



Disclosure information display

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4CE

Consumer Choice and Carbon Consciousness for Electricity

Disclaimer

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The 4C Electricity Project

The project “Consumer Choice and Carbon Consciousness for Electricity (4C Electricity)” is being carried out under the framework of the EU Altener programme. The aim of this project is to promote Electricity Disclosure, i.e. consumer information about the source of the electricity product they are currently buying and the implications of its generation.

By assisting consumers to make an informed choice in the liberalised market place, this project proposes to develop a label (and the information system behind it) that will provide them with details of the content of their supply mix and its resulting environmental implications.

By designing an information system which displays details about the primary energy sources used to generate a certain product, this label will provide a tool which can aid consumers and policy makers in greening Europe’s electricity supply.

The Electricity Disclosure scheme will be explored within the context of liberalisation, in order to ensure that a functional and practical scheme is proposed. An assessment of the opportunities and barriers to labelling, and especially for tracking electricity, from the changes to the European liberalised markets will therefore be undertaken.

These will be achieved through the following activities:

- Phase 1: A study of the ability of suppliers to access and provide the information needed for an electricity label within the context of liberalisation.
- Phase 2: A study of what the label will mean for consumers and what consumers want by consulting with them directly through focus groups and a telephone survey.
- Phase 3: Development of policies to maximise the impact of the label, as well as investigating the need for associated policies to ensure effectiveness. This final phase views the label as part of a policy framework towards a lower carbon future, and suggests a policy toolbox that can be employed to build on the label.

In the course of the project, two workshops will be held, which form key deliverables of the 4C Electricity project. The project final report will be available in October 2003.

For more information about the 4C Electricity project, please visit the project website: <http://www.electricitylabels.com>

Executive Summary

The display format of the disclosure information represents the interface with consumers and therefore is a key component in determining the effectiveness of the information from the consumers' perspective.

Any display format used should be simple, eye-catching and visually appealing, with clarity in display and of the information provided.

The following recommendations are given in terms of the key aspects of the disclosure information display:

- Harmonisation – the display format and information content should be harmonised at least at a Member State level, with common definitions, units and calculation methods agreed at the European level
- Location – the fuel source and environmental indicator information should be displayed together on a separate insert, with a direct link to the bill, that is sent out with every bill.
- Factual information – basic information on the fuel sources and related CO₂ emissions and radioactive waste is required under the Directive. Consumers would also like to see comparative figures and information on imports, along with a more detailed explanation of the information provided.
- Display format – the fuel source information should be displayed in a pie chart and table, which includes a detailed breakdown of renewable sources and comparative figures. Environmental indicator information could be displayed as a ranked label, based on the European appliance Energy Label, or as an indexed bar chart, both including absolute figures. Further research is required in this area to identify the most appropriate design from the consumer perspective.
- Verification – consumer confidence in the disclosure information is essential. Therefore any verification process must be seen to be trustworthy and reliable.
- Costs – the costs of producing and distributing the disclosure information will ultimately be passed onto the final customer and are unlikely to represent a significant proportion of the final electricity price paid.

1 Introduction

This chapter provides a summary of the main recommendations from the 4CE project in terms of the display of electricity disclosure information. This work is based on substantial consumer research undertaken in phase 2 of the 4CE project, including 20 focus groups and a telephone survey of 3000 participants throughout Europe, and additional knowledge gathered over the course of the 4CE project. Further details of the consumer research can be found in the phase 2 summary report and individual task reports, all available on the 4CE website (www.electricitylabels.com).

The focus here is on the front-side of the disclosure system – the tracking mechanism, or back-side, is not discussed. It is assumed throughout the discussions that whatever tracking mechanism is in place, it is able to provide the necessary detail for the display options outlined here. Detailed discussions on the various options available for a tracking mechanism are included in the phase 1 report of the 4CE project, also available on the 4CE website.

This chapter starts by outlining the key aspects of the display of disclosure information and the issues that need to be considered. Then, taking the wording of the labelling provision contained in European Directive 2003/54/EC¹ on liberalisation of European electricity markets as a starting point, each aspect of the information display is discussed in turn, both in terms of minimal compliance with the Directive and options which go beyond the minimum. Finally, some basic ground rules for disclosure information display are given. A brief summary and examples of the display formats used in existing schemes around the world are included in Appendix A.

¹ Referred to as the Directive in this report

2 Key aspects of disclosure information display

When it comes to designing any kind of label or information material, there are some fundamental issues that need to be considered in terms of ensuring the information is understandable and accessible to as wide a range of people as possible. These basic criteria include:

- simplicity
- clarity in display and information provided
- minimum font size
- appropriate language
- eye-catching and appealing (possibly through use of colour)

Aside from these fundamental criteria, there are a number of key aspects regarding the display of the disclosure information which can be broken down into the following areas:

- Harmonisation – the extent to which the display format and information content is harmonised between suppliers and across countries
- Location – where the disclosure information is displayed, including promotional materials, websites and independent catalogues
- Basic parameters – size and shape of the display formats
- Factual information – what information is actually provided in terms of fuel sources, emissions factors, comparative data, information on imports
- Display format – how the information is displayed: text, tables, pie charts, bar charts, use of colour
- Verification process – to ensure information provided is reliable
- Costs of producing and distributing the disclosure information

Each of these will be discussed in turn in the next section, in the context of the labelling provision of the Directive.

3 Electricity disclosure information display issues

The labelling provision of Directive 2003/54/EC on liberalisation of the European electricity markets is as follows:

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

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

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

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

Although this is referred to as the ‘labelling provision’, it does not actually require the electricity disclosure information to be shown on a single physical ‘label’². The Directive suggests that the fuel mix information and environmental information could be displayed in different locations, making a single label impossible. Therefore, the discussion here is focused on the display format for each element of the disclosure information rather than a single label design. These individual components could, of course, be brought together and presented as a stand alone label.

The Directive provides guidance only at a very general level and does not cover some of the more detailed aspects of how the information is displayed. The Directive defines the minimum that is required, but there is plenty of scope for Member States to go beyond this and interpret the labelling provision according to their country’s priorities and requirements.

Each of the key aspects of disclosure information display are discussed below, outlining the various options available and identifying what would constitute ‘minimal compliance’ with the Directive and the options which go beyond the minimum, in line with the consumer preferences identified through the consumer research conducted under the 4CE project.

² A ‘label’ is defined as a separate piece of paper associated with an item which identifies the nature of that item by outlining certain defining characteristics

3.1 Harmonisation

One of the key issues to establish is the extent to which display of the disclosure information is harmonised. This concerns both the display format used and criteria for presenting the information (e.g. common definitions and calculations). At one extreme, there could be no harmonisation at all at a country or European level, with individual suppliers deciding what information they use and how this is displayed. At the other extreme, the front-side elements could be fully harmonised at a European level, with both the criteria and display format specified by the European Commission.

In between these two extremes, lie three other options:

- Member States develop their own criteria for the information, but the actual display format is left up to suppliers to decide
- Member States develop their own criteria with a uniform display format within the country
- Member States agree on some fundamental criteria between them, but the display format varies between Member States, although is uniform within any one country

3.1.1 Minimal compliance

There is no explicit requirement in the Directive for any level of harmonisation. However, since Member States are required to ensure that the information provided to final consumers is reliable, there will need to be limited harmonisation of certain criteria (e.g. definitions, calculations used) at a Member State level. The display format for the information would be decided by individual suppliers in each country. Suppliers may support this approach since they may be keen to develop their own style of information presentation and tailor it towards their customer base, rather than the display being regulated.

However, such an approach has several key disadvantages:

- Duplication of effort and low cost-effectiveness – all suppliers would be designing and testing their own display formats independently.
- Poor comparability – one of the strong messages from the 4CE focus groups was that the information should be comparable between suppliers (Arvidson, 2003). Such comparisons would be difficult if every supplier presented the information in a different way and used different definitions and calculations. This is also backed up by consumer research in the US – Moskovitz et al (1998) found that electricity disclosure information was far more effective if all products were labelled in a uniform manner, allowing easy comparison.
- Represents a market barrier – difficulties in comparing information between suppliers reduces transparency of the information and represents a barrier to consumer choice.

- Reliability – this is a requirement of the Directive and implies that a minimum level of verification is necessary. However, a multitude of display formats and criteria would make any verification by the Member States more complex and expensive.

3.1.2 Beyond the minimum

Given the disadvantages of a lack of harmonisation, it is clear that some level of harmonisation is desirable.

Deciding the criteria for what information should be included at a Member State level would make it easier to verify the information provided. This would be of benefit to all involved – industry, government and consumers.

