field of question, including general knowledge on this instrument, experiences with respect to the own supply and an evaluation of the practical value from the consumer's point of view. Particular attention was paid to the field of different tracking instruments and further tracking related policies. Due to the complexity of this rather technical field this was backed by explanations by the E-TRACK II project partner if deemed necessary. Knowledge on existing approaches and the perception of different methods was assessed, including the interactions between the different tracking policies support, disclosure and target accounting.

The interviews themselves were mostly made personally, partly by phone. The results were put minutes both in a free text format as well as in a standardised Excel sheet with multiple choice answers in order to allow for a semi-quantitative assessment of key questions.

4.3 Results

Influencing factors for interview results: General experiences with liberalisation and expertise of the interview partners

Electricity markets should be liberalised in all European Member States. But various countries which are covered by our interviews electricity markets still are not competitive. This is partly due to insufficient official regulation, partly due to a limited number

of market participants leading to an inefficient oligopoly situation. In France, consumers have the choice to stay on the regulated side of markets, which, by now, still offer the most convenient conditions for many consumers. In Belgium only few suppliers are able to provide big lots of physical supply for large consumers, so competition is low. Particularly in the New Member States legal implementation of liberalisation is still in progress. While Slovenia has a generally liberalised market, which is in practice still very immature, Lithuania hardly has any practical liberalisation at all. Lithuania also has no legislation on disclosure in place, which accords to the fact that no free choice of suppliers is provided (except for very large industrial consumers) and therefore differentiation between different products is not considered to be of high relevance. Many of the interviewees have expressed their discontent with the state of competition in electricity markets and particularly the price development in the last years. The price decrease after liberalisation is mostly considered to be very small compared with the additional administrative effort to negotiate supply in competitive markets. However, some interview partners also pointed out the high relevance of being able to choose the cheapest offer.

The interviews quite clearly revealed that liberalisation and competitive markets are a precondition for consumer awareness when it comes to issues other than price. Differentiation according to the fuel mix and acknowledgement of the relevance of tracking systems are only relevant when consumers have the practical choice between different products and the corresponding need for proper documentation.

Interview results furthermore were depending on the role and expertise of interview partners. Particularly large industrial consumers have high level experts being in charge of all technical aspects of electricity supply, while possible ecological decisions (e.g. minimum share of RES-E including further specifications) are taken by environmental units or the board of the respective companies. These distinguished responsibilities also show in the statements which were made (e.g. technical experts which have a strong focus on technical aspects, but do consider any additional environmental criteria being an unnecessary complication).

Criteria of choice

Unsurprisingly the main decision criterion for choice of suppliers is the price of electricity. This particularly refers to the absolute price, but also includes mechanisms in order to assure a minimum risk level for the price development and long term foreseeability. The price criterion is important for basically all interview partners.

Additional criteria often refer to the fuel or production technology. Main aspect is the share of renewable energy sources. Still, some companies are focussing explicitly on the CO_2 emissions of supplied electricity. Therefore, CHP is partly considered as well as nuclear as low carbon production. However, most of the consumers which care about their fuel mix at all exclude nuclear due to the remaining ecological risk of this technology.
For geographic origin of energy some preferences have been stated, whereas this mostly referred to statements like “might be interesting information for consumers” than “is of

interest for us". In any case, the minimum expectation has been expressed that the place of production should have a grid connection to the place of consumption, which is relevant for delinked tracking by GO.
Further relevant criteria include particularly that additional technical and administrative services are provided by the supplier (metering e.g.). Individual suppliers also consider aspects like promotion of competition in the electricity market and choice of "independent suppliers" as relevant.
Additional criteria as described above are usually formulated as fix minimum criteria. Eligible offers meeting these requirements are then ranked by price again as final selection criterion. A local authority has the particular situation that they still are shareholder of their former municipal utility. As such, they are not only interested in the monetary benefits of operational business, but also stay as a consumer with this supplier in order to have a higher influence on production and procurement policy of the supplier. This particularly includes the environmental performance of the company.

Several interview partners pointed out their desire for security of supply which may not be hampered by change of the supplier. While this is reasonable for a consumer with his own isolated grid, for most consumers it shows that the understanding of the meaning of changing supplier is not always well developed. This still imposes an obstacle for active choice of consumers even in the non-domestic sector.

The drivers behind non-domestic green demand

The interviewed consumers which are already purchasing a partly or totally green electricity demand have expressed various reasons for this. The most dominant motivation appears to be claiming of the respective green attributes in order to use it for image purposes including marketing and Corporate Social Responsibility (CSR purposes). This accords to a strong consumer oriented rather than a production oriented view of the meaning of green supply. The main concern often is the eligibility to book and claim the green attributes for the respective own accounting, irrespective of the system effects of green demand (like giving additional incentives for construction of new ecological plants). Besides general marketing purposes, particular request by consumers for goods produced with a particular type of electricity (probably RES-E) is also considered a good reason for getting green electricity supply. However, this particular request usually still is very limited, if existing at all. It seems worth mentioning that one large consumer who is following a price leader strategy in his segment has fully renewable supply but stated that he did not actively communicate this in order not to appear to spend money which might have been saved in order to keep prices even lower.

In comparison to commercial companies, public authorities have a higher level of political motivation to not only focus on the individual situation by a book and claim approach but also to make real improvements to the ecological situation.

As already mentioned above market liberalisation goes hand in hand with consumer education, which also applies for non-domestic consumers. Only knowing about the

option to have green supply makes non-domestic consumers think about their possibilities to use this for marketing purposes.

The particular situation of large energy consumers

Large energy consumers either in the commercial sector or as large public authorities have a particular situation with respect both to their needs and to their capabilities. Big volumes of electricity make it feasible to have professional experts for electricity supply with a better knowledge of the individual options for choice of supply and of tracking issues. Supply of a particular green share is usually decided by separate staff within the general management of the company or within the environmental department. This usually is set out within a broader environmental strategy for the company including CSR reporting, public carbon accounting etc. Interviewed technical experts of large consumers often expressed doubts about the actual ecological relevance of disclosure information due to the known discrepancies between individual accounting within a book and claim system and the push effects for increasing the share of ecological production in an overall system.
Still, in order to fulfil the decided targets for a particular green supply, large consumers often prefer to have de-linked supply of physical electricity on the one hand and tradeable green electricity certificate (like RECS / GO / LECs[8]). For small and medium consumers this appears to be a complex mechanism, particularly as this consumer group usually has limited interest in the technical details of different tracking systems. For large consumers it proves to be a cost-efficient solution for larger shares of electricity supply with few experts managing supply for different sites, particularly when these are located in several countries. This statement is of course conditional to a certificate scheme being in place in the geographical region of activities of the consumer.

