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Accompanying document to the

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

**on the indication by labelling and standard product information of the consumption of
energy and other resources by energy-related products**

IMPACT ASSESSMENT

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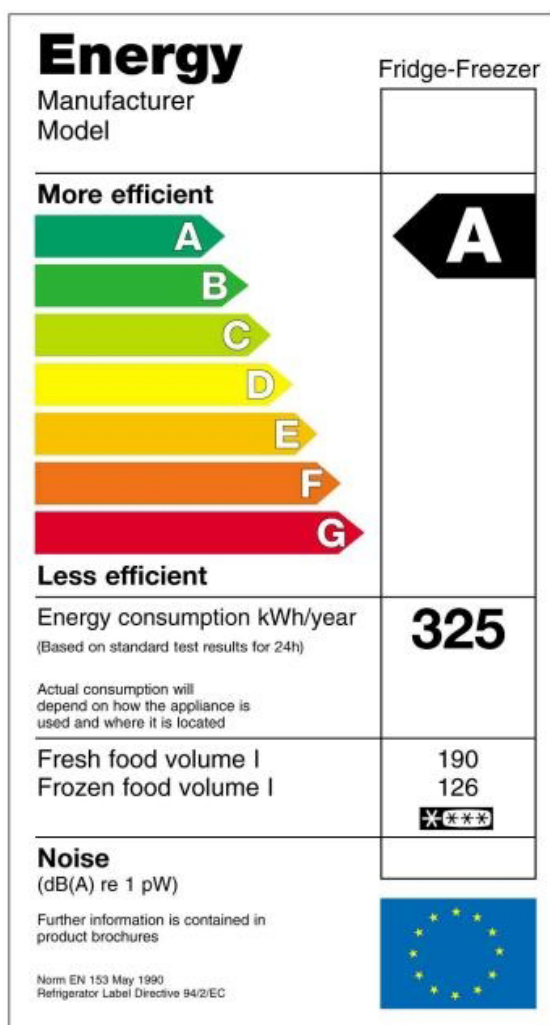
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EXECUTIVE SUMMARY

This Impact Assessment accompanies the proposal for the recast of the 92/75/EEC “Energy Labelling Directive for Household Appliances”¹ (hereafter ELD). The recast of the ELD is one of the elements of the Action Plan on Sustainable Consumption and Production and on Sustainable Industrial Policy (SCP/SIP).

The ELD, which was adopted in 1992, requires retailers to display a comparative label showing the level of energy consumption of household appliances to consumers at the point of sale. It is estimated that energy labelling has contributed to annual energy savings in the order of 3 Mtoe² corresponding to emission reductions of some 14 Mt of Co2 annually over the period 1996-2004.



The energy label is compulsory for those products covered by implementing measures under the framework ELD. The energy labelling scheme has been successful in contributing to pull the market of household appliances towards more energy efficient products. It provides useful and comparable information to consumers, allowing them to consider investing in better performing appliances in order to realize savings in taking into account the running costs (mainly energy consumption in use).

It also helps manufacturers to position their products on the market and get some payback on their investments for introducing better and more innovative appliances. The scheme is therefore considered as a win-win instrument for consumers, industry and the environment.

As announced in the Action Plan on Sustainable Consumption and Production and on Sustainable Industrial Policy (SCP/SIP), the ELD together with the Ecodesign Directive could deliver more savings in energy and reduction of

environmental impacts, if extended to all energy-related product groups (products that have an impact on energy consumption during use).

¹ Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances.

² This does not take into account energy savings from related self commitments by Ceced (white goods) and Eicta (TVs)

The current ELD is a framework that mandates the Commission (assisted by a Regulatory Committee) to adopt labelling implementing measures for specific household appliances³. For these, an upgrade of the existing labels is being prepared for adoption in 2009 and 2010.

The impact assessment of the SCP/SIP has shown that the limited scope of the ELD restricts its potential to further mitigate climate change and contribute to the EU-wide target of 20% energy efficiency gains by 2020 and achieve the goals of sustainable production and consumption. This impact assessment report therefore analyses further whether the scope and functioning of the ELD can be reinforced, how this can be done and what impacts it could have. However, as the ELD is a framework Directive with no direct impact on products, the environmental, economic and social impacts can only be quantified in detail for those implementing measures to be adopted on specific products. Accordingly, the potential advantages and disadvantages of the possible revision are considered in the light of a number of selected priority product groups with significant environmental impacts and for which labelling appears to be a relevant policy instrument.

For the functioning of the ELD, the aim is to seek increased effectiveness of the ELD and its implementing measures while reducing the administrative burden, and explore the use of ELD as a framework for harmonised public procurement and incentives in the Internal Market.

Four policy options are considered as follows:

- 1) No policy change, with two sub-options:
 - 1a) BaU - business as usual,
 - 1b) BaU + 1 - full implementation of the current ELD scope.
- (2) Non-regulatory action.
- (3) Amend the Directive - full implementation of the current ELD scope, plus coverage of all energy-related products, excluding means of transport.
- (4) Repeal the Directive and implement its provisions within the Ecodesign Directive - full implementation of the current ELD scope, plus coverage of all energy-related products, excluding means of transport.

It is estimated that the policy option 1b (fully implement the current framework) could lead to, based on the considered priority appliances, savings of some 22 Mtoe by 2020, corresponding to emission savings of about 65 Mt of CO₂. More than half of these savings would come from the heating and water heating appliances alone, which have not yet been addressed under the ELD. The rest of the savings would come from the upgrading of the existing eight measures, and from a new measure on televisions.

Policy option 2 (voluntary agreements/self commitments) would have advantages in adding little administrative burden to the business and administrations, depending on the way of implementing the non-regulatory action, but would fully rely on the feasibility and willingness from industry, which has rejected this option (CECED⁴ and EICTA⁵). The capacity of this policy option to contribute to further energy savings was considered marginal at best.

Policy option 3 (fully exploit current framework and extend the scope to all energy-related products) involves some administrative burden for the recast but would save some €4 million

³ Refrigerators, freezers and their combinations, washing machines, driers and their combinations, dishwashers, ovens, water heaters and hot-water storage appliances, lighting sources and air-conditioning appliances.

⁴ European Committee of Manufacturers of Domestic Equipment

⁵ European Information & Communications Technology Industry Association

in transposition costs for every upgraded or newly developed implementing measure if implementing Directives were replaced by implementing Regulations. It is estimated that broadening the scope of the ELD to energy-related products could lead to additional savings of some 27 Mtoe by 2020⁶, corresponding to emission reduction of close to 80 Mt of CO₂ in comparison to BaU. This represents additional savings of some 5 Mtoe against the policy option BaU +1 alone from the three priority product groups considered (commercial heating and refrigeration and windows). More precise knowledge on the savings potential of these products will be available from the Ecodesign preparatory studies followed by product specific impact assessments. Additional changes like introducing provisions on the legal protection of the use of the label, clarifying information requirements and introducing a framework for public procurement and incentives would further reinforce the effectiveness of the scheme as well as increase the savings.