In addition to this, a common display format at a Member State level would be of great benefit to consumers, enabling them to compare offerings from different suppliers and encouraging transparency in the market. A common design would be cost-effective in terms of selecting and testing a design and ensure that all suppliers are competing on a level playing field. Another advantage would be that it would be easier for Member State governments to introduce additional legislation with a common design and criteria as a basis e.g. sales targets for renewable energy.

Therefore, a harmonised approach at a Member State level in terms of the information criteria and display format would be beneficial to all stakeholders.

It could also be possible to define the information criteria and display format at a European level. This would not necessarily bring any advantages in terms of ease of verification, since this is a Member State responsibility. It is unlikely to be of particular benefit to domestic consumers, since the majority will only ever see the disclosure information for electricity that is being sold in their own country – it makes no difference to them if this is harmonised at a European level, although it could benefit non-domestic consumers who operate multi-nationally. Industry may benefit in terms of the cost-effectiveness of developing one single European design. It would also be easier for suppliers to sell electricity in other countries, since they would not have to change the display format in order to do so, but only correct for language differences. As with harmonisation at a country level, a common European format would make it more straightforward to introduce further EU legislation.

Harmonisation at the EU level is more important in terms of deciding on common definitions and calculations for disclosure information. This would ensure that the information is directly comparable between countries and avoids any confusion. It would be sensible to base fuel source definitions on those used in other Directives (e.g. Renewables Directive 2001/77/EC). In terms of the environmental indicators, there should be agreement on the units used and the basis on which the carbon dioxide emissions and radioactive waste figures are calculated and tracked.

The disadvantages of working towards a common EU format is that it could be a long, drawn out process to reach agreement on the criteria and design. Also, it is probably not

advisable to allow countries to develop their own designs and then change this to a common European design at a later date, since this is likely to be confusing to consumers and may undermine their confidence in the system. Therefore, if there is to be a common European design it would be advisable to work towards this from the outset.

However, given that the benefit to consumers of a common European design is likely to be minimal, it is suggested that the focus should be on harmonisation of the display format at a Member State level, with some key criteria and definitions agreed at a European level.

3.2 Basic display parameters

The two key display parameters are essentially size and shape. These are dictated by the amount of information to be included and where it is to be displayed – as discussed in the following sections.

There are some advantages to displaying the disclosure information in a stand alone label – it would be easy to reproduce, would be easily recognisable and easy to transfer between media (electricity bills, promotional materials, websites). However, given the complexity of the information required for electricity disclosure, it may be difficult to provide all the necessary information for consumers on a single label.

3.3 Location of information

The Directive requires that the ‘contribution of each energy source to the overall fuel mix’ should be specified in or with the bill and promotional materials and there must be ‘at least the reference to existing reference sources, such as web-pages’ for information on environmental impact. This leaves the option open for Member States to decide to include the environmental impact information alongside the fuel mix information in or with the bill rather than using an existing reference source.

Therefore, according to the Directive the options available for display of fuel mix information are:

1. incorporated onto the front page of the existing bill
2. included on the back of the bill
3. included as an extra page of the bill
4. detailed on a separate leaflet sent out with the bill
5. divided between the bill and a leaflet (with a link between the two)

In addition to this, the information must also be displayed on promotional materials.

In terms of the environmental information, the Directive only requires this to be displayed on an existing reference source, such as a website, although this does not exclude the possibility that this detail could also be included in the same location as the fuel mix information.

There is also the issue of where comparative information on all suppliers to help consumers in choosing between them is made available. This will be discussed separately.

3.3.1 Options for disclosure information location

3.3.1.1 Front page of the bill

The majority of bills are generated by using single colour (usually black) text and numbers onto a white page using a standard pre-printed bill template (which includes such things as the company logo and standard headings). The use of colour is usually limited to the bill template (eg for the logo) or paper on which the bill is printed – coloured text is unusual.

Under this option, the information must fit into the available space on the front page using the existing bill format and will be limited to a format which is easy to produce using current bill printing processes.

This option has the advantage that it would require little change to the bill printing process and would not incur any additional postage costs since there are no extra pages to add to the bill.

The main disadvantage is that the space available is likely to be extremely limited, although this varies for different customers and suppliers. A review of electricity bills from a number of European countries indicated that bills already contain a great deal of information and there is little ‘spare’ space for including any additional information on the bill without a major re-design of the bill format. This means that only a small amount of information could be provided and it is unlikely there would be any space for further detail or explanation on what the information is about.

Any information added onto the bill would most likely be limited to text, numbers or percentages in black print. This would therefore be lacking in any visual impact and is likely to be lost amongst the other information that already appears on the bill, thereby significantly reducing the likelihood that the information would be noticed by consumers.

One way to highlight the disclosure information would be to include a specific area within the bill template which contains the additional information. It may then be possible to include some colour (in line with any colours already used in the template to minimise costs) and possibly a special logo that identifies the disclosure information. This would involve a redesign of the bill template, but could be incorporated over time through the regular redesign of bills that suppliers undertake as a matter of course.

3.3.1.2 Back page of the bill

There is usually more space available on the back on the bill and the format of the information would be less restricted – there could be scope to include graphics and tables rather than plain text.

However, this would still require some adjustment to the current billing printing processes (with associated costs) and the major disadvantage of this option is that it is very likely that the information would be overlooked by the majority of consumers – not many people pay attention to what is printed on the back of the bill. It is strongly recommended that this option is not used.

3.3.1.3 *Extra page with the bill*

Rather than fitting the additional information into the available space on the front or back of the bill, this option looks at the possibility of including a separate page with the bill that contains only the disclosure information. This would still be printed as part of the bill and so is subject to the limitations on the bill printing processes, as in the first option.

The main advantage of this option over the first two is that more information could be included, possibly with some more detailed explanation to set it into context for the consumer. This, of course, would involve increasing the number of pages of the bill, which may incur an increase in postage costs. The magnitude of this increase will vary between Member States – cost estimates for Germany indicate that postage represent a significant proportion of the total costs of a disclosure scheme.

The disadvantage with this option is that, as with the first option, the display of the information is limited to the current bill printing processes and so is likely to lack visual impact, although including the information on a separate sheet would help it stand out.

3.3.1.4 *Separate leaflet*

In this context, the leaflet is assumed to be a folded A4 page, or smaller, printed on both sides and folded to fit into the average bill envelope. Including all the information on a separate leaflet immediately increases the design options available. A leaflet could include a greater range of colours and graphics than is possible on the bill and present the information in a more visually appealing and eye-catching way. There is also more space to present the information and provide explanations to set it into context.

One of the findings of the 4CE focus groups was that people favoured a range of different formats for presentation of the disclosure information. There is potential to do this within a leaflet format – including formats such as pie charts, tables and text.

A leaflet could provide generalised information about the supplier's portfolio and would be the same one that was sent out to all customers (limiting costs). It would also be straightforward to send out such a leaflet with any advertising and promotional materials.

The possible disadvantage is cost, both in terms of designing and printing the leaflet and the increased postage weight for sending it out with bill. There is also the issue of standardisation – how much of the leaflet design is left up to the suppliers to decide? It would probably be necessary to standardise the text included in the leaflet to a certain extent within each Member State, at least in terms of what information should (and

should not) be included. An example of what the leaflet could look like is given in Appendix A.

The other drawback of this approach is that the leaflet may get lost amongst other information sent out with the bill – many participants in the focus groups stated that they usually ignored the extra ‘stuffers’ and threw them straight in the bin. This makes it all the more important that the front of any leaflet should be designed to be as eye-catching (and therefore probably colourful) as possible.

3.3.1.5 *Separate leaflet with a link to the bill*

An extension of the third option is to display a link to the leaflet on the bill. The aim would be to have a small amount of information, which fits into the available space on the bill, to draw attention to the leaflet, encouraging people to seek it out. For example:

‘The electricity sold by Supplier X in 2002 resulted in x kilograms of CO₂ emissions and x units of radioactive waste per kilowatt-hour. See accompanying leaflet for more detail’.

Ideally, this link would be as eye-catching or thought provoking as possible. For example, if the environmental impact of the electricity was ranked on a scale of A-G, the bill could just state that the electricity is AA rated and that more detail is provided on the leaflet. The link could also be personalised according to the individual’s electricity consumption, for example:

‘Your electricity usage in 2002 resulted in x kilograms of CO₂ emissions and x units of radioactive waste. See accompanying leaflet for more detail’.

Providing such personalised information would be more straightforward in some Member States than others, depending on the current billing processes.

This option still has the disadvantages of the extra cost of producing and sending out the leaflet and potential costs of including additional information on the bill – these costs are likely to be higher for a personalised rather than generic link.