Use of GO as a tracking instrument

Interview partners were also asked about their view on the use of GO for tracking purposes. Except for big consumers, who are acting in liberalised markets, the concept of GO was usually unknown by interview partners. In these cases, explanations by the interviewing project team member were provided. The expressed opinions show a general acceptance of using GO as a tracking instrument, but according to the particular framework, individual positions differ. In Germany there is a generally strong support also for contract based tracking compared to other countries with a high interest in green electricity. In Netherlands and UK, tradeable certificates including particularly GO play a

[8] The interviews showed that LECs actually are used and accepted as proof of green electricity supply within the UK in addition to GO. This underlines the need for separation of the two systems in order to avoid the immanent probability of double counting.

major role in the national legal framework. Therefore this instrument is well known by consumers in these countries and accordingly well accepted. For Lithuanian stakeholders, on the other hand, the un-liberalised market and the absence of requirements for disclosure or other tracking uses makes GO a very abstract and academic topic which is considered hard to assess.

The interview results do not show clear preferences regarding requirements for linking GO to physical delivery. Some interview partners use GO as delinked tracking mechanism, and the possibility for this is mostly supported. Still, there are also doubts about the legitimacy of such an approach, as linked tracking is perceived being more consistent and logical by some consumers. This particularly applies for Germany. As a general requirement the restriction of delinked tracking to physical grid connection between production and consumption has been expressed.

The additionality aspect of green energy

The stated views on additionality requirements show different expectations by different consumers. Particularly for big consumers who are using green supply for marketing purposes (particularly low CO_2 supply for carbon accounting) real additionality is of minor relevance for companies, as long as they can claim the full environmental value of green supply. Some interview partners know the general concept of additionality and expressed general support for the possibility for choosing an "additionality product", but still consider this aspect being beyond the scope of their companies' efforts. Other interview partners do consider additionality an important aspect, including particularly public authorities but also some ecologically motivated commercial consumers. The discussed concepts of additionality here included a very general perspective ("Money spent on greenness should lead to the development of more ecological generation capacity") but also to the particular relation to the national targets as determined by the new Renewables Directive of the European Commission ("Green consumers should be able to contribute to over-achievement of the 20% target").

Interactions between disclosure, support and target uses of green electricity

Preferences on interactions between the different fields of tracking vary to a large extent. Even with provision of information of the (possible) interactions between disclosure, support and target by the project team member many interview partners stated that such issues are considered to be too complex and beyond the scope of their expertise and interest. Still, by trend one can conclude that particularly large consumers support the possibility of free trade of GO (and physical electricity) also for supported electricity, while smaller consumers and consumers with a generally higher ecological commitment prefer supported GO to be allocated within the support system rather than by free markets providing additional profits.

Most interview partners support the definition of binding targets and flexibility mechanisms as defined within the Renewables Directive. Potential inconsistencies between disclosure and target accounting are mostly considered irrelevant. Some interview part-

ners explicitly stated that such targets should be production based rather than consumption based. Interview partners generally consider public support being the main driver of RES-E production and fulfilment of the targets. With respect to the individual role of a consumer within this framework views differ widely (see also section on additionality above). As a general limitation, large consumers want to maintain the right to claim the environmental value for their purposes when purchasing green electricity.

General feedback and recommendations by the interview partners

Generally most interview partners acknowledged the discussed topics as interesting topics, but stated that they only are interested in being involved to a certain level of detail. While many consumers have an interest in their own disclosure information, they more and more considered the details being beyond their interest (or plain capacity) with an increasing level of complexity (e.g. when taking interactions with support and target into account). Main requirements to tracking systems differed between interview partners. Several particularly pointed out, that tracking issues are not of particular relevance for them, therefore they prefer to have a simple tracking system in place not imposing any additional efforts for them and for markets in general. Interview partners who have an interest in green supply asked for a higher level of quality. This includes a harmonised approach for tracking which should be designed by experts and which should make it easier to compare different offers. In order to ensure quality of the provided data, implementation of a transparent central disclosure database was suggested. As another quality management approach, mandatory independent audit of disclosure information was proposed. This should also keep efforts for individual market actors at a minimum level, as these would be overloaded with the complexity of the issues.

One Lithuanian interview partner also suggested providing rather an information package on “how to switch supplier” first of all, which underlines the different levels of expectations and needs in different countries.

The Key Lessons Learnt

The expectations of non-domestic consumers are as different as their business type, the size of the company and the political and legislative framework in which they are acting, individual preferences not to be mentioned.

Mostly, reliability of tracking information is simply expected and assumed– with individual exceptions. Besides this, most companies and their representatives only show limited interest in details of methodical details of tracking. There is a wide range of the level of interest in disclosure information, which mostly depends on the existence of top down defined ecological performance indicators. Depending on how such ecological standards are formulated, also the role of voluntary green consumers is assessed differently. This applies not only to the relevance of disclosure information, but also and particularly to the definition of additionality requirements. Mostly, the main driver for

large-scale green supply of non-domestic consumers is the consideration of low emissions in carbon reporting.

The challenge which derives from these findings is that tracking has to accommodate different needs: a simple approach for low interest consumers, but also advanced capabilities for dedicated green consumers. This calls for a harmonised tracking solution consisting of different elements. For the supply of green consumers, tracking should particularly allow for differentiation between different levels of RES additionality. For this purpose, the first step would be a harmonised definition of additionality criteria and the means to proof it. This should be done by policy makers, but could also be agreed on a voluntary basis by relevant stakeholders including market participants, consumer protection organisations and environmental organisations. When RES-E is taken into account for carbon reporting, the final addressee of the green value is not the non-domestic electricity consumer, but the (potential) customer of the company or public in general. Therefore the expectation of additionality is passed on one step further; in the end, additionality requirements for RES-E will then be depending on the methodical standards how RES-E can be taken into account in carbon reporting compared to standards electricity supply. If carbon reporting should be considered as providing information on environmental performance, a carbon accounting standard has to be applied which gives valuable results (by taking some form of additionality into account).

5 Conclusions and recommendations

5.1 Main WP5 findings

The knowledge gap among electricity users regarding issues related to tracking and disclosing attributes regarding the origin of delivered electricity is highly diverse. This also applies to the motivation of (potential) interest among knowledgeable end users. As motives for knowledgeable domestic end-users and - notably commercial - non-domestic end-users tend to differ, we highlight the main results for each of these two categories successively.

Domestic end-users

Issues related to tracking and disclosing attributes regarding the origin of electricity delivered to end-users arouses interest from environmentally concerned domestic end-users and their representatives. All over the EU, this involves a relatively small part of the total category of domestic end-users and representatives from domestic consumer organisations. Most of the interested actors in the category of domestic electricity end-users reside in northern and western Europe. For the lion's share of households in notably the new MS electricity pricing issues take precedence over concerns about environmental impacts of their electricity use.