Policy option 4, repeal the ELD and implement energy labelling within the Ecodesign Directive, could lead in theory to the same level of savings as policy option 3 and would reduce the number of regulatory instruments, but could hardly be considered as simplification. This is due to the different nature of the legal instruments: the Ecodesign Directive bans the less performing products regarding their global environmental performance focusing on all environmental aspects throughout the lifecycle of the product. The ELD provides an energy label showing to consumers the energy efficiency performance of the product during the use phase (and relevant use of other resources (like water) where relevant).

The analysis and comparison of the policy options indicates that the options 1b and 3 are the most cost-efficient and suitable options with strongest stakeholder support to achieve the policy objectives.

Monitoring and evaluation is proposed in the framework of Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy in coordination with Ecodesign, Ecolabel and other related instruments.

⁶ The figure is composed of the estimated 22 Mtoe savings by 2020 from the full implementation of the ELD and of some 5 Mtoe additional savings from the broadening on the scope, based on considerations on three priority product groups (windows, commercial refrigeration and heating appliances).

SECTION 1: PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

The Energy Labelling Directive - ELD

This Impact Assessment accompanies the proposal for the amendment of the Energy Labelling Directive for household appliances. This framework directive provides harmonised EU-wide rules for energy labelling of household appliances as described in the Article 1 of the Directive.

The purpose of the ELD is two-fold. It informs potential purchasers of the energy (and other resources such as water) consumption of the various appliances on offer, so consumers can take account of this and of the resultant running costs before making purchase decisions. The Directive also incites manufacturers to produce more energy efficient appliances. This mechanism requires some basic criteria to be fulfilled in order to be effective and efficient. The main basic criteria are as follows⁷:

- The scheme must be uniform. If there are a variety of differing designs of labels, for the same type of appliance in particular, consumers may be confused when comparing rival appliances and may ignore the information altogether.
- The scheme must be comprehensive; all appliances of a given type must be labelled otherwise labelled products may be put at a disadvantage.
- The label and the fiche⁸ must be as clear and as simple as possible, while conveying as much relevant information as possible from the point of view of the customer.
- The scheme should be credible with information that can be trusted.
- The scheme should be flexible and dynamic. In particular it should allow for updating in the light of market developments and in particular improved efficiency of appliances.
- The scheme should be as simple to run as possible and lead to the minimum possible cost for those involved (manufacturers, retailers, Member States).
- Finally, the scheme should be harmonized at the level of the Internal Market to avoid any barriers to trade between Member States in respect to energy labelling and product information.

These criteria are very important in assuring that information asymmetries and bounded rationality are avoided. The scheme must allow end-users to easily compare which product is more resource efficient during its use phase than another, thus avoiding buying products that are cheaper at the purchase but more expensive over their life cycle. Providing enough information is not enough; the label must provide information that can easily be understood even with a quick look and it must focus on issues of most interest for buyers. Complex information can be provided in product documentation for more demanding consumers.

As mentioned in the explanatory memorandum to the ELD, various surveys and the existing Ecodesign studies⁹ have shown that the energy consumption of domestic appliances varies

⁷ Explanatory memorandum for the proposal for a Council Directive on the indication by labelling and standard product information of the consumption of energy and other resources of household appliances, 20 March 1991.

⁸ 'Product information fiche' is an information fiche containing relevant product information such as energy consumption, consumption of filters in average use, ventilation and air flow performance, etc in the case of a cooker hood (see Annex 6). The 'label', which is displayed on products in shops, is composed of a background label with basic energy information and a strip that includes the values for this information (e.g. in the case of cooker hoods, logo and model of the hood, the 'A' class, values for filter efficiency etc). See illustrations in Annexes 3, 4 and 6.

⁹ http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

widely for similar functionalities, and that a more efficient appliance is not necessarily more expensive to purchase. Thus, if potential purchasers were better informed, they would tend to buy appliances which – for a given performance - were more energy efficient, cost less to run, and have a better environmental footprint. This would, through the normal competitive process, put considerable pressure on manufacturers to increase their efforts to produce more efficient appliances, which has happened in the case of those appliances on which implementing measures have been in force for some time¹⁰. However, at present customers do receive this information only on some products covered by (eight) existing implementing Directives. As a result, for most products on the market, purchasers cannot easily identify the better performing ones and the market fails to encourage the manufacturers of producing such appliances.

Considering that the energy label can contribute to making the "right" purchasing decision but is not the only element guiding consumer decision to buy a particular product, it is difficult to assess the impact of a labelling information scheme on the energy efficiency of appliances. The background study estimates that the ELD would have helped to reach savings of some 3 Mtoe per year by 2020, corresponding to annual emission reduction of some 14 Mt of CO₂ (for further details, see Annex 10).

The Article 1 of the ELD covers a selected number of household appliances, as shown in Annex 1. The Article 1 also allows the Commission, assisted by a Committee, to add further household appliances to this list. However, Art. 1 does not allow the extension of scope to non-household appliances. This excludes numerous products for which a labelling scheme could be appropriate, such as energy-using products for commercial and industrial sectors, as well as energy-related products which do not consume energy but allow for energy conservation (e.g. window glazing and frames).

An important aspect of the functioning of an energy labelling scheme is the synergy, complementarities and possible overlap with other EU labelling instruments on products. The Annex 2 illustrates the complementarities and synergies between Ecodesign, Ecolabel and Energy Labelling. While Ecodesign cuts the less efficient products from the market, the voluntary Ecolabel grants a 'best in class' label for the upper end products (corresponding normally to an 'A' class in the energy labelling classification). Energy labelling complements the picture in providing compulsory comparative information on energy performance between these two extremes. It also pushes manufacturers to invest on more efficient products in order to shorten the path from R&D to products mature for markets.

Annex 2 describes the coverage of various labelling instruments, in particular in between the energy-using and non-energy using products. The revision of the Ecodesign Directive is heading towards the coverage of more products. Both the Ecodesign Directive and the Ecolabel address the significant environmental aspects over the life cycle of a product while energy labelling focuses on 80-90% of the environmental impacts of energy-using products, that is, energy consumption and consumption of consumables in the use phase. Together these instruments contribute to policy coherence in the wider picture of sustainable energy policies.

¹⁰ See Annex 10.

Procedural steps for adopting Energy Labelling implementing Directives

Before the Commission prepares an implementing directive it conducts a technical economic study which looks into the range of performances available among products on the market offering similar functionalities, the potential for improvement and the related costs. This phase is fully coordinated with the Ecodesign process in which the same preparatory study provides the necessary technical analysis for both minimum efficiency performance requirements under the Ecodesign Directive and for a possible labelling scheme under the ELD (where the display of a label showing the efficiency performance of the product in question can influence the purchase decision and thereby pull the market towards more efficient products). Extensive stakeholder consultation takes place during preparatory studies in form of bilateral meetings with directly affected stakeholders, complemented with public stakeholder consultation through the Internet and a dedicated stakeholder workshop.