3.3.1.6 *Promotional materials*

The Directive refers to ‘*promotional materials made available to final consumers*’. This is assumed to cover only material that is sent out directly to customers, rather than newspaper and magazine advertisements, and includes printed brochures for domestic and non-domestic customers and any tender documents and price quotations provided to any non-domestic customers when negotiating contracts for their electricity supply whether written or verbal (e.g. on the telephone) (Katrien Prins, pers. comm.).

In order to ensure easy recognition (and therefore effectiveness) and to avoid confusion amongst consumers, the best approach would be to use the same information display on the promotional material as is used in or with the bill. If the disclosure information is provided in a separate leaflet, the promotional materials could use just the key graphics and tables from this, rather than any detailed explanations. This could take the form of

an integrated 'label', as shown in Appendix B. Such an approach would be straightforward for suppliers, since the display format is already decided. Verification of the disclosure information displayed on promotional materials would also be much easier thus ensuring reliability.

3.3.1.7 Website

The Directive specifies that, at a minimum, the environmental information must be available on an existing reference source, such as a website. Given that only 38% of households currently have access to the internet (Eurobarometer 2001), it is important that this information is also available elsewhere – for instance a telephone number could be provided for people to call and receive such information, either directly over the phone or they could register to be sent a copy of the website information. Another possibility is that a pre-paid reply card could be included with the bill for people to send off for this information. Both options would result in additional transaction costs for suppliers through responding to telephone or written inquiries.

It is important that the environmental information is easy to find on the web page. It is suggested that the website address supplied with the bill should be a direct link to the environmental information page within the supplier's website, rather than, for instance, the supplier's home page.

There is also the issue of reliability of information – how do consumers know that the information provided on the supplier's website is correct? It may also be difficult to regulate or define exactly how the information is presented. One possibility would be to set up an accreditation system for the environmental information web pages, coordinated by an independent body, with regular monitoring.

Despite the limitations due to the current level of internet access throughout Europe, the website could be a useful medium through which to communicate more detailed information on both the fuel mix and environmental impact of electricity. There are also few limitations on how such information could be displayed. It would be straightforward to link to some common generic sites which provide the background and explanations on, for instance, the link between electricity generation and climate change.

The website is also a useful medium for providing comparative information on electricity suppliers, as is currently the case in the UK, with websites such as www.uswitch.com and www.energywatch.org.uk providing consumers with the various supplier options available to them. These websites are run by independent bodies and consumer associations and usually accredited by the regulator.

However, due to the low level of internet penetration and the fact that there is no guarantee that consumers will either visit a website or request the information by post or telephone, providing environmental information only on an existing reference source is likely to be a significant obstacle for consumers to access such information.

3.3.2 Frequency of information distribution

The Directive provides no clear guidance on how often the disclosure information should be distributed. It is assumed that suppliers will only want to send out the information with the electricity bill, rather than as a separate mailing, thus minimising any increase in postage costs. At a minimum, it must be sent out each year, since the Directive requires that the information is provided for the preceding year. At a maximum, it could be sent out with each electricity bill (although in some countries, this would also be on an annual basis). This does not mean that the information would have to be revised each time it was sent out – the same information could be sent out with each bill in any one year.

In the focus groups and telephone survey, participants expressed a preference to receive the disclosure information once a year. However, it may be advisable, at least in the initial stages of the disclosure scheme, to send out the information twice a year with the aim of raising awareness of the issues amongst consumers. This may result in an increased cost compared to an annual circulation, although the postage costs for the bills would be incurred anyway. However, in countries where bills are sent annually or where consumers receive electronic bills (and no paper copy), the information could be sent out once a year. Suppliers should also be obliged to provide the information on request.

3.3.3 Minimal compliance

The quickest, simplest and cheapest option that complies with the Directive would be to provide the fuel mix information in a simple format on the bill, either on the front page or as an additional sheet, with identical information displayed on any promotional materials. The information would be sent out once a year. As discussed in section 3.3.1.1, this would have implications for the format in which the fuel mix information was displayed since this would have to fit in with the current bill printing processes and the space available.

The environmental information would be displayed on a website only, with a telephone number or reply-paid postcard provided to enable those without internet access to request the information.

3.3.4 Beyond minimal compliance

From a consumer information viewpoint, it would be preferable to display both the fuel mix and environmental information on a separate insert provided with the bill, with a direct link between the bill and the insert. The leaflet would be circulated at least once a year, preferably twice a year. This (and more) information could also be available on a website. The key graphics and tables would be displayed on the promotional materials.

From an industry point of view, depending on the format chosen for the display of the disclosure information, a separate insert may also be preferable since detailed information can be given without requiring any alteration of the current bill printing processes.

Producing a separate insert may actually be cheaper than including the information in the bill, although may result in higher postage costs.

3.4 Factual information

There are a number of issues to consider, both for the fuel mix and environmental information.

3.4.1 Fuel mix information

The fuel mix is assumed to be the mix of fuels used in the generation of the electricity that the supplier is selling to its customers. The fuel mix information displayed should take into account any transmission losses from generation to supply – this should be accounted for through the tracking mechanism.

The Directive requires information on the contribution of ‘*each energy source*’. It is not clear whether this requires all fuel sources to be listed individually or whether it is acceptable to group sources together, such as fossil fuels. It is assumed that this information would be given on a percentage basis, rather than actual generation figures.

The number and type of fuel sources will vary between each country and it is suggested that it would be useful to have some basic ground rules concerning the display of this information.

Firstly, the order in which the fuels are displayed. It is recommended that there is a fixed list of fuels for all Member States, e.g. coal, nuclear, gas, other and renewables. Renewables are always listed last so as to allow the inclusion of a detailed breakdown of these sources e.g. hydropower, wind, biomass, solar and other. Suppliers must always display the full list, including the details of renewables, even if a source is not represented in their portfolio. Standardisation of the fuel list in this way ensures comparability between suppliers and makes it straightforward to include national comparative figures. It may be advisable to limit the list to a maximum of ten to twelve fuels at any one time, in order to keep the level and display of information manageable.

Results from the 4CE focus groups indicated that people wanted to be given a detailed breakdown of which renewable sources are covered in the fuel mix. Participants felt that this was important to enable them to make the distinction between what they consider to be ‘good’ and ‘bad’ renewables (e.g. solar is good whereas wind energy is bad due to the negative impacts on the landscape). The ability to display this level of detail depends on the chosen format and location for the disclosure information – it may be that this is only a realistic option if the information is displayed in a table either on a leaflet or website.

Ideally, the definitions of the various fuel sources would be standardised as far as possible, based on current definitions used in other European Directives to ensure consistency between countries and across Europe e.g. definitions of renewable sources should be

based on those in the current EU Renewables Directive 2001/77/EC. Member States should agree on the terms and definitions to be used.

The interaction of disclosure information with other existing policies should also be clarified. For instance, in the UK, there is an obligation on suppliers to provide a certain percentage of renewable energy to their customers, evidenced through the ownership of Renewables Obligation Certificates or ROCs. In the event that a supplier does not buy enough renewable energy to meet the obligation, it is possible for them to purchase ROCs from suppliers with an excess of certificates. As a last resort, they are also able to 'buy out' i.e. pay a penalty for not having met their obligation. However, disclosure information relates to the actual fuel mix of the supplier, i.e. what the supplier has actually bought according to the disclosure tracking mechanism (whether based on certificates or contracts), regardless of any additional ROCs that the supplier has purchased. Hence it would be possible for the ROCs and disclosure systems to co-exist separately, although could result in some confusion amongst consumers if they are aware of such targets and do not seem them reflected in the disclosure information.

3.4.2 Environmental information

The Directive specifies information must be provided on 'at least' CO₂ emissions and radioactive waste and therefore does not prevent Member States from including data on other environmental indicators that they feel are relevant. However, the inclusion of any additional indicators will have implications for the tracking mechanism, particularly if harmonised at a European level since it would have to be able to deal with the requirements of all Member States. Additional indicators are not considered here, although the issues discussed below would also apply to them if included in the disclosure information.

Although the Directive specifies that information must be given in terms of CO₂ emissions and radioactive waste relating to the supplier's portfolio, it provides no guidance as to the basis on which these data are calculated. These issues are covered in more detail in the 4CE Phase 1 report, but will be outlined here in the interest of completion.

Data on the environmental indicators could be based on either:

- European averages;
- country averages or;
- plant specific figures.

In terms of CO₂ emissions, the easiest and most appropriate approach, at least for the short-term, would be to use country averages – European averages would be inaccurate, given the range of efficiencies throughout Europe, and plant-specific factors require a fully functioning, detailed tracking mechanism. In the longer-term it would be beneficial to work towards plant-specific factors since this provides greater precision and accuracy.