Furthermore, a knowledge gap needs to be bridged regarding the nature of green energy product offerings, let alone technical issues related tracking systems. To that effect, the E-TRACK II team went at great length to engage at least representatives of domestic consumer organisations at the national and European level. Two workshops were organised were in close consultation with BEUC interested consumer representatives were provided with information and ample opportunities to develop and express their opinions on ten issues that the E-TRACK II team identified *a priori* as potentially relevant to representatives of domestic consumers. Furthermore, additional representatives of domestic consumer organisations could be reached and consulted in part of the E-TRACK II national consultations and through bilateral contacts. E-TRACK II succeeded in making notable but still relatively modest impact on enhancement of the knowledge base of domestic consumer organisations in articulating their views on tracking of electricity origin attributes.

For domestic consumers, most importance turned out to be attached by interested representatives of domestic consumer organisations to the requirement that green energy offerings should have at least some real, transparent, and verifiable additionality. Other issues considered highly relevant by interested representatives are:

- Reliable tracking systems should be in place;
- No green product offerings based on subsidised energy;

- The public sector is to enforce standardised displays for disclosure of supplier energy mixes and for marketing of energy product offerings.

Part of this group also showed concerns about:

- Renewable energy statistics, which may give rise to confusion and credibility problems among consumers;
- Ex post specification of green power products might be at odds with additionality of green power generation (lack of impulse of buying these products for greening electricity supply as Guarantees of Origin refer to past production);
- Concerns about false carbon reduction claims to domestic consumers by green power end-users by the business sector;
- The legal disconnection of consumer choices in favour of green premium energy products with MS target compliance accounting;
- The use of non-standardised disclosure displays by (retail) suppliers of energy products which may blur product transparency for the consumer's choice
- The premature introduction of disclosure of power from HE-CHP (high-efficient combined heat and power) plants: for reasons of disclosure focus and transparency disclosure of electricity from CHP sources is suggested to be postponed.

Non-domestic electricity users

In the field of non-domestic consumers, staff members being responsible for electricity procurement of 23 companies and institutions were interviewed. Results of these interviews show heterogeneity of existing expectations and requirements within this consumer group.

Also stakeholders in the non-domestic sector originating from the new Member States tend to overwhelmingly attach most value to electricity cost aspects, with environmental aspects of electricity generation being attached a relatively subdued priority. Awareness and expertise of electricity consumers goes hand in hand with the free choice between different products and also public expectations (particularly of the customers of electricity using companies) to show environmental responsibility.

For non-domestic consumers, reliability of tracking information is simply expected and assumed– with individual exceptions. Besides this, most companies and their representatives only show limited interest in details of methodical details of tracking. There is a wide range of the level of interest in disclosure information, which mostly depends on the existence of top down defined ecological performance indicators. Depending on how such ecological standards are formulated, also the role of voluntary green consumers is assessed differently. This applies not only to the relevance of disclosure information, but also and particularly to the definition of additionality requirements. With increasing level of interest and ecological ambitions, non-domestic consumers are interested in more sophisticated and reliable tracking instruments. Mostly, the main driver

for large-scale green supply of non-domestic consumers is the consideration of low emissions in carbon reporting.

5.2 Recommendations

Completing the liberalisation of the electricity market in Europe and the MS is of utmost importance for pursuing the three pillar energy goals. Ample, easily realisable, possibilities for end-users including notably households to switch supplier and/or product is a key component of electricity market liberalisation. In this respect, issues regarding the transparent and reliable disclosure and tracking of electricity generation attributes play a prominent role.

Recommended actions:

- Assure that product claims relating to particular fuels are only valid when GO as a reliable tracking instrument are accordingly used. Until such tracking approach is fully standardised, an easy-to-use (but correct) alternative for provision of further explicit or implicit tracking information should be available for low-interest consumers (regulation by national legislator);
- Definition of standard additionality criteria which can be applied to green products, preferably in different levels of ambitions (EU regulation/national legislators; preferably in consultation with stakeholders such as domestic consumer and environmental NGOs);
- Introduce obligation for a supplier of a green energy offering to communicate to his green-product customers a transparent explanation of the character of the product's green additionality and how this can be verified (regulation by national legislator / regulatory agency);
- The generation attributes of energy produced with *de facto* coverage of the full additional cost of renewable energy over the commodity market price by way of support mechanisms are to be transferred from the support beneficiary to a Member State default allocation, e.g. by way of a pro-rata allocation for all consumers (regulation by national legislator / regulatory agency);
- Consider implementation of ex ante specification of green energy offerings with proper reconciliation procedures after the accounting year to make this possible (regulation by national legislator / regulatory agency);
- Enforce that claims in product information, SCR reporting, or green-image commercials alluding to a reduction of the carbon footprint by a power supplier or corporate power end-users through sale or procurement of green energy offerings have to be properly substantiated (regulation by national legislator / regulatory agency);
- More specifically for the case of corporate carbon reporting, a standard shall be implemented clarifying the accounting of particular electricity products. Product specific lower emissions compared to the regional/national default emission fac-

tor may only be taken into account, if prove for an according degree of additionality by that electricity product is provided (ISO/EU and national legislator);

- Prescribe standardised energy product information displays showing the product's fuel mix, the supplier's fuel mix, and the national fuel mix in accordance with the E-TRACK standard (regulation by national legislator / regulatory agency);
- Consider – at least in MS with advanced stage of electricity market liberalisation – the introduction of a mandatory green quality label for green energy offerings with a A-G scale based on transparent, unambiguous criteria (regulation by national legislator / regulatory agency);
- Consider ways to improve consistency of renewable energy statistics, including aggregated ones based on GO issued and cancelled and other tracking information for disclosure (evaluation by the European Commission mandated by Directive 2009/29/CE; ultimo 2013)
- A tracking standard has also to find a solution for interaction between individual supply for own consumption and usage of GO for disclosure purpose by suppliers (regulation by national legislator / regulatory agency).

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7 Annex

7.1 Guidelines for the interview with industrial, commercial and public consumers

Introduction (10 mn)

- Presentation of the E-TRACK project: a project which is aimed at easing the supply of information on the electricity they consume to electricity consumers in Europe. Therefore focus on consumers and their expectations regarding such information.
- Co-financed by the European Commission. Our recommendations have some importance regarding the setting of the international framework for electricity tracking.
- Presentation of the project team: international, consumers are interviewed from all around Europe
- Presentation of the interviewer: company, job, expertise in the field Presentation of the interviewee: company (number of employed people, volume of electricity consumed each year), responsibilities regarding electricity procurement, current contract (what company, any particular product?)

1. Perception and experience of the opening of the electricity market (20 mn)

- What does «opening of the electricity market» mean for you?
- What has changed for you / in which way were you affected?
- Did it correspond to what you were waiting for? Why?
- Did you consider changing supplier? Why?
  - *If yes:* What is the process for changing suppliers? How far did you go? What are the criteria of choice? Did they change since the market is open? How and why? Try to evacuate price issue relatively quickly. What information did you look for?
  - What did you think of the information you found on other electricity offers? In what sense?
  - How many suppliers did you consult? What were your criteria of choice?