After impact assessment and interservice consultation, the Commission gathers the opinion of the ELD Committee operating under the regulatory procedure with scrutiny¹¹ by the European Parliament, and the Commission adopts the Implementing Directive following the normal procedures. Once adopted by the Commission and after publication in the Official Journal, Member States must transpose the implementing Directive into national legislation, which the Commission must monitor and take appropriate action in the case of late or non-compliant transposition by the Member States.

Like under the Ecodesign Directive, the Commission is involved in formal regulatory dialogue with its main trading partners and with international organisations on issues such as the harmonization of measurement methods/standards, benchmarking and other elements directly linked to the setting of Implementing Directives. The development of measures is also discussed with relevant ministries from third countries in the frame of regulatory cooperation. Manufacturers from outside the EU are encouraged to actively provide input from the very beginning of the process, when preparatory studies are carried out, and can fully participate in the consultation process.

The current impact assessment

The Action Plan on Sustainable Consumption and Production and on Sustainable Industrial Policy (SCP/SIP) is a joint initiative of DG ENTR, ENV and TREN proposing actions to address market and regulatory failures which affect the environmental performance of a large number of products in Europe. The main element of the SCP/SIP is an integrated product policy of which the ELD is one building block.

The revised Ecodesign Directive is to be extended to cover all energy-related products. This impact assessment will consider similar extension to the ELD. By the Ecodesign Directive, minimum requirements will be set for products with significant environmental impacts, focusing on key environmental aspects. To provide markets with information on best performing products, advanced benchmarks of environmental performance will be identified. Periodic reviews of minimum requirements and advanced benchmarks will take place to adapt them to technological change and provide businesses with a long-term perspective of future regulatory environment. Apart from considering the extension of the ELD to energy-related products, this impact assessment also considers how the energy efficiency criteria under the ELD could be used to establish a harmonised base for public procurement and incentives provided by the EU and its Member States. This would overcome the current fragmentation of stimuli and incentives in the Internal Market¹².

¹² On the interaction between Ecodesign, Ecolabel and Energy Labelling, see Annex 2.

This impact assessment is one layer in the analytical framework of three levels of impact assessments related to product policy. The impact assessment of the Action Plan focused on delimiting the problem definition and the remaining problems. In the Impact Assessment of the Action Plan it was stated that the Action Plan would only look at existing policy instruments and how to coordinate them better. The main conclusion of the impact assessment of the Action Plan was that a mandatory approach could solve the identified market failures. Moreover, the impact assessment of the action plan concluded that a specific impact assessment was needed to look at the extension of the scope of the ELD.

This impact assessment focuses on the identification of the need for and the most adequate extension of the scope of the ELD. Further impact assessments will identify the particular problems and analyse the environmental, economic and social impacts when preparing implementing measures for the setting of labelling requirements on specific products.

This impact assessment does not look at national or regional impacts, as energy labelling does not have impact on affordability (in contrary to e.g. minimum requirements set within the Ecodesign Directive). Energy labelling provides comparative information on products offered on the market guiding the consumer towards the most economic choices over the life time of the product; energy label does not cut off products with cheaper purchase prices from the market. The exception of setting of minimum requirements for public procurement and/or incentives by Member States will be looked at in Annex 11 and in relevant chapters, such as 5.4.2.

This document is prepared as a basis for comments and does not prejudge the final form of any decision to be taken by the Commission. Moreover, all product categories mentioned in this document are included for analytical purposes only and do not prejudge any decision on the setting of labelling requirements on any products. Figures and numbers quoted in this Impact Assessment are of an indicative nature.

1.1. Organisation and timing

The recast (amendment) of the Energy Labelling Directive 92/75/EEC¹³ is included in the Commission's rolling simplification programme *Better Regulation: Simplification Strategy*¹⁴. This is based on the Commission Legislative and Work Programme 2008 (CLWP) and on the Energy Efficiency Action Plan¹⁵ calling for a possible recast of the ELD. It was confirmed in the recent SCP/SIP Action Plan.

Commission's minimum standards for stakeholder consultation were respected, as described in chapters 1.1 and 1.2. For the purpose of the impact assessment an inter-service steering group (ISSG) was created with invitations to ENV, SANCO, SG, ECFIN, ENTR, MARKT, LS, INFSO, COMP, and TRADE. The start-up ISSG meeting took place on 9 November 2007 with effective participation of ENV, SANCO, SJ, ENTR, and ECFIN. The first meeting discussed and agreed on the process and on what should be the content of the impact assessment study and the Commission Staff Working Document (CSWD) for consultation of stakeholders. Three subsequent ISSG consultations took place before submitting the IA report to the IAB (Consultation on the draft stakeholder consultation document on 7 December

¹³ Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances.

¹⁴ COM (2005) 535 final of 25.10.2005.

¹⁵ COM (2006) 545 final of 19.10.2006.

2007, first consultation on the draft IA report on 11 March 2008 and a second consultation on the draft IA report on 24 April 2008).

On 20 December 2007, the CSWD and the background study were published on the Commission's impact assessment website and on relevant EUROPA websites, such as http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation for a public Internet consultation. The final deadline for comments was 22 February 2008. Additionally, a stakeholder consultation workshop took place on 8 February 2008. Summaries of the Internet consultation and of the stakeholder meeting were published on the above web sites.

1.2. Consultation and expertise

DG TREN launched an external study (30.07.2007 – 19.10.2007) in support to the IA with Europe Economics, Fraunhofer-ISI with BSR Sustainability and FfE. The study reviewed the achievements of energy labelling under the present ELD and looked at areas of improvement by carrying out technical analyses on selected energy-using (boilers and electric motors) and non-energy using but energy-related products (windows and tyres) in order to identify the potential for further energy efficiency gains, including interviews of stakeholders and of seven Member States representatives. The study also included a literature review. Finally, the study reviewed and summarised the options for possible future action. The main findings from the stakeholder interviews can be summarised as follows:

Highest importance was given to:

- broadening the scope of the directive to additional household products, such as boilers or TVs, and to non-household appliances, such as motors (above 90% of stakeholders considered this very important or important¹⁶);
- upgrading the requirements of the existing implementing Directives (above 90%);
- use Regulations as implementing tools instead of Directives (close to 80%).

Medium level importance was given to:

- stricter enforcement of the requirements of the implementing measures (above 60% considered high or medium priority).
- provision of additional information in the label useful to consumers (about 50%)
- including additional product information into the label, e.g. annual cost of energy consumption or annual CO₂ emissions (about 50%);
- legal protection of the label (about 50%).