In some situations, a combination of plant-specific and average emissions factors may be required. For instance, under a contracts based tracking mechanism, plant-specific

factors could be used for electricity related to specific contracts, whereas the power exchanges would be assigned average emissions factors of the electricity sold through the exchange.³

CO₂ emissions can be based on either direct emissions (i.e. resulting from the fuel in order to produce electricity) or on life-cycle emissions (i.e. taking into account the whole process from producing or extracting the fuel to the generation of electricity). Whilst life-cycle emissions can be considered more accurate in reflecting the true environmental impact of using a particular fuel (e.g. the production of solar panels is highly energy intensive and therefore results in a certain level of CO₂ emissions), such figures are controversial since there is currently no agreement on how to define the boundaries of the life cycle. The use of such figures may also be confusing for consumers since they might not expect renewable sources to be linked to any CO₂ emissions. Direct emissions figures are more readily available and less controversial. In the longer-term it would be preferable to move towards life-cycle emissions factors if agreement can be reached on how these are calculated.

In terms of radioactive waste, the Directive does not specify whether this refers to high, medium or low level waste. Calculation of high-level waste (determined from the annual production of spent nuclear fuel) produced is reasonably straightforward, but the amount of medium and low level waste produced varies widely between the different methods for handling nuclear waste (e.g. reprocessing, interim storage) and so is more difficult to establish. Therefore, it is probably only possible to provide information on high-level waste. As with CO₂ emissions, the use of country averages for the amount of radioactive waste produced by power stations would be the simplest approach, with a possible move towards plant-specific data at a later stage.

The treatment of CHP as part of the disclosure information also needs to be considered. Since CHP is not in itself a fuel source, it is not required to be specified separately as part of the fuel mix information. However, in terms of the environmental information, this would mean that it would be assigned the same status as an average e.g. gas power plant, which is clearly not the case given the higher efficiency, on average, of CHP electricity generation. One possibility would be to ear-mark any electricity that has been produced from high-efficiency CHP on the disclosure information. The tracking mechanism would also need to provide details of the proportion and efficiency of the generation, to enable an accurate calculation of the emissions figure. This issue is discussed in further detail under phase 1 of the 4CE project.

3.4.3 Product vs portfolio

The Directive requires that the disclosure information is based on the supplier's portfolio, therefore this is what must be provided as a minimum. It is assumed that portfolio

³ For more details on the issues surrounding contract and certificate based tracking mechanisms, please see the 4CE phase 1 report, available on www.electricitylabels.com

refers to all the electricity sold to final consumers, both domestic and non-domestic, by the company that is named on the bill (rather than the parent company).

Portfolio-only information is likely to be more straightforward for suppliers to provide, since the information will be the same for all customers of any one supplier. It also avoids the problem of double-counting (see discussion on product and portfolio disclosure below) and ensures that all customers get a full picture of what is provided by their supplier – the supplier cannot ‘hide’ its ‘dirty’ electricity – as can happen with product-only or optional portfolio disclosure. This was the experience under the recently introduced Austrian disclosure scheme, where it was optional to disclose product or portfolio information. In Austria, there was a strong demand from domestic customers for renewable energy, whereas the non-domestic customers were not interested in renewable supply and were happy to buy the remainder. So the suppliers just split their current portfolio between the two groups of customers – renewable energy being sold to domestic customers and the remaining ‘dirty’ electricity (fossil fuel and nuclear) sold to the non-domestic sector. Under product disclosure, the domestic customers were unaware that their supplier was still selling non-green electricity to its other non-domestic customers. This is clearly mis-leading for the domestic customers who believe they are supporting a supplier with a 100% renewable energy supply. In the light of this experience, the Austrian scheme has been revised and will be limited to portfolio-only disclosure from July 2004 (Herbert Ritter, pers. comm.).

However, there are some drawbacks to providing information just on the company portfolio. The main one being that it does not encourage suppliers to create different products, such as a green or low CO₂ tariff, which could address the preferences of different consumer groups. In several Member States, diversified products have already been developed by a range of suppliers. Product diversification can help to establish consumer choice options. Under a disclosure system purely based on the supplier portfolio, suppliers with diversified products would have to submit identical disclosure information to all their customers showing their total portfolio, which would contradict to the product descriptions.

In theory suppliers could comply with the requirements of a portfolio disclosure system by setting up a daughter company for each product. But this has both time and cost implications and could be seen as mis-leading to the customers since they will not get the full picture of what the parent company provides (which may be important to them if they wish to avoid, for example, any association with nuclear energy).

The Directive does not, however, exclude the possibility of including product information. This has implications in terms of increased complexity of information (disclosure information on portfolio alone is already complex), reduced clarity for the consumer (in the focus groups, the difference between the product and portfolio was difficult for people to grasp so it is unlikely that many consumers will understand the distinction between product and portfolio, at least initially) and display/format issues (given that more room would be required).

Where both product and portfolio information can be displayed but product information is not required on **all** electricity, there is a possibility that electricity with certain qualities could be sold twice. For example, if a supplier created a green product, they would provide product and portfolio information to those customers buying this product. Other customers would just receive portfolio information, which would include the green electricity being sold separately as a green product. Therefore, it would appear to these customers that they were buying a proportion of green electricity in the portfolio mix, whereas in actual fact, some or all of this electricity has already been sold to the green product customers.

Thus, whilst it could be optional to display product information with the portfolio information, as soon as a supplier differentiates one or more products, it is strongly recommended that they must then provide product and portfolio information to all customers. No consumer should believe they are buying the portfolio mix if this is not the case.

3.4.4 Ex-post vs ex-ante

The Directive requires information to be provided on an ex-post basis. If long-term contracts dominate the wholesale market, a supplier's portfolio is unlikely to change drastically from one year to the next and so ex-post information can provide consumers with a fair indication of the type of electricity that they will be buying in the coming year. Also, evidence from the 4CE focus groups appeared to indicate that people expected to see ex-post data, since this is the basis on which their bill information is provided. A more detailed discussion of the ex-post/ex-ante issues is contained in the 4CE phase 1 report.

3.4.5 Comparative data

There is no requirement to provide any comparative data (country, regional or European averages) under the Directive for either the fuel mix or environmental information. However, some kind of reference figure is likely to be useful to consumers in helping them understand the information they are provided with and set it into context. For fuel mix information, this could take the form of e.g. the fuel mix relating to national average consumption (rather than generation, to take into account any imports and exports). For environmental information, depending on the display format used, average CO₂ emissions and radioactive waste figures could be provided or, if ranking was used, the ranking scale would provide the appropriate reference (see section 3.6.4.1 for more detail).

Findings from both the 4CE telephone survey and focus groups indicate that consumers want to be provided with some kind of reference figure for both fuel mix and environmental impact information. There was no clear preference for country or European average figures.

European averages for fuel mix information are likely to be of less relevance to consumers within a country and they could also act as a disincentive – either from the perspective of a country way below the average, where consumers could be frustrated that they

are unable to buy anything approaching the average and from the perspective of countries above the average, where complacency may set in.

In terms of environmental impact information, given that there is a large difference in CO₂ emissions factors between the best and worst generating stations in Europe, a European average would be fairly meaningless. The situation is similar for proportions of radioactive waste, given the dominance of this technology in some countries and the lack of it in others.

Therefore, in the short-term it may be appropriate to use country averages to provide greater incentives within each country to improve generation sources. European averages may become more relevant once a liberalised European market is established and the differences between countries are possibly less extreme.

The inclusion of comparative data could also provide industry with an impetus to improve their offerings, if below the average. It would also mean that the information provided to consumers would be more transparent.

3.4.6 Imported electricity

The Directive specifies that aggregate figures may be used for any imported electricity from outside the EU. The phrase ‘may be used’ implies that Member States could choose to use something other than aggregate figures if they wished. Aggregate figures are assumed to imply some type of statistical average – either at a European, country or regional level. The use of aggregate figures may not be necessary if the exporting country has a tracking mechanism compatible with that of the importing country.

Depending on the extent of harmonisation of the tracking mechanism within the EU, it may be that imports from countries within the EU without a compatible tracking mechanism would also use aggregate figures.

Any imported electricity should be assigned to the relevant fuel source categories within the supplier’s portfolio on the basis of the aggregate figures, not specified as a separate category in the fuel mix.

There is no requirement to specify the proportion or country of origin of any imported electricity, although disclosure of this information was strongly supported by the 4CE focus groups and telephone survey. According to the focus group participants, the reasons for wanting this level of detail was partly to see how much they were supporting the national industries and partly because of concerns regarding safety and security of supply from abroad.

If an appropriate tracking mechanism was used, it would be possible to provide exact proportions of imported electricity by country of origin. This could be used to provide an overall figure for the amount of electricity imported along with a list of the countries from which this electricity came.