- Why did you finally change or did not change? What would have made you switch? If you were at the same price level for all offers, what would be the most important criteria for switching? What would be another important element for your decision? What else?
- *If no:* why were you not interested? What would make you switch? (if the answer is the price : what is the minimum threshold to make you switch, eg -X% on the kWh)
- If you were at the same price level for all offers, what would be the second most important criteria for switching? What would be another important element for your decision? What else?

2. Perception of disclosure (20 mn)

- Did you consider at one point information on the supply mix of your supplier?
- Did you notice this information?
  - *If yes:* What do you remember about it? Do you remember the energy sources that were listed? (Which ones?). Do you remember the position of your supplier for these different sources? Do you remember other information given on the supply mix?
  - *If no:* did you know that suppliers have to give this information to the public? What do you think of that? Why?
- Do you think if you switched to another supplier, this would be the same percentage or not? Why? What does it mean according to you? What is the use of such information? Do you know what energy sources are used to produce energy in your country? Do you have an idea of their respective share?
- If you had to choose a new supplier right now, on what sources would you like your new supplier to propose a different share than the national one for example? Are there sources of energy to which you would not pay attention?
- What other information on the energy you are buying would be of interest in your process of choice of a new supplier?
- Probe:
  - CO2 emissions? Why?
  - Nuclear waste?
  - Country of origin / region of origin
  - Country supporting the electricity?

- Energy efficient technologies like CHP. Do you know what CHP is? Explain. Would it be of interest for you?
- Development of new RES plants?

3. Expectations regarding tracking system and related policies (30 mn)

- How do you think this information is obtained?

This part should be illustrated by slides

- In fact this information is quite tricky to obtain *(slide 1)*. It can be obtained by statistics of national production, but then all suppliers would have the same mix. The aim of our project is to improve the differentiation capacity of the suppliers *(slide 2)*.
- There is a possibility to use electronic files, called Guarantees of origin (GO) that contain all the information related to one MWh of electricity *(slide 3)*. Each time a MWh is produced, a GO is created into the producer's account in a GO bank (slide 4). He sells it to a supplier. The supplier has to cancel a GO for each MWh which is consumed by its consumers *(slide 5)*.
- In the end the share of different GOs will give the share of different energy sources of the supplier mix. These GOs can come from own plants or they can be bought from other producers, even in other European countries. The supplier can buy his GO independently from the electricity he buys. He buys the characteristics and the electricity separately *(slide 6).*
- This means that there will be suppliers who produce one type of energy but want to sell also another type. These suppliers will sell their GOs and buy other ones so that they will have the GOs that correspond to the mix they want to disclose *(slide 7).* Also if they have more clients than they can produce, they will have to buy GOs and they will be able to choose the origin of the electricity they want to disclose. Of course GOs that are asked more will be more expensive, and other GOs will be less expensive. One can expect the difference in costs to be reflected in the final prices. How do you react to this general idea? What is interesting here for you?
- By decision of the European Union, each European country has to achieve a certain target corresponding to a percentage of RES-E in a country's overall consumption. In order to achieve this target, RES producers are helped by the State to develop new plants because RES technologies are not competitive with conventional energies yet. This production is counted in the country's target. Regarding the corresponding GO, there are two possibilities:

- either the State can decide to keep it and distribute it among national suppliers
- or the State allows the producer to sell their GOs to whatever supplier they want.

In the first case, the target level of achievement is the same percentage as the information that is disclosed to consumers once we sum up all the suppliers' mixes.

In the second case, the two figures can be different because some producers can export their GOs to suppliers of other countries.

What do you think of that? Why? Are the two options equally legitimate for you? Why?

- By decision of the European Union, each European country has to achieve a certain level of consumption coming from RES. Each MWh produced on national land will be counted in the consumption of the MS. But some countries will not be able to reach the level they have to reach with national production. And some countries will have more than needed. MS will be allowed to trade their surplus *(Slide 8)*. What do you think of that? Why?
- If MS trade their surplus, then the consumption they will show after the trade will not correspond to the total mix of consumption that is obtained when adding all the suppliers' mixes. What do you think of that? Why?
- There can be a possibility for a consumer to help also the development of RES by buying production from producers who are not helped by the State. In this case, there is no counting of this production in the targets of any country (so that the consumer does not replace the State effort). It will only be counted in the mix of electricity consumed.
  What do you think of this possibility? Would that be of interest to your company? How would you use that in the communication of your company?

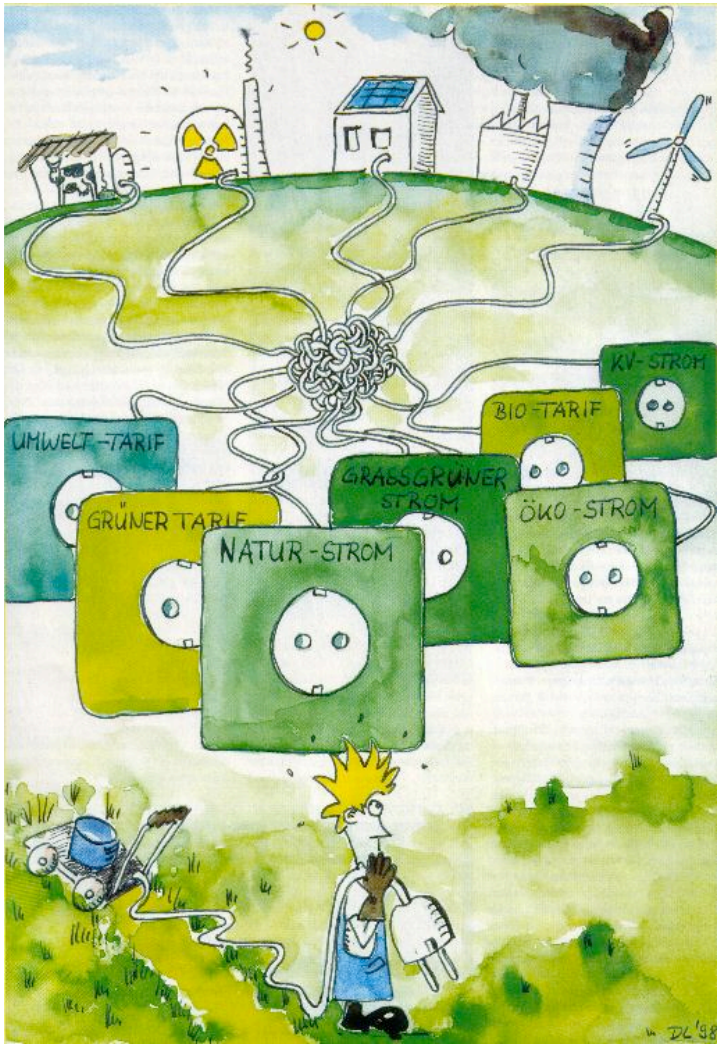
4. Conclusion (10 mn)