Stakeholder consultation workshop on 8 February 2008 was attended by all relevant stakeholders, including members of the ELD Regulatory Committee and European associations representing the industry, retailers, consumers and environmental NGOs (for the CSWD, minutes of the workshop and summary results of the consultation, see the Commission ELD website:

http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation).

Consultation in form of a workshop turned to be very valuable, as it allowed an open discussion on the pros and cons related to different stakeholders groups, in particular to consumers, retailers, manufacturers and administrations. The meeting discussion helped stakeholders to better understand each others concerns. Consequently, the results of the

¹⁶ Options were considered in three 'classes': high, medium or low priority.

consultation were refined and more comprehensive compared with the results of the background study, although the basic trend of the replies was the same.

The minutes of the stakeholder consultation workshop, summary results of the web-based consultation and stakeholder comments were published on EUROPA. In total, 66 written stakeholder comments were received on the Internet consultation covering Member States, European Associations and groupings, individual industry, national governments and other groupings. It is worth mentioning that the conclusions listed hereafter are supported by all stakeholders consulted.

The main results of this stakeholder consultation were that:

- the scope of the labelling should be broadened beyond household appliances to all energy-using appliances;
- the scope of the labelling should not be broadened to non-energy using products, except those which are 'energy relevant', that is, which allow energy conservation (e.g. window glazing and frames);
- the label should remain simple, relate to the consumption of energy in use and not be mixed with other environmental parameters during the life-cycle of a product, while keeping the possibility to include also additional information relevant to consumers on the products' performance);
- implementation through Regulations rather than Directives was considered to be more efficient;
- tighter tolerances in test standards and reinforced market surveillance were requested;
- reinforce provision of energy labels in the context of other type of sales and advertising, such as websites, newspapers, TV ads and other media;
- legal protection of the label against abusive voluntary use was seen beneficial, if it would not lead to royalty costs.

The above stakeholder input from the background study, stakeholder consultation meeting and the stakeholder comments received through the web were integrated into this report as described in the sections below.

The joint internet stakeholder consultation on Sustainable Consumption and Production (SCP) and on Sustainable Industrial Policy (Sustainable Industrial Policy launched in 2007 by ENV and ENTR is also relevant for this IA. In particular stakeholders highlighted the role of relevant Community legislation to reinforce the potential of public incentives and public procurement for the deployment of energy efficient and green products:

- 34% of stakeholders found public procurement and incentives important;
- 29% found fiscal incentives, subsidies and trading schemes important;
- 82% found it was important that public procurement concentrate on green products, even if they were more expensive;
- 60% felt green procurement should be mandatory.

1.3. Opinion of the Impact Assessment Board

This impact assessment report takes into account the opinions of the Impact Assessment Board dated 4 June and 25 July 2008 as follows:

- Problem analysis has been further elaborated and presented in the context of the introduction of the SCP/SIP and the revision of the Ecodesign Directive. More

explanation has been provided on why the potential of the current ELD has not been fully exploited in the past. Market failure in the field of public procurement and incentives has been identified and the potential of the Energy Labelling Directive to tackle this failure have been addressed.

- Objectives have been revised in relation to the reworked problem analysis and specific objectives are related directly to the problems identified.
- The range of policy options have been widened in broadening the BaU to two sub-options in order to more widely consider different options, including the use of latest EC Baseline scenario figures.
- The analysis of the impacts focuses on how the options can solve the identified market and regulatory failures and the options are compared based on effectiveness, efficiency and consistency.
- Structure and content of the report have been aligned with the impact assessments on the Communication of SCP/SIP and the Ecodesign Directive.

Upon the second opinion,

- The problem definition was further clarified and policy objectives were complemented with operational objectives, including an explanation on the role of the Framework Directive and its implementing measures in relation to the specific objectives.
- Explanation on the coherence of the objectives with the SIP/SCP was fine-tuned and reasoning on the option of repealing the Directive was reinforced in the context of the past achievements.
- Ecodesign Directive as an alternative implementing mechanism and the assessment of the impacts were further dealt with in relevant chapters and the benefits of considering the two BaU sub-options were spelt out.
- Monitoring and evaluation was refined with notions on timelines and further details on particular stakeholder positions were added, including crosschecking the presentation of the document.

SECTION 2: PROBLEM DEFINITION

As discussed in the impact assessment of the SCP/SIP Action Plan and restated in the IA on the amendment of Directive 2005/32/EC, products can have negative impacts on the environment depending on how they are made, used and disposed. The SCP/SIP impact assessment identified several market failures and imperfections, which prevent society from reaching the social optimum¹⁷. The most important market failures were summarised in the IA on 2005/32/EC as:

- Environmental externalities that result from prices not reflecting the negative environmental impacts of the production or consumption of products leads consumers to choices that do not necessarily act in the interest of the society.
- Information asymmetries that result from high transaction costs for consumers to obtain relevant information on product characteristics. Consumers can often not tell whether a product is more resource efficient during its use phase than another one, thus consumers are buying products that are cheaper at the purchase but more expensive over the life cycle.
- Bounded rationality explaining why even well-informed consumers do not act rationally when making purchasing decisions. Even if consumers have sufficient information, they can be faced with high upfront costs when buying a more performing product, while the

¹⁷ Impact Assessment of the SCP/SIP Action Plan, EC (2008) forthcoming.

benefits accrue over a longer period of time (i.e. during its use-phase). Consumers may not take into account the use cost of a product but focus short-sightedly on the purchase price only.

- Principal-agent problems that occur where there is a misalignment of incentives of those purchasing the product (e.g. landlord or industrial plant) and those using it (e.g. tenant or provider to an industrial plant).

The above market failures have negative effects on development of better performing products since they limit the demand for products with lower environmental impacts. The market failures result in products that are not designed such that environmental impacts of products over their life cycle are optimal. The Ecodesign preparatory studies show that typically more than 90% of the life cycle environmental impacts take place during the use phase¹⁸.

Globally, combating information asymmetries through energy efficiency measures seems possible at a negative cost. The 2006 status report on energy consumption and efficiency trends prepared for the Commission commented that:

“Most of the energy efficiency measures are cost-effective. This means that they will result in net money savings for end-users, as the reduced electricity cost over the life time of the appliances will outweigh the additional purchasing cost for a more efficient model. In many cases there is an increase in manufacturing cost to manufacturers, which can be passed on to the users or can be compensated by productivity gains (and in many cases will decrease over time when the most efficient components will be mass produced). Over the last ten years, the EU white goods appliances cost less and the efficiency has improved, while keeping the industry sector healthy (though with limited margin) and despite fears by manufacturers that the policy action introduced in the 90ies could have had a negative impact. Instead the "white goods" industry sector acknowledges the added value of the label as a means to differentiate products on the market. Overall it can be concluded that energy efficiency measures and in particular minimum requirements and labels are cost effective for society and reduce CO2 emissions at a negative cost.”¹⁹

The uptake of energy efficient products requires consumer and user awareness as well as the provision of clear and easily understandable information from manufacturers and retailers. Such information is unlikely to be provided in the form and on the scale required without some degree of government intervention, although this information is normally provided by manufacturers in their product documentation and catalogues in any case. An important question is on how to best package and provide this information to be useful, reliable, credible and easy-to-understand for consumers.