3.4.7 Contact details

Contact details such as a customer service telephone line and mailing address are usually included on bills as a matter of course. This will need to be extended to provide the reference to the environmental indicator web page and phone line or reply-paid card (if applicable). It could also include a reference to an independent website that displays comparative information on all suppliers and a phone number to call to order a paper copy of this information.

If the disclosure information is provided on a separate leaflet or insert, the standard contact details of the supplier should be included, along with the any website details.

3.4.8 Minimal compliance

Minimal compliance could be achieved through:

- Limited guidance at a Member State (not European) level in terms of the list of fuels and common definitions of fuels listed in order to assist in verification (and thereby ensure reliability).
- Fuel list has to include ‘unknown’ since a minimal compliance tracking mechanism cannot provide full information.
- Definition of units to be used for the environmental indicators at a Member State level.
- Coverage of CO₂ emissions and radioactive waste figures only. Member States can choose whether to use country average or plant-specific figures. Direct CO₂ emissions factors are used.
- Providing information on the supplier’s portfolio, on an ex-post basis. Suppliers may choose to also provide product information, but this is not required or regulated in any way.
- Giving basic contact details of the supplier on the bill, along with the website address where the environmental information is available.
- Comparative figures, e.g. national averages, are not provided.
- Information on imported electricity is not provided.

This represents the minimal amount of information that could be displayed and is therefore likely to be of lowest cost to the industry. This fits well with the minimal compliance options for where the information is displayed.

However, this approach would have minimal impact in terms of consumer information. Also, since there is no environmental information on the bill nor any explanation provided on the various fuel sources, those consumers who do take note of the fuel mix information on the bill are more likely to react against electricity generated from nuclear power than fossil fuels. Given the strong support for renewable sources demonstrated in the telephone survey, these consumers would probably favour renewable energy instead.

Reliability of information may be low since verification of the information could be difficult.

3.4.9 Beyond minimal compliance

Based on the consumer research conducted under the 4CE project, the following represents options which go beyond minimal compliance and are more in line with consumer preferences and requirements:

- Definitions of the fuel sources are agreed at the European level.
- Member States agree on list of fuel sources to be used.
- CO₂ emissions factors and radioactive waste are calculated on the basis of plant-specific data.
- CHP generation is accounted for in the CO₂ emissions factors. MS can choose to ear-mark CHP on the disclosure information.
- Information is ex-post and is provided on portfolio only or on both portfolio and all products where a supplier differentiates one or more products.
- National averages for fuel mix and environmental impacts are provided as reference figures, with a possible move towards European averages as the European market develops and extreme differences between countries have reduced.
- The proportion of imported electricity is specified on the bill.
- Contact details for the supplier are displayed clearly and include a reference to the supplier's website, where more detail on the disclosure information can be found as well as a contact phone number and reply-paid card to order a hard copy of the web page information.

It is important to think carefully about how the information should be displayed to provide sufficient explanation and to avoid confusing consumers. This is particularly important in relation to product and portfolio disclosure where information on both is provided.

3.5 Fuel mix display options

The appropriate format used to display the disclosure information is dependent on a number of factors – where the information is to be displayed, the type of information and level of detail to be conveyed.

There is a variety of ways in which information on the fuel mix could be displayed. These are not necessarily mutually exclusive – a number of different options could be combined, which was an approach favoured by participants in the 4CE focus groups. A combination of display formats has the advantage that the information may reach a wider audience since some people respond better to, for example, pie charts, whereas others find tables easier to comprehend.

Any design should be as eye-catching as possible although space limitations and the danger of over-loading people with too much information also need to be taken into account.

3.5.1 Text

The main advantages of text is that it is simple to reproduce, takes up very little space and allows a detailed explanation of the information. However, space restrictions may mean that the amount of information that can be conveyed is limited. A section of text also has a low visual impact and can lack clarity of information. Moreover, comparisons of different offerings based on textual information is more difficult for consumers. For example:

‘The electricity sold by Supplier X in 2002 came from the following sources of electricity : coal (40%), gas (33%), nuclear (25%), oil (1%), renewables (1%), other (0%)’

3.5.2 Tables

Tables are possibly the best format in which to communicate a substantial amount of data, including comparative figures. It is also possible to provide a detailed breakdown on fuel sources, such as the various different types of renewables. Depending on the level of detail required, a table can be made fairly small to fit into the space available, although a small font is unattractive to the elderly and people with reading difficulties.

Figure 1 Example of table display for fuel mix information

Fuel source	Supplier X %
Gas	25
Coal	71
Nuclear	1
Others non renewables	1
Renewables (total)	2
<i>Hydro-electric</i>	<i>1.5</i>
<i>Biomass</i>	<i>0</i>
<i>Wind</i>	<i>0.5</i>
<i>Solar</i>	<i>0</i>
<i>Other renewables</i>	<i>0</i>

3.5.3 Pie charts

Pie charts with percentages were the most popular option for the display of fuel mix information in the 4CE focus groups. These have the advantage of a good visual impact, particularly if in colour, although it is also possible to use black and white shading.

However it would not be possible to display any detail on the breakdown of renewables (as was favoured by the 4CE focus groups) – this would have to be provided in a separate table. There is also a limit to the number of pie charts that could be displayed for comparisons – two is probably feasible, but three pie charts, as would be required to display portfolio, product and national average fuel mixes, becomes a little unmanageable in terms of space and comprehension. Even one or two pie charts require a substantial amount of space which may restrict the font size of any explanatory text, even on a separate insert.

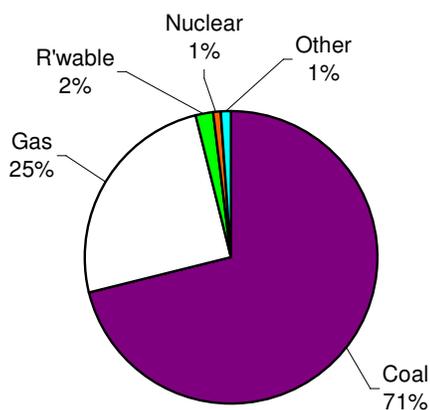


Figure 2 Example of a pie chart displaying fuel mix information

3.5.4 Bar charts

Bar charts also have good visual impact and have the advantage that it is easier to make comparisons than it is with pie charts, although it is still not possible to provide a detailed breakdown of renewables – again this would have to be provided in a separate table.

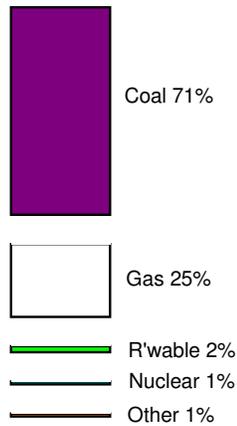


Figure 3 Example of a bar chart displaying fuel mix information

3.5.5 Minimal compliance

The fuel mix is displayed as a list in simple black text or in a table, with no additional explanation. It should be possible to incorporate this minimal level of detail onto the existing bill. The same format would be used in the promotional materials. This approach is relatively cheap, quick and simple, although will have minimal impact in terms of consumer information.

3.5.6 Beyond minimal compliance

A combination of options is used to display the fuel mix information – a pie chart accompanied by a table showing the percentage figures for the supplier’s portfolio, including a detailed breakdown of the renewables sources, and comparative figures (Figure 4). This would be accompanied by some explanatory text to set the information into context. It is likely that this display format would be best suited to a separate insert sent out with the bill. The pie chart and table would be displayed on the promotional materials as well.

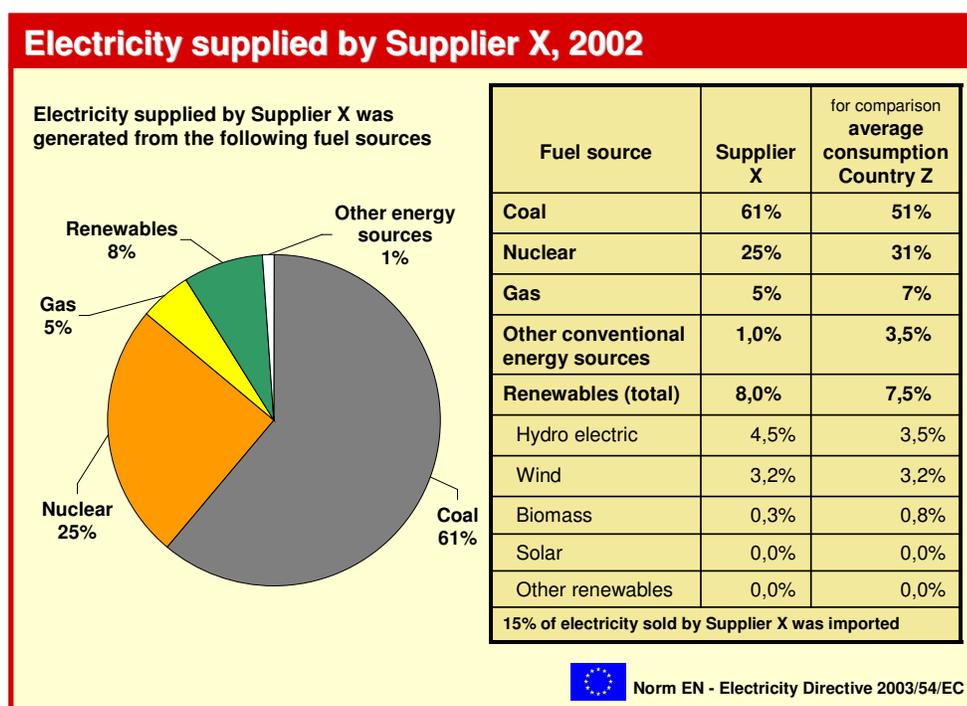


Figure 4 Recommended display format for fuel mix information

3.6 Display of environmental indicator information

The display of environmental information is not as straightforward as for information on the fuel mix since the calculation of the information is more complex and the information is more difficult to portray. Several designs were tested in the 4CE focus groups, but none were very successful. Further research is required in this area to identify the most appropriate way to display the environmental indicator information simply but effectively.