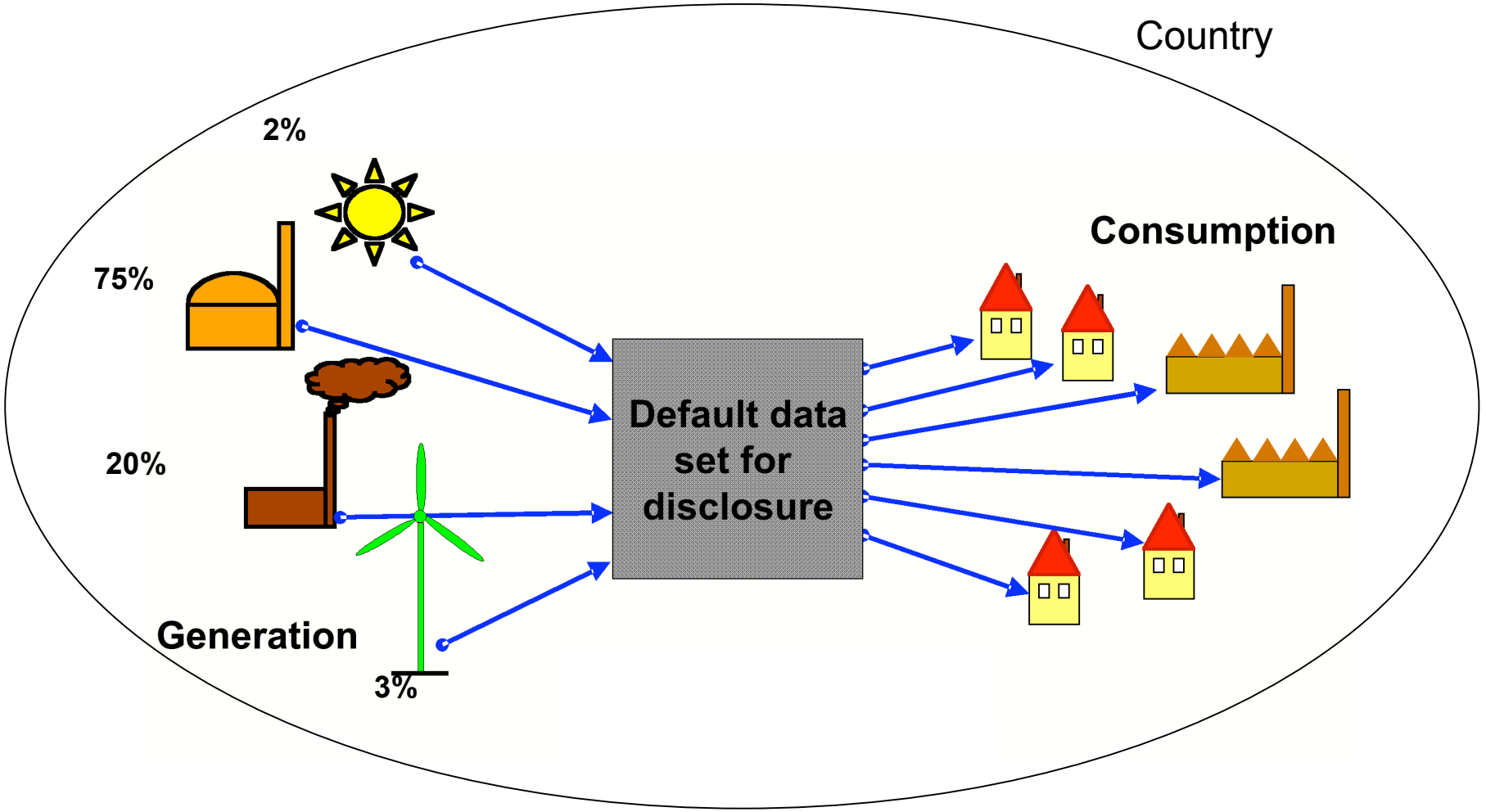
- What would be your recommendations regarding information that is communicated to you by your supplier?
- What would be your recommendations to the project team?
- What do you think of the subjects we discussed? Will it change your procurement process / contents?

THANKS AND END

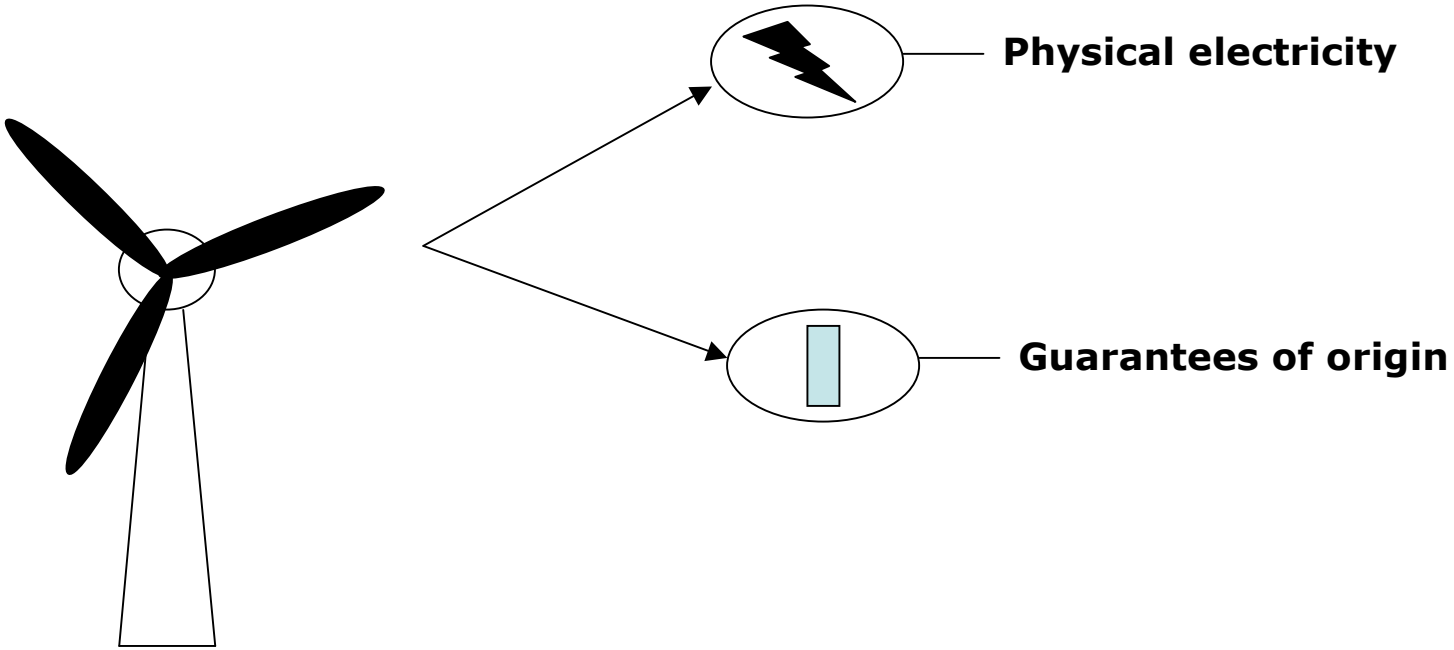
7.2 Supporting Documents

- Electricity from RES is not recognisable in the electricity system.