Energy consumption in use is not the only environmental impact of products. However an EIPRO study²⁰ on environmental impact of products identified that energy consumption in use is the single most important factor for energy-using products. Broadening the focus from energy and resource efficiency in use phase to all significant environmental impacts over the life cycle of the product would risk increasing information asymmetries in providing more

¹⁸ http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

¹⁹ Electricity Consumption and Efficiency Trends in the Enlarged European Union - Status report 2006, Bertoldi and Atanasiu, 2007.

²⁰ Environmental impact of products (EIPRO); analysis of the life-cycle environmental impacts related to the final consumption of the EU-25. Summary of the final report by DG Environment and DG Joint Research Centre, May 2006.

information on complex environmental impacts over the life cycle of the product. Given that the present focus of the ELD on energy and resource already tackles typically more than 90% of the environmental impacts of energy-using products, broadening of the focus at the expense of the clarity of information is considered inappropriate. When consulted specifically on this issue, all stakeholders, including consumer associations and environmental NGOs, were in favour of, at least for the coming years, a focus on the consumption of resources in use, thereby guiding consumers on the cost of running an appliance.

Experience shows that customer purchase decision can be influenced with clear and easy-to-understand information, if it focuses on consumers' primary interest, the cost of the product. While the purchase price of a product is a trivial way to compare costs between products, adding life cycle considerations or externalities into the picture tends to confuse consumers. The way to convey information under the ELD has been to provide it in a comparative way showing not only the best but also the worst appliances in terms of operating cost. It is important to keep this simplicity of the message in order to avoid providing too complex information for consumers. For example, in a recent survey²¹, 71% of the retail consumers interviewed confirmed that they would be willing to use energy-efficient appliances in order to stop climate change against only 12%, who would be willing to purchase carbon offsets/credits. The results are similar in third countries such as India, China or Brazil. This may illustrate a main reason why the EU energy label has been copied more or less identically by so many third countries rather than been broadened to include all environmental impacts over the whole life cycle of the product. Similarly, out of global retail consumers only 21% expressed willingness to pay for products with environmental and social benefits.

2.1 Market and regulatory failures related to energy label - problems to be addressed

The market failures discussed under chapter on 'Problem definition' apply also on energy labelling. A range of policies is in place to improve the energy and environmental performance of products²². These are for example the Ecodesign (EuP) Directive²³ which establishes a framework for setting Ecodesign requirements for energy-using products while ensuring free movements of products within the Internal Market, taking a life-cycle perspective. A number of other legislations address specific aspects of the life-cycle of products, such as in particular waste or hazardous substances while the Energy Performance of Buildings Directive²⁴ addresses the system efficiency in buildings through installation requirements.

The labelling schemes set by the ELD²⁵, the Energy Star Regulation²⁶, the Ecolabel Regulation²⁷ and other schemes developed by Member States, retailers and other economic operators provide consumers with information on the energy and environmental performance

²¹ Addressing consumer concerns about climate change, Sheila M. J. Bonini, Greg Hintz and Lenny T. Mendonca, McKinsey Quartely, March 2008.

²² As identified e.g. in the impact assessments of the Action Plan SCP/SIP and Ecodesign Directive, and the subsequent Action Plan on SCP/SIP.

²³ Directive 2005/32/EC of the European Parliament and of the Council establishing a framework for the setting of Ecodesign requirements for energy-using products, OJ L 101, 22.7.2005, p.29-58.

²⁴ Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings.

²⁵ Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances, OJ L 297, 13.10.1992, p.16-19.

²⁶ [Regulation \(EC\) 106/2008](#) of the European Parliament and of the Council of 15 January 2008 on a Community energy efficiency labelling programme for office equipment, OJ L 39, of 13.02.2008, p. 1–7.

²⁷ Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme, OJ L 237, 20.9.2000, p. 1-8.

of products. Incentives and public procurement are being implemented by Member States to stimulate the better performance of products. The Energy Star Regulation also obliges EU institutions and Member State authorities to purchase office equipment which meet minimum levels of energy efficiency.

Most product legislation addresses specific aspects of a product's life-cycle and not all the life cycle aspects. While the Ecodesign Directive and the Eco-label take a life-cycle perspective, in the case of energy-using products, studies show that typically more than 90% of the life cycle environmental impacts take place during the use phase²⁸.

Information to consumers under EU policy focuses on energy and consumables efficiency of household appliances in the use phase under the ELD and of energy efficiency of office equipment under the Energy Star Programme. The Eco-label covers all life cycle phases but in practice only a limited number of products are registered under the scheme. Finally, actions at national level (Nordic Swann, Blue Angel...) are not coordinated.

Regulatory instruments are not sufficiently connected and potential synergies between different instruments are not sufficiently exploited. Implementation could be more dynamic and forward-looking to drive the performance of products upwards. Divergent national and regional approaches send conflicting signals to producers, and as a result the full potential of the Internal Market is not realised.

The potential of the ELD has not been fully exploited mainly due to shortage of staff in the Commission and allocation of resources to other priorities, which has led, among others, to no implementing measures on boilers and water heaters. On water heaters, there were no consistent measurement standards between different types of water heaters in the past. This meant that it would have been impossible to produce clear simple information to guide customers. In order to remedy the situation, the Commission issued a Mandate for standardisation (M204) in 1996. However, the mandate was rejected by CEN as regards gas water heaters, and progress by Cenelec in developing the necessary standards for electric water heaters was very slow. Finally, in 2000, a self commitment was made by manufacturers of electric storage water heaters to reduce standing losses. In 2003, a renewed mandate (M324) was issued. Based on the mandate, CEN has produced an EN standard, while Cenelec is still at the stage of a prEN. These standards will now be used in order to develop Ecodesign and energy labelling implementing measure on water heaters under the current ELD.

On boilers, a harmonized minimum efficiency standard was adopted for (household size) gas and oil boilers in 1992 (Directive 92/42/EC). As the standard contained a star rating system (based on energy efficiency), boilers were not included in the initial list of products to be energy labelled. Experience showed that the star rating system was not effective. In view of this, the relevant parts of Directive 92/42/EC were repealed by Directive 2005/32/EC (Ecodesign) and an energy label for boilers is now being developed in parallel with the Ecodesign requirements. The Commission consulted the Ecodesign Consultation Forum with its Working Document on boilers and water heaters on 29 February 2008 in order to propose Ecodesign and energy labelling implementing measures/Directives on water heaters and boilers later this year.