A key issue is whether the information on environmental indicators should be given in absolute figures e.g. kg of CO₂ and µg of radioactive waste per kWh. Research in the US indicates that domestic consumers find this information difficult to understand and therefore the effectiveness of such disclosure is greatly reduced (Moskovitz et al, 1998). However, whilst absolute figures by themselves may be hard for consumers to understand, it may be beneficial to include such figures in addition to some of the display formats discussed below. This would provide consumers with a reference figure to help put the information provided into context and also allows them the opportunity to calculate their own individual environmental impact. This information may be of particular interest to non-domestic customers who may require this detail as part of their environmental reporting or tendering processes.

CO₂ emissions can be expressed either in terms of carbon, CO₂ or greenhouse gases. In this case the Directive has specified that the information be given in terms of CO₂.

Radioactive waste can also be expressed in a variety of ways: either by weight in µg per kWh, or based on the level of radioactive radiation in Bequerels. Although none of these units are likely to be familiar to the majority of consumers, it is recommended that micrograms per kWh are used for the disclosure information.

The following display options could be used either on a website or on or with the bill:

3.6.1 Text

As with information on the fuel mix, a limited amount of information could be portrayed through the use of text, although this lacks visual impact and makes comparisons more difficult. The information could be provided in terms of absolute figures, but these may require some further explanation to help consumers understand what the data mean.

“Over the past year, the electricity sold by Supplier X has resulted in the generation of x kilograms of CO₂ emissions and x micrograms of radioactive waste per kWh”

3.6.2 Tables

The absolute figures could also be presented in a table. Again, without further explanation or comparative figures, it is unlikely that these data would be very meaningful for consumers.

Another option would be to present the percentage contribution of the various fuel sources towards a particular environmental impact for a particular portfolio (e.g. coal generation results in 99% of the CO₂ emissions for this electricity product). Whilst this may be useful in raising awareness about the environmental implications of using particular fuel sources, it provides no indication as to whether the particular product is high or low, good or bad compared with what is available on the market. In order to set the figures into context, this data would need to be accompanied by an absolute total for emissions, which, as discussed above, can be difficult for consumers to understand.

Another option would be to display the environmental impacts as an index, as shown in the following table. Absolute figures could be included as a reference.

Environmental impact of the electricity sold by Supplier X compared with the national electricity mix in country X:		
CO ₂ emissions	68%	of the average electricity mix
Radioactive waste production	120%	of the average electricity mix

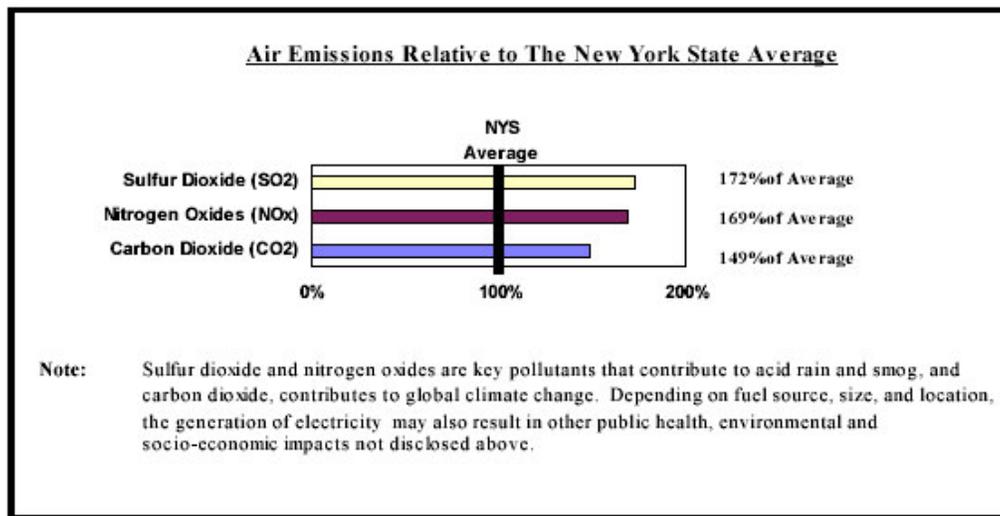
These indices could be based on absolute figures or related to the proportion of total nuclear power or fossil fuel generation within a region. For instance, if a supplier’s port-

folio is made of up 50% nuclear in a country which consumes an average of 34% (index 100) of its electricity from nuclear power, the proportion of radioactive waste assigned to this supplier would be an index of 147 (50/34 multiplied by 100). In this case national or regional indexes are likely to be more meaningful than a European index.

It is suggested that, whilst a table may be appropriate for displaying fuel mix information, it is probably not a suitable format for the display of environmental information.

3.6.3 Indexing

This is the format commonly used on many of the US electricity labels (see Figure 5).



Source: www.dps.state.ny.us/envlabels/end_03_02/aei.PDF

Figure 5: Air emissions detail from New York State Electricity Label

However, when this type of format was tested in the 4CE focus groups, people found it very difficult to understand and it was not at all popular. One of the key problems was that people could not understand how something could be greater than the national average of 100, indicating that the use of an average value as an index was not well understood. This would require further explanation if this display format was used.

3.6.4 Ranking

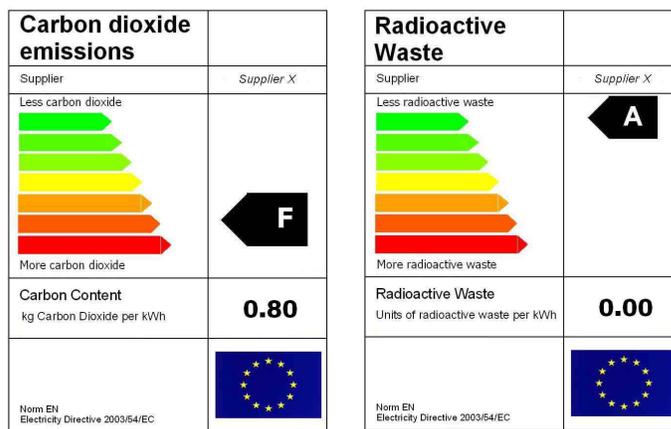
Ranking of electricity in terms of environmental information would involve assigning the electricity sold a position on an agreed environmental impact scale, providing customers with a basis on which to judge the electricity they buy. Such a ranking has the advantage that there is a comparison to other suppliers on the market inherent within the scale, which aids consumer decision-making.

There is already a well-established ranking system used on the European Energy Label, which appears on all cold appliances, washing machines, tumble driers, dishwashers, ovens and light bulbs, with a similar ranking being used by several European countries for new cars. This uses a rating on a scale of A to G, with A indicating high efficiency and G indicating low efficiency. The Energy Label is also colourful and visually appealing – both important factors in designing a label. It also provides a ranking which is easy to remember.

Given the widespread use of the Energy Label and its increasing familiarity to consumers, it would be sensible to base the environmental impact disclosure information on this design. This would have the added benefit of reinforcing the appliance Energy Label since all electricity customers would see the disclosure label on a regular basis and so would be familiar with the appearance of the Energy Label by the time they go to purchase an appliance.

The ranking of the environmental impact of electricity generation is more complex than the one-dimensional message of the cold appliances label: any ranking of the environmental impact of electricity generation must at least be two-dimensional, covering CO₂ emissions and radioactive waste. These two factors must be given equal weight in any display and it must be clear to consumers that these indicators are not being compared against each other. It is not clear whether an agreement between the Member States can be reached to include radioactive waste into a ranking system – this tends to be a more controversial issue than CO₂ emissions since some countries do not perceive nuclear waste to be a problem. It is suggested that ranking should only be used if CO₂ emissions and nuclear waste are both displayed on a ranked scale so as not to attach greater importance to one or the other i.e. both are treated equally.