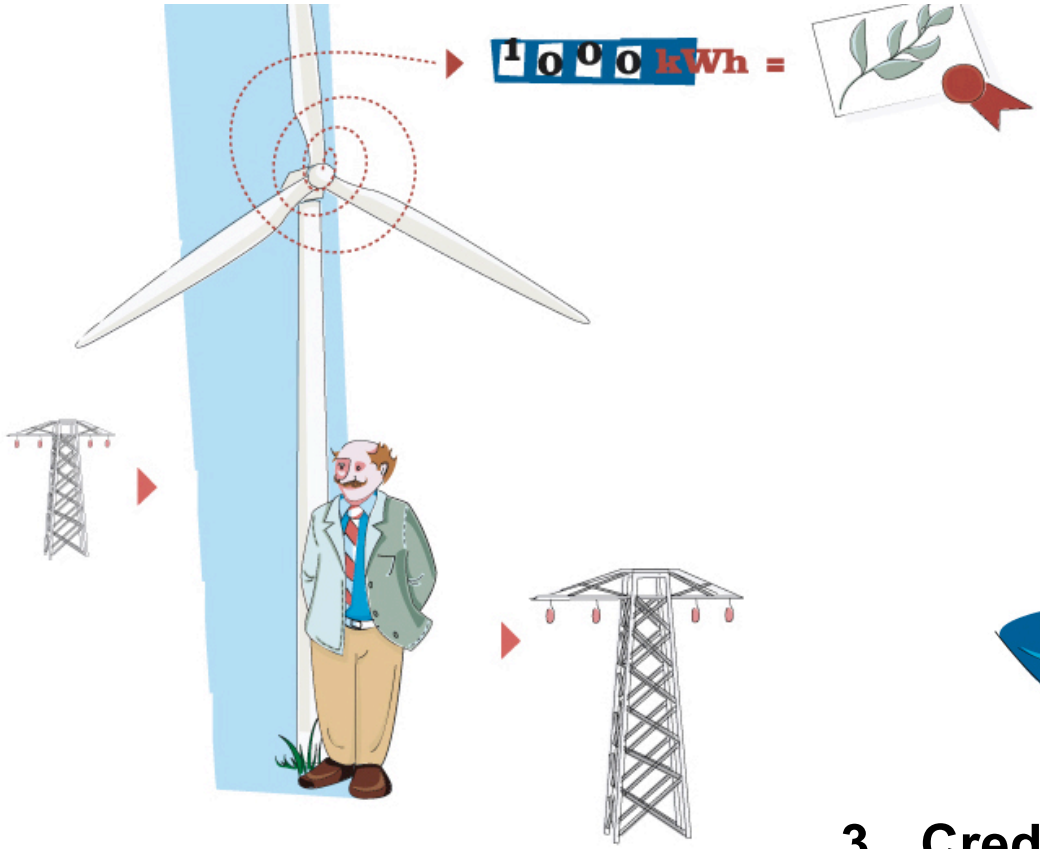

Country
2%
75%
20%
Generation
3%
Default data set for disclosure
Consumption

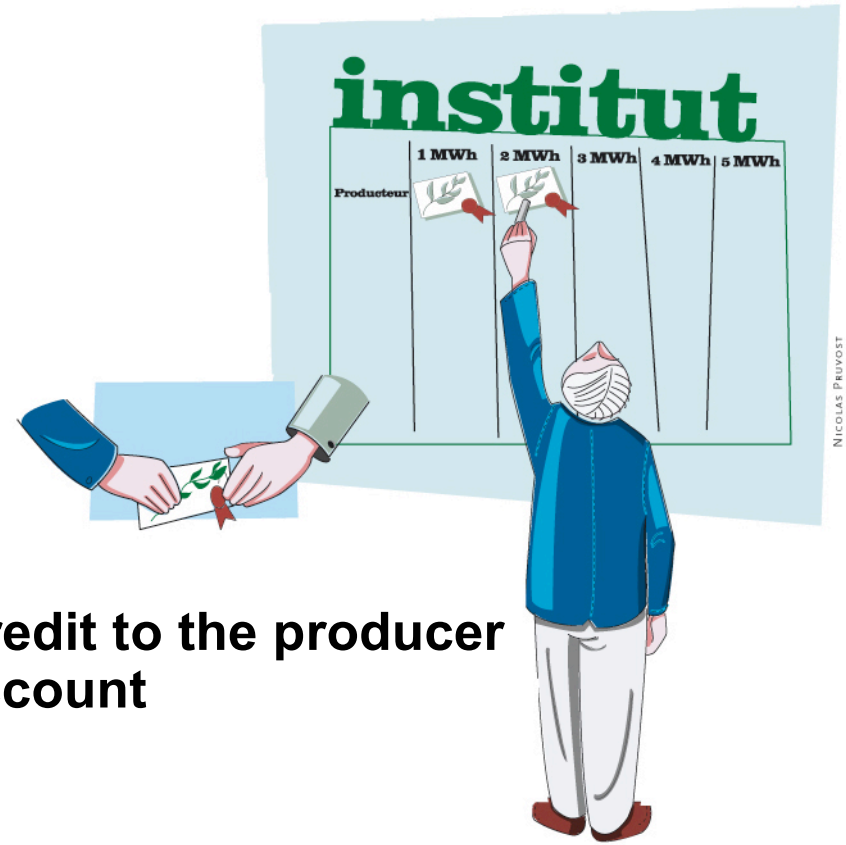
- GO system : separation from electricity and its characteristics