Also, the possibility of labelling further lighting sources or adding new household appliances (e.g. televisions) into the scope of the Directive (Article 1.2 of the Directive) has not been exploited. Concerning televisions, a self-commitment by industry (EICTA) was initiated in

²⁸ http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

2004. It delivered good results on reducing stand-by losses of TVs but failed in trying to introduce a voluntary label (mainly because retailers generally were peeling of the label from TV frames displayed in shops and show rooms). EICTA decided to stop the self-commitment in 2007.

As to the in/efficiency of the existing implementing Directives, the Annex 10 shows, on the one hand, how efficiently the market has been transformed (almost all labelled appliances are A or A+), and on the other hand, how inefficient the implementing Directives have become, as efficiency of the appliances is not anymore clearly distinguished when distributed to two levels of A classes only.

The new policy approach of the Action Plan aims at integrating the potential of the different policy instruments, implementing them in a dynamic way. It comprises suggestions for actions as follows:

- The scope of the Ecodesign Directive will be extended. Minimum requirements will be set for products with significant environmental impacts, focusing on key environmental aspects from a life-cycle perspective. A revised impact assessment is available since 6/5/2008.
- Product labelling under the ELD and Ecolabel Regulation will be further developed to provide consumers with information about the energy and/or environmental performance of products. A proposal for a revised Ecolabelling scheme was presented as part of the SCP/SIP package. **The present IA analyses further how to reinforce effectiveness of product labelling and in particular the ELD to achieve the objectives of the SCP/SIP.**
- The energy efficiency and environmental criteria under the above schemes will be used to establish a harmonised base for public procurement and incentives provided by the EU and its Member States. This would help to overcome the current situation of inadequate information with fragmentation of stimulus and incentives in the Internal Market, as described in Annex 11.
- A range of other actions to arrive at smarter consumption will also be undertaken. In particular, action will be implemented with retailers and producers of products to green their own activities and supply chains, as well as raising the awareness of consumers at large and increasing their proactive role.

The impact assessment on the Ecodesign Directive identifies an external cost due to current market failures ranging from €74 – €298 billion in the EU-27. Out of this total cost, energy-using products account for some 1/3 (€25-100) of which typically more than 90% of the life cycle environmental impacts take place during the use phase. ELD and Ecodesign will help reducing this cost.

Market failures to public procurement decisions are mainly information asymmetries and bounded rationality²⁹. Lack of information about the long term financial benefits is a main barrier to the uptake of resource efficient products. However, even when the relevant information and necessary credit is easily available, procurers may still not decide rationally but act in a myopic (i.e. short-sighted) way buying the low price – high lifetime cost product. The cause for this lies in the difficulty to process complex information in a purchase situation and to draw from it the correct (rational) conclusions. This puts emphasis on the level of

²⁹ Impact Assessment on SCP/SIP.

simplicity to understand the information and to realise its value in relation to purchaser preferences in comparison with other similar product.

Although the assessment of the usefulness and impact of various types of incentives is a task for Member States and not for this impact assessment, energy labelling can be considered as a European-wide framework within which the national authorities can develop such schemes. Experience and research³⁰ shows that some general issues are common for such schemes to work:

- schemes which give customers rebates or other incentives should apply to all products providing the same function and be available in all relevant stores and distribution chains (no restrictions as to type of outlets selling the product);
- incentives should be valid for a long time period enough across the whole country to help retailers plan their purchases and marketing strategies;
- incentive schemes should be general without need for forecast of sales or budgets (no reward for incremental sales).

The European energy labelling scheme has helped, for example, the Netherlands and the Italy to develop incentive schemes. The Dutch EPR scheme has been successful in transforming the market for household appliances in the Netherlands³¹ and several Member States³² are planning incentive schemes for the future. In the absence of minimum efficiency requirements in form of specifically identified labelling classes³³ for public procurement and incentive schemes, the industry and consumers will risk working under 27 different schemes with varying efficiency levels. The role of the product specific impact assessments is to judge the right level for such levels, if any, on each product group being labelled.

2.2 Limits of the scope of the Directive

Stakeholders found, in line with the Action Plan on SCP/SIC, that energy labelling scheme could be successful also when applied to a number of products not covered by its current scope, which is restricted to household appliances. Stakeholders have requested that all energy-using products but also some non-energy using products could be energy labelled to inform potential buyers of their performance. The additional energy-related appliances represent a technical energy savings potential of above 158 Mtoe³⁴, which cannot be addressed within the scope of the present Directive. It should be considered whether some of this potential would be worth-while addressing with labelling and whether it would be cost-efficient to do so. For a number of non-energy using products which however have an impact

³⁰ Cool labels - The first three years of the European Energy Label, University of Oxford.

³¹ Energy Premium Scheme EPR for domestic appliances in the Netherlands, Hans-Paul Siderius, Novem.

³² For example, the most recent French intention to generalise the 'bonus-malus' system from cars to electrical appliances, Le Monde, 19.8.2008.

³³ It is important to express the harmonised minimum energy efficiency classes in form of classes (A-G) instead of in form of a numerical value (e.g. energy efficiency index) in order to avoid disturbing the markets when the values for classes change as a result of a revised implementing measure.

³⁴ COM (2006) 545 final of 19.10.2006 estimates that the technical savings potential from commercial and industrial sectors is 152 Mtoe by 2020, which represents 27 % and 30 % respectively of the total consumption of 549 Mtoe 2020 under BaU. The figure excludes energy-related non-energy using products from the residential sector, such as windows. The figures must be taken as indicative given that boundaries between 'household', 'commercial' and 'industrial' products are not always clear cut.

on energy conservation, such as windows (glazing and frames), the savings potential can also be considered in energy terms.

Also in the case of energy-using products outside the scope of the current ELD, information asymmetries are a main market failure. However, market structure of the energy-using products can lead to different practical situations than in the case of household appliances. For example, industrial appliances are traded largely on an OEM market³⁵, which represents 80-90% of total sales of these products. While not being responsible for paying the running costs, OEM manufacturers tend to put less emphasis on designing efficient appliances/parts, as inefficiency in use does not add to manufacturers' costs. Also, there is often a situation of split budgets where one budget is used to spend money so that another budget can show savings.³⁶ For example, investing in the efficiency of an industrial pumping or commercial refrigeration system is the responsibility of the maintenance department or service provider, and earmarked in its budget (meaning that mainly purchase/investment cost matters), while the savings due to increased efficiency accrue to the budget of the production/sales department and the general budget of the enterprise. The impact assessment of SCP/SIP show similar information asymmetries related to other energy-related products.