Figure 6 Example of environmental ranking labels for electricity



3.6.4.1 Ranking scale

With any type of ranking, a standard scale must be agreed – this could be either at the country level or European level. A European scale, as with the appliance Energy Label,

is more appropriate in the context of a liberalised European electricity market. For example, if companies are to be encouraged to sell their electricity in different countries, then complying with 15 (and in the future 25) different energy labels would constitute a major barrier.

A European scale has the advantage that it would be straightforward to introduce any future EU regulation on the basis of a label with one standard scale. Using a European scale would mean that, for instance, in one country it may only be possible to buy products rated E or lower for a certain environmental impact. However, this is not necessarily a bad thing – it would raise awareness amongst consumers that there are products available in Europe that are better than those in their own country and so may increase consumer pressure for improvements in their own electricity supply. However, it could also act as a disincentive since the majority of consumers will only be able to buy what is available in their own country and may become frustrated if they are unable to buy anything better than an E.

If the scale was on a national basis, consumers may only push for the best product on the market within their country, not in Europe, since they would not be aware that it was possible to go beyond that level. However, this may be the most appropriate scale to use in the short term since it reflects what is available to the consumers in any one country and it is likely to be easier and quicker to reach agreement on than a European scale. A European scale may become more suitable in the longer term, particularly if disparities between countries reduce.

Setting the parameters of any scale will require a certain level of value judgement. There was concern expressed amongst the 4CE focus group participants about the motivations and judgements behind setting a particular scale. Therefore, any decisions behind drawing up the scale must be transparent and justifiable to ensure consumer confidence in such a label. It would also be necessary to have some verification processes in place to ensure that the information provided on the label is correct. For the appliance Energy Label, this is the responsibility of the Member States.

3.6.5 Minimal compliance

As with the fuel mix information, the minimum that would comply with the Directive would be to display the environmental information as simple text, with no additional explanation. This will have minimal impact on consumers.

3.6.6 Beyond minimal compliance

Further research is required to identify the most appropriate display for the environmental indicator information. It is recommended that either a ranking label or an index could be suitable, but improvements need to be made to the designs tested under the 4CE project. Whilst absolute figures (per kWh) by themselves may be hard for consumers to understand, it would be beneficial to include such figures in addition to a ranked

or indexed scale, both as an educational tool and to enable people to calculate their own personal emissions.

3.7 Verification

The Directive requires the Member States ‘to ensure that the information provided by suppliers to their customers pursuant to this Article is reliable’. This implies that there must be some kind of verification process in place to ensure that any disclosure information provided to consumers is correct. An independent verification processes was also strongly supported by the 4CE focus group participants – this was one of the strongest messages that resulted from this process.

3.7.1 Minimal compliance

The onus of verifying the information is placed upon the industry, although it is ultimately the responsibility of the Member State to make certain that this verification ensures reliability.

3.7.2 Beyond minimal compliance

An independent body e.g. the industry regulator or consumer watchdog, is appointed to carry out the verification process.

3.8 Costs

Costs can be divided into research and development costs and implementation costs. As discussed in section 3.1, harmonisation at either a country or European level would reduce the research and development costs for an individual supplier. These will not be discussed in further detail here. In terms of the implementation costs (of the front-side only), these are dependent on a number of interacting factors:

- Display format chosen – level of detail, complexity, graphics and colour
- Costs of altering current bill printing processes or printing a separate leaflet and the extent to which this is required
- Additional postage costs

A detailed cost estimate of two options for the front-side has been made for Germany, the UK and Hungary for both domestic and non-domestic customers⁴:

- The cost of including the disclosure information on the bill (requiring redesign of the bill) is estimated at 3.8 cents/MWh in Germany, 0.1 cents/MWh in the UK and 0.7 cents/MWh in Hungary.

⁴ For more detail see the Cost Benefit Analysis in Phase 3 of the 4CE project.

- The cost of displaying the disclosure information on a separate leaflet sent out with the bill is estimated at 5.0 cents/MWh in Germany, 0.3 cents/MWh in the UK and 0.4 cents/MWh in Hungary.

These estimates include the cost of bill redesign or printing of the leaflet, postage and man-power. They do not include any costs for graphic design, the assumption being that the supplier is provided with the label design. Verification costs have been incorporated into the back-side costs.

It should be noted that these costs will most likely be passed onto the consumer and do not represent a significant increase to the final price of electricity that consumers currently pay for Germany (0.06%-0.08%) and the UK (less than 0.01%). In Hungary the possible price increase is slightly higher at 0.6%-1% of the current electricity selling price, although the costs and electricity price are both likely to change once the Hungarian electricity market is liberalised.

The total cost estimates are highly dependent on two key factors: the number of suppliers per country and the estimated increase in postage cost. The figures for Germany are high due to the relatively large number of suppliers (750 in total) and a high estimated postage cost. These estimates have been made using conservative assumptions and indicate the range of costs that are likely to be incurred throughout Europe.

4 Ground rules

The following list represents some of the basic ground rules that are recommended for use in any disclosure scheme and display format:

- The display format should be as eye-catching and visually appealing as possible.
- The supplier is taken to be the company name appearing on the letter head of the bill (i.e. not necessarily the parent company).
- There is a fixed list of fuels for all Member States, e.g. coal, nuclear, gas, other and renewables. Renewables are always shown at the end of the list to allow for the display of a detailed breakdown of these sources.
- It may be advisable to limit the list of fuel sources to 10 or 12 to reduce complexity.
- Definitions of the fuel sources should be based on those used in existing European Directives e.g. definitions of renewables in the Renewables Directive 2001/77/EC. Member States should agree on the terms and definitions to be used in the disclosure information.
- The units and calculation methods used for the environmental indicators should be agreed at a European level.
- If a company from one country wishes to sell electricity in another country, it must display the disclosure information in the format of the country it is selling in and use the language of that country.
- Imported electricity is assigned to the appropriate fuel sources in the disclosure information and not identified separately.
- As soon as a supplier differentiates one or more products in addition to the portfolio information, the supplier must then provide product and portfolio information to all customers.
- The display of information on the promotional materials should use the same display format as the disclosure information provided in or with the bill.
- The disclosure information is distributed twice a year (if bills are sent out more frequently than once a year), at least initially, to help reinforce the issues and raise awareness amongst consumers.
- Contact details of the supplier should be included with the disclosure information. If a website address is supplied, a phone number or reply-paid card should also be provided for those people without internet access to order the information.
- Consumer confidence in the disclosure information is essential, therefore trustworthy verification processes are important.

5 Conclusions

The display format for the disclosure information is a crucial element in the success of a disclosure scheme. The type of information provided and the way in which it is presented determines the way in which consumers will respond. Since the main aim of disclosure is to improve information for consumers on the electricity they use then the display of information should be designed on the basis of consumer preferences and requirements.

Under European Directive 2003/54/EC, electricity disclosure is introduced within the context of a liberalised European market, to assist consumers in choosing electricity which is best suited to their values and preferences. Comparability of disclosure information between suppliers is important if consumers are to exercise free choice. Therefore, it is strongly recommended that the disclosure information display should be harmonised at least at a country level, so that consumers can easily compare what is in offer within their own country. Given the move towards a European market in electricity, it would be advisable to establish common definitions and calculations for the disclosure information at a European level to ensure consistency across all countries and facilitate a possible move to a harmonised European display at a later date.

The Directive provides only general guidance on what information is covered and how it should be displayed, leaving scope for interpretation by the individual Member States. Therefore, there is a wide variety of possible display formats and combinations that could be used. However, it is clear that a display format which seeks only to achieve minimal compliance with the Directive is likely to be ineffective – it would not provide consumers with the information that they require, nor would it assist them in understanding, and therefore make use of, the information.

It is strongly recommended that any display format used for the disclosure information goes beyond the minimum specified in the Directive. One such option, aimed at maximising effectiveness of the information from the consumer perspective, has been identified based on the consumer research undertaken as part of the 4CE project. Under this approach, it is recommended that the fuel mix and environmental indicator information are displayed together on a separate leaflet with a link to the bill, sent out at least once a year, but preferably twice a year initially. The recommended format for the fuel mix information is a combination of a pie chart and table, including a detailed breakdown of renewable sources and national averages for comparison. Information on the proportion of any imported electricity is also provided. The environmental indicator information could be displayed, including absolute figures, as a ranked label, similar to the EU appliance Energy Label, or an indexed bar chart, similar to the labels of several disclosure schemes in the US – further research is required in this area to identify the most appropriate format from the consumer perspective.