1. Production of electricity

2. Issuing of GOs

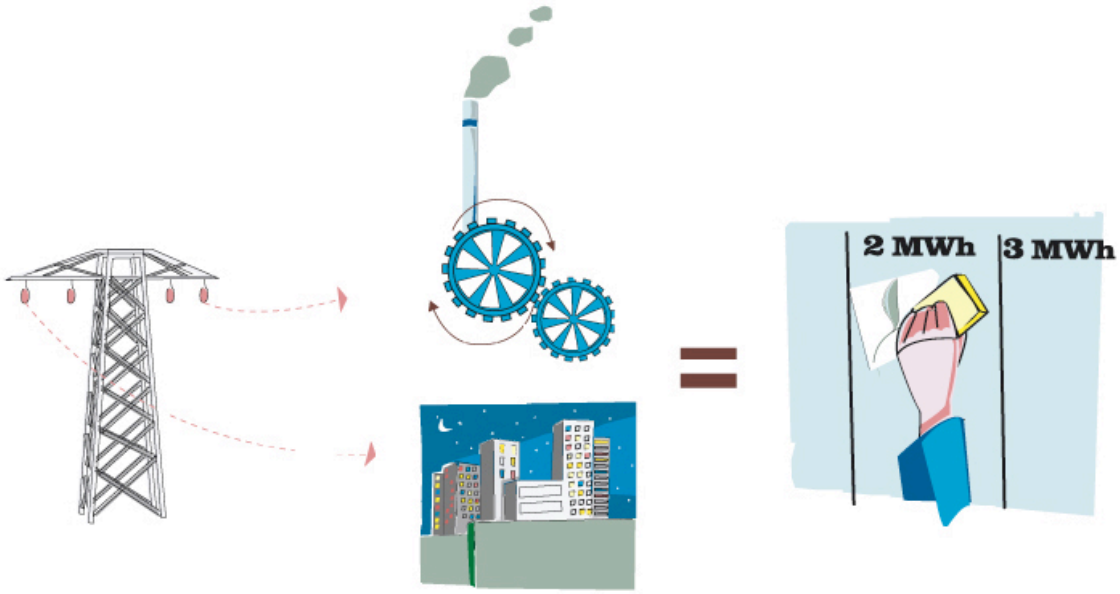




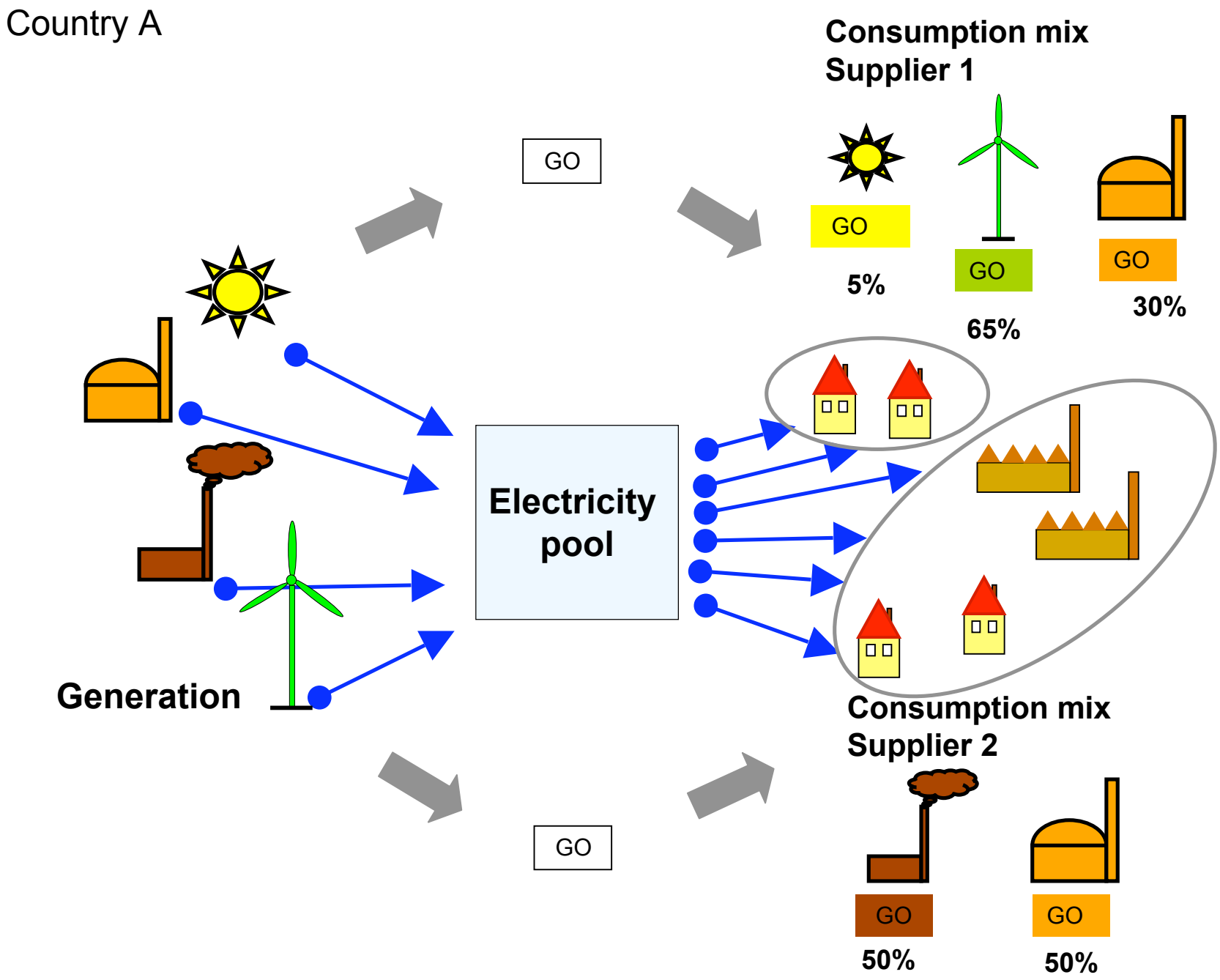
3. Credit to the producer account

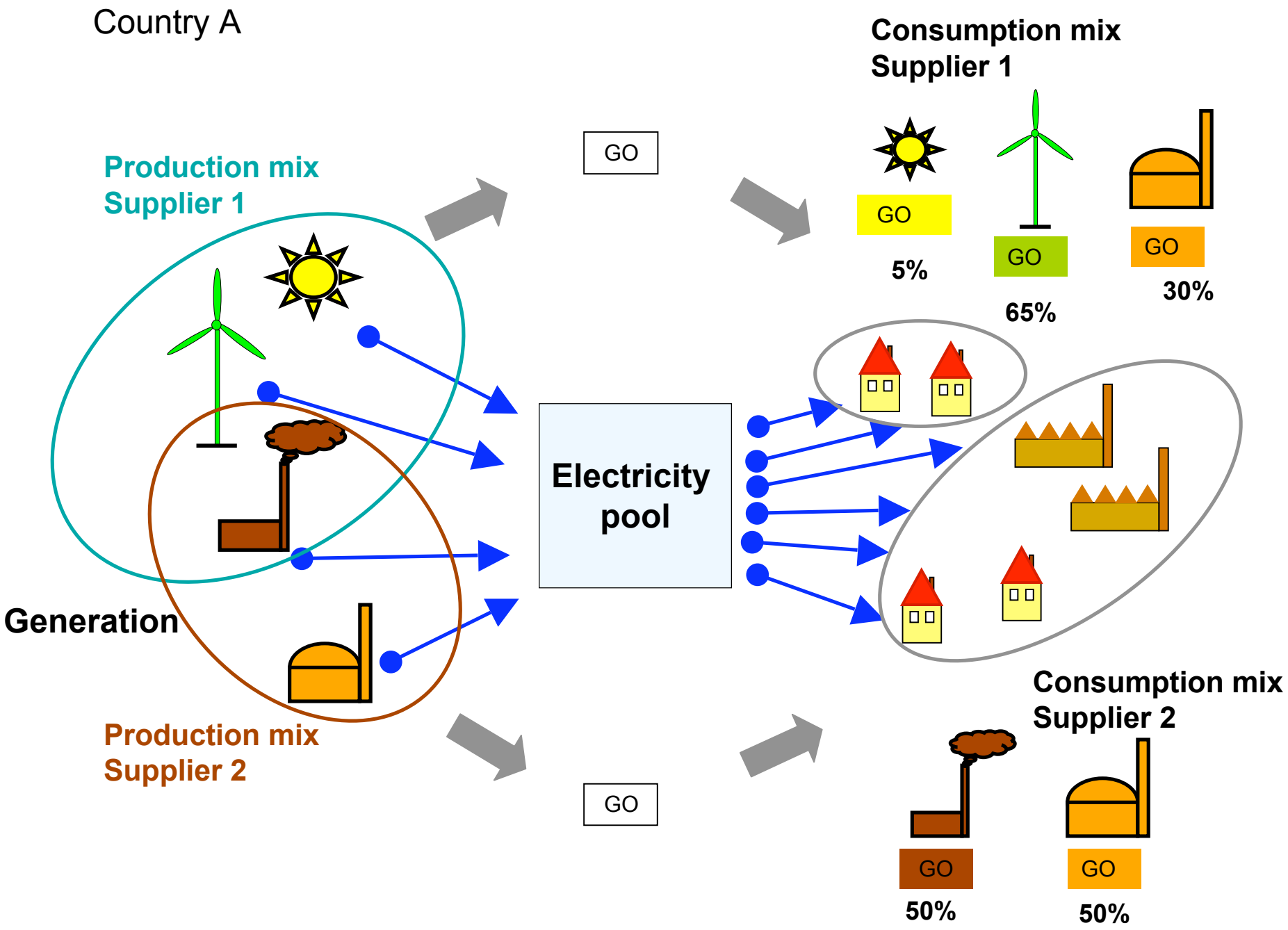
4. **The supplier buys GOs to the producer**

5. **… and cancels them according to what he has sold to his consumers**

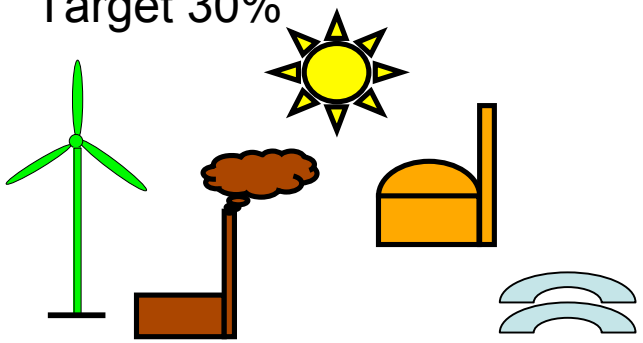


5 MWh


Country A
Consumption mix
Supplier 1
GO
GO
5%
GO
65%
GO
30%
Electricity
pool
Generation
Consumption mix
Supplier 2
GO
GO
50%
GO
50%


Country A
Consumption mix
Supplier 1
Production mix