Currently, the ELD does not allow the provision of product information in the label such as an estimate of the annual running cost in monetary terms (though it gives estimates of yearly consumption) or carbon footprint. The relevance of opening the possibility to show such information under the ELD should be assessed as part of the revision in order to aim at further reducing the information asymmetries in the market. Similarly, the ELD does not allow provisions to cover advertising by manufacturers, retailers or their representatives in media, such as websites (e.g. Internet sales), newspapers or TV. This media has an important growing impact on consumer knowledge and purchase decisions. Provisions on these issues could help changing the consumer behaviour based on purchase price towards purchases based on life cycle cost.

2.3 Limits of the functioning of the Directive

The dynamism of the ELD - within a given scope – depends, first of all, on the resources allocated within the Commission to develop new implementing measures (periodic reviews) and on the support by the Member States in the Regulatory Committee. Another obstacle to the adoption of reviews is the industry stakeholders' resistance in upgrading the A–G ratings, as it implies downgrading of appliances in stock (an 'A' appliance becomes a 'B' or a 'C' appliance, which leads to decreased value of these appliances in stock due to reduced consumer interest).

Currently the ELD framework only allows implementing Directives, which require transposition by Member States and the follow up of the transposition by the Commission. Implementing measures in the form of regulations or decisions would reduce administrative burden and respond to a strong request made by industry in order to ensure level playing field for competition in the Internal Market and the harmonised introduction of measures across the Member States.

³⁵ Original equipment manufacturer, or OEM, is an ambiguous and abstruse phrase that refers to containment-based re-branding, where a company uses a component of another company in its product, or sells the product of another company under its own brand. OEM refers to the company that originally manufactured the product.

³⁶EuP Lot 11 study on industrial motors, pumps, fans and circulators: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm.

Tolerances in test standards are considered to be too wide in the case of many appliances³⁷, which can allow an appliance to have a falsely higher ranking. As technical development has increased the accuracy of testing devices and methods, it should be assessed whether some provisions could be added to the ELD that would contribute minimising variation.

Market surveillance is not addressed in the provisions of the ELD contrary to other relevant Community legislation. Several stakeholders³⁸ have reported insufficient surveillance and enforcement by Member State authorities, both in respect to manufacturers meeting the set requirements and retailers displaying correct information.

The energy label has no legal protection, which entails risks of abuse by third parties. The lack of provisions ruling the voluntary use of the Community energy label by third parties can put the credibility of the scheme in danger.

The ELD makes no provision regarding the use of implementing measures as a basis for public procurement or incentives by Member States. Today, Member State practices are not harmonised as to the efficiency levels for appliances purchased/promoted. Consumers, public administrations and industry would benefit if the Member States made harmonised use of the energy class levels and measurement standards set out in the implementing measures as reference for their public procurement or incentives.

2.4 Identifying the affected parties and the impacts therewith

- The (framework) ELD puts requirements only on Member State authorities and Commission, while the Implementing Directives address:
 - Retailers/dealers being responsible for the affixing of the label at the point of sales on the regulated appliances and for the provision of correct information to consumers;
 - Manufacturers/suppliers being responsible for measuring and declaring the performance of their models, for holding the technical documentation and for providing the labels to retailers/dealers;
 - Member State authorities for the implementation of the directives, including both transposition into national legislation and market surveillance.

In addition, implementing measures affect all citizens and public authorities as potential customers. Labelled products require manufacturers to provide energy efficiency information in a standard format to be made publicly available. This allows consumers and public purchases to more easily calculate running cost of products and to compare the efficiency of products. Furthermore, particularly for a typical consumer, it is very difficult, if not impossible, to calculate the running cost for a TV or a lamp³⁹ but very easy and convenient to compare the efficiency levels between different TVs or lamps shown in an A-G efficiency scale.

The labelling scheme provides a level playing field for manufacturers to position their products in term of energy efficiency in their marketing and design activities in a predictable way. It also results in a larger and more competitive market in providing an incentive to

³⁷ See e.g. Ecodesign preparatory studies on http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm#studies

³⁸ E.g. ANEC, CECED, Swedish Energy Agency.

³⁹ Calculating the annual running costs for example for a fridge or a freezer that is running constantly tends to be much easier with help of the annual consumption figures provided in the energy label.

produce high-efficiency appliances. More efficient appliances also provide manufacturers a competitive advantage in third country markets.

For retailers, a well functioning energy labelling scheme can be a powerful marketing tool for products that often provide higher profit for the retailer and lower life-cycle cost for consumer.

The visibility and credibility of a label endorsed by public authority allow households to compare appliances and buy those that cost less over the life-cycle of the product and contribute to a better environment.

Public authorities can lean on a harmonised EU level scheme when setting incentives or rebate schemes for the most efficient appliances while respecting fair competition. Clear and credible ranking of appliances can help public authorities to purchase (for relevant product groups) or to set up incentive schemes with double benefit in form of savings for the public sector and in contribution to an increased demand for energy efficient and environmentally sound appliances. This is an important aspect of the SCP/SIP⁴⁰.

The way in which these aspects would develop over time is further described under the policy option 'business as usual'.

2.5 Transposition and compliance

In the early days of the energy labelling, failure to display labels and incorrect labelling was an important issue. The situation has improved but compliance remains a concern⁴¹. Currently the (Framework) Directive provides for implementing Directives (under article 9). This is in contrast with the Ecodesign Directive 2005/32/EC which allows for implementing measures to be either decisions or regulations. The advantage of regulations is that they reduce the legislative burden on Member States and allow for a level playing field for manufacturers who will no longer be affected by divergent progress on transposition across the EU27; there can be significant time delays in transposition which may cause uncertainty in the market.⁴²

The Ecodesign Directive requires Member States to designate authorities responsible for market surveillance to ensure compliance with the provisions of the Directive. Possible actions include an adequate scale of checks on compliance, provision of necessary information and spot checks on products. Member States are required to report their market surveillance findings to the Commission. These authorities are responsible for market surveillance on compliance with both minimum performance requirements and energy labelling schemes.

2.6 EU right to act: Treaty base and subsidiarity

The ELD is based on Article 95 of the Treaty.

In order to achieve a well-functioning Internal Market for household (and possibly other) appliances and a level playing field without technical barriers to trade, a compulsory labelling scheme was set out at Community level. Now the scheme needs to be reviewed. The principle of subsidiarity is respected by the fact that Member States are assigned appropriate responsibilities with regard to the implementation of Community legislation related to energy efficiency of appliances and market surveillance. This includes the Comitology process in which the Member States are able to exercise their legal power. A proposal is currently on the

⁴⁰ Sustainable Consumption and Production and Sustainable Industrial Policy.

⁴¹ Survey of Compliance Directive 92/75/EEC, Draft Interim Report to the Commission, 25 August 2008.

⁴² Background study: http://ec.europa.eu/energy/demand/legislation/domestic_en.htm

table to provide the European Parliament with a reinforced right of scrutiny. The Directive keeps proportionate as it does not go beyond what is required for achieving its policy goals.