Whatever display format is chosen, the main focus should be the consumer – providing them with the information they require in a form which they can easily understand and use.

6 Bibliography

Arvidson, A., 2003: Domestic and Small and Medium Enterprise Consumer Views on Electricity Disclosure – summary of Focus Group research in Europe. 4CE Project, Stockholm Environment Institute.

Eurobarometer, 2001: Internet and the public at large, Flash Eurobarometer 112, prepared by EOS Gallup Europe for the Directorate-General Information Society, European Commission, November 2001

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Appendix A – Example of disclosure information leaflet (A4 folded into three)

Electricity supplied by Supplier X in 2001

Fuel source	Supplier X %	National average consumption %
Gas	25	40
Coal	71	33
Nuclear	1	23
Other	1	1
Renewables (total)	2	3
Hydro-electric	1.5	1.4
Biomass	0.0	1.2
Wind	0.5	0.3
Solar	0.0	0.0
Other	0.0	0.0

15% of electricity sold by Supplier X was imported

Supplier X contact details

For an enquiry, please phone
0807 111 111

For further information on electricity and the environment, see
<http://www.supplierx.com>
or phone 0807 222 222

To compare the environmental impact of electricity offered by different electricity suppliers, see:
<http://www.electricitycompare.com>

Supplier X address

YOUR ELECTRICITY EXPLAINED

Environmental Impact Labels

Carbon dioxide emissions

Supplier: *Supplier X*

Carbon Content
kg Carbon Dioxide per kWh: **0.80**

Norm EN Electricity Directive 2003/54/EC

Radioactive Waste

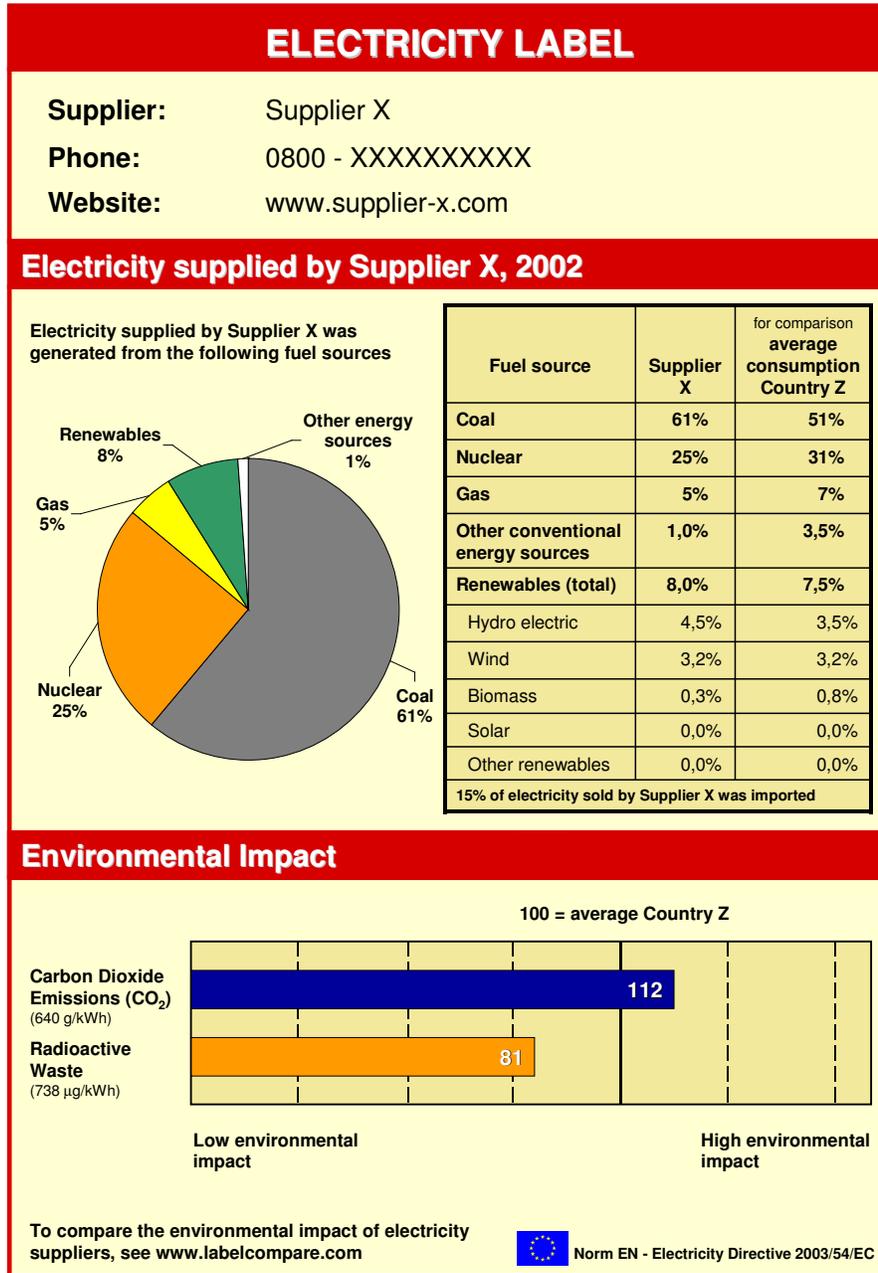
Supplier: *Supplier X*

Radioactive Waste
Units of radioactive waste per kWh: **0.00**

Norm EN Electricity Directive 2003/54/EC

How your electricity is generated	What impact your electricity has on the environment	Where your electricity comes from
<p>The electricity provided by Supplier X comes mostly from coal (71%) and natural gas (25%). Other energy sources such as nuclear, oil and renewables account for 4%. Renewable sources of energy include solar, wind and hydro-electric power.</p> <p>15% of the electricity is imported. The rest is generated in country X.</p> <p>You can use the information provided in this leaflet to compare the electricity sold by Supplier X to electricity sold by other suppliers.</p>	<p>Each unit of electricity – a kilowatt hour (kWh) – supplied by Supplier X results in 0.0 micrograms of radioactive waste and 0.8 kilograms of carbon dioxide, a greenhouse gas.</p> <p>The labels on the front of the leaflet give a rating for the environmental impact of your electricity in terms of carbon dioxide emissions and radioactive waste. The level of these environmental impacts depends on the power plants used to generate your electricity.</p> <p>Carbon dioxide is released when certain fuels are burned. It is a greenhouse gas and a major contributor to climate change.</p> <p>Radioactive waste is produced when electricity is generated by nuclear power stations.</p> <p>On a scale of A to G, where A is the least damaging to the environment and G the most damaging, the electricity supplied by Supplier X has the label F for carbon dioxide and A for nuclear waste. This is because of the high proportion of coal and low proportion of nuclear energy in the fuel mix.</p>	<p>The actual electricity you use is indistinguishable from the electricity used by your friends and neighbours. There is no way to identify the actual power plant that produced the electricity consumed in your home because once it is fed into the distribution and transmission system it becomes a general pool of electricity.</p> <p>However, it is possible to track the money you pay for your electricity. Your electricity Euros support electricity generation from various energy sources in the proportions listed in the table on the front of the leaflet. The national average column is provided as a comparison and represents the breakdown of sources used to generate all electricity that was sold in country X.</p>

Appendix B – Example of a disclosure information insert (portfolio only)



Appendix C – Example of a disclosure information insert (portfolio and product)

ELECTRICITY LABEL

Product: Product X
Supplier: Supplier Y
Phone: 0800 - XXXXXXXXXX
Website: www.supplier-y.com

Electricity supplied by Supplier Y, 2002

Electricity supplied by Supplier Y was generated from the following fuel sources

Fuel source	Product X	Supplier Y	for comparison average consumption Country Z
Coal	0%	61%	51%
Nuclear	0%	25%	31%
Gas	65%	5%	7%
Other conventional energy sources	0,0%	1,0%	3,5%
Renewables (total)	35,0%	8,0%	7,5%
Hydro electric	24,5%	4,5%	3,5%
Wind	10,0%	3,2%	3,2%
Biomass	0,0%	0,3%	0,8%
Solar	0,5%	0,0%	0,0%
Other renewables	0,0%	0,0%	0,0%

15% of electricity sold by Supplier Y was imported

Environmental Impact

100 = average Country Z

Carbon Dioxide Emissions (CO₂)	Product X (254 g/kWh) 47				
	Supplier Y (626 g/kWh) 112				
Radioactive Waste	Product X 0				
	Supplier Y (738 µg/kWh) 81				

Low environmental impactHigh environmental impact

To compare the environmental impact of electricity suppliers, see www.labelcompare.com

Norm EN - Electricity Directive 2003/54/EC