Supplier 1
GO
GO
GO
GO
5%
65%
30%
Electricity
pool
Generation
Production mix
Supplier 2
GO
Consumption mix
Supplier 2
GO
GO
50%
50%

Country A : 31% RES
Target 30%

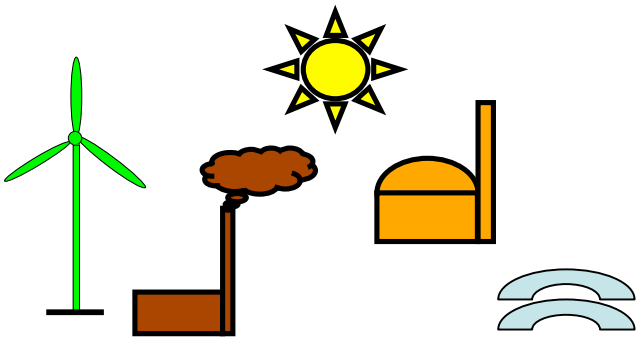


GO GO GO GO GO

15% 69% 2% 0% 14%

GO

Country A : target 30%

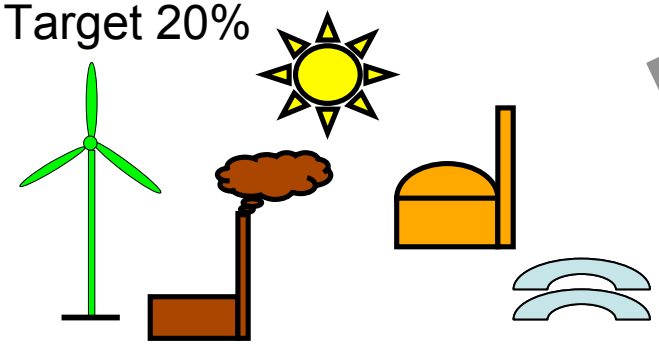


GO GO GO GO GO

15% 70% 2% 0% 13%

Consumption mix

Country B : 12% RES
Target 20%



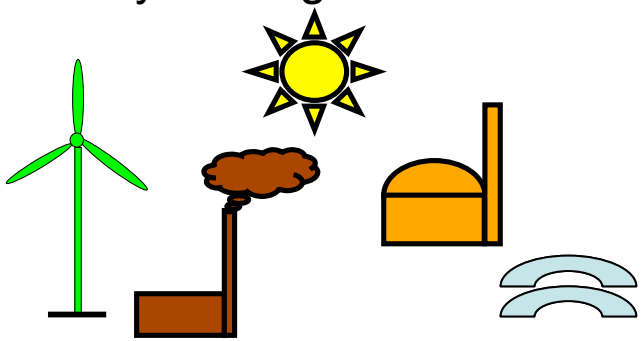
GO GO GO GO GO

5% 58% 0% 30% 7%

GO

Fulfilment of the target

Country B : target 20%



GO GO GO GO GO

5% 50% 0% 30% 15%