SECTION 3: OBJECTIVES

The general objective of this policy revision is to contribute to the EU energy policy goals stated in the Energy Efficiency Action Plan and in the Climate Change Package; to save at least 20% of its present energy consumption in a cost-effective manner and reduce overall emissions to at least 20% below 1990 levels by 2020, with contribution to the Lisbon Agenda and to the EU Sustainable Development Strategies. This will be done in identifying the most cost-efficient way(s) to reinforce the market transformation towards more efficient and environmental-friendly products, which contribute to energy savings, better environment and sustainable production and consumption, while providing useful and easy-to-understand information on product performance to consumers

The specific objectives are to contribute to energy saving, and related emissions reduction, within two sub-categories of products:

- (1) household appliances;
- (2) all energy-related products⁴³.

Depending on the policy option chosen, the specific objectives will be achieved by means of operational objectives that were consulted with stakeholders (Annex 13) as summarised in table 3.1. The outcomes sought by the ELD are realised through the implementing measures and are to be evaluated on the basis of the results of these measures.

Table 3.1: Operational objectives

No	Operational objectives
1	Increase the number of household appliances for which an energy label is introduced
2	Introduce energy label to priority energy-using and energy-related appliances
3	Regularly review existing implementing measures according to timeframe indicated in each implementing measure
4	Provide additional useful product information in labels based on product specific impact assessment
5	Cover distant mail, media advertising and other distant selling activities with energy label as defined in implementing measures based on specificities of each product group
6	Save administrative cost in implementing ELD with implementing measures
7	Prevent unauthorised use of label
8	Ensure adequate framework requirements on measurement tolerances and market surveillance activities
9	Ensure framework requirements for Member State public procurement and incentive schemes and that these schemes are linked with energy labelling scales of individual implementing measures

No further objectives for the savings of other essential resources (Article 1 of the Directive) in the use phase are developed in order to keep the focus clearly on the main environmental impacts. A well designed product labelling ought to take such trade-offs into account and ensure that the focus on one environmental parameter (energy consumption in use) is not promoted at the detriment of the global environmental performance of the product over its lifecycle. Potential trade-offs must be addressed in product specific impact assessments.

⁴³ Energy-related products are products that have an impact on energy consumption during use. This includes products such as window frames, whose insulation properties influence the energy required for the heating and cooling of the buildings etc.

However, the issue of consumption of 'other essential resources' in use phase and the trade-off with energy mainly applies to a very limited number of well known products, the so called 'wet goods' (washing and dish washing machines and dryers to some degree). Currently there is no accepted methodology that could prioritise between environmental impacts. However in the case of energy-using products it is clear that typically more than 90% of environmental impacts take place in the use phase corresponding to energy consumption.

The indicators for the specific objectives are in particular the electricity (TWh) and primary energy (Mtoe) saved and related CO₂ emissions reduced, depending on the product group in question (e.g. an electric, gas, oil or solid fuel appliance). Changes in market share towards higher efficiency appliances/classes over time and the amount of energy saved indicates the speed of market change induced by the labelling scheme.

SECTION 4: POLICY OPTIONS

In the light of the past achievements (see Annex 10), termination of the labelling scheme cannot be considered as a valid policy option. On the contrary, in the light of the speed in market developments and the environmental pressure, it is necessary to consider how to reinforce the scheme with minimum, or possibly reduced, additional burden. As requirements for a well-functioning Internal Market have not changed since the adoption of the ELD, Member State or non-regulatory action alone is not a realistic alternative. Instead, alternative EU-level solutions need to be considered in combination with other available regulatory and non-regulatory actions in order to consider to what extent each policy option is capable in reaching the maximum of the energy savings and emission reduction objectives set out in the Action Plans for Energy Efficiency and SCP/SIP and the Climate Change Package. Four policy options are identified that could possibly achieve the specific objectives. These are:

- (1) No policy change, with two sub-options:
 - 1a) BaU - business as usual,
 - 1b) BaU + 1 - full implementation of the current ELD scope.
- (2) Non-regulatory action.
- (3) Amend the Directive - full implementation of the current ELD scope, plus coverage of all energy-related products, excluding means of transport.
- (4) Repeal the Directive and implement its provisions within the Ecodesign Directive - full implementation of the current ELD scope, plus coverage of all energy-related products, excluding means of transport.

The product specific impact assessments will have to look at further 'sub-options' within the scope of the ELD, such as the appropriate information on labels or possible provisions to upgrade the label grid depending on the type of product in question. Further actions such as requirements for suppliers and dealers to organise consumer advisory services or the like can not be dealt with under actions stemming from Article 95 of the Treaty.

4.1 Policy option 1: BaU - business as usual

This policy option is divided in two sub-options, one with no further action and one with full implementation of the current scope of the ELD.

4.1.1 Policy option 1a: BaU - no further action

This BaU scenario includes the current scope of the ELD with no development of new or updated implementing measures. The option serves as an analytical baseline for comparison of costs and benefits with the other policy options. The impact of options 3 and 4 will be compared against both BaU options.

The effect of the labelling implementing measures will continue to have some effect in time even without strengthening the scheme, in particular for those products on which there are no minimum (Ecodesign) requirements in place. However, given that the life time of an appliance varies around 10-12 years, the impact of the increased energy efficiency of appliances covered by implementing measures will vanish around 2013-2015, as the latest implementing measures have been introduced in 2002-2003⁴⁴. Although energy efficiency of these appliances is not expected to go down by 2020 ('nega-joules' gained), it is not expected to increase without additional measures on the product groups currently covered by implementing Directives. In addition, a labelling scheme loses its impact once all or most models correspond to the A rating.

4.1.2 Policy option 1b: “BaU + 1”, including optimal implementation of the current ELD

The “BaU + 1” scenario includes the scope as it is currently but with an optimal implementation of the current ELD based on the Article 1 of the Directive. The option implies to cover all relevant household appliances by implementing measures as foreseen in Article 1. This means the introduction of implementing measures for new household energy-using appliances such as boilers, water heater and TVs, and the upgrading of the existing implementing Directives.

Apart from the full implementation of the present ELD scope, account must be taken on other relevant regulatory and non-regulatory action, such as Ecodesign, Ecolabel, Energy-Star, IPPC⁴⁵ and voluntary industry and Member State initiatives. Member States are expected to continue developing national and regional labelling schemes (e.g. Blaue Engel or Nordic Swan). Member States would continue public procurement procedures on an uncoordinated national basis and provide incentives for the acceleration of the uptake of more performing products without a harmonised framework.

4.2 Policy option 2: Non-regulatory action

The second policy option relies on voluntary action by industry to reinforce energy labelling in combination with other relevant Community tools, such as the Ecodesign Directive, Ecolabel, Energy-Star. This option would coexist with voluntary national and regional labelling schemes. Member State participation would be based on a voluntary approach to harmonise incentives and public procurement for energy efficient goods in line with option 1.

4.3 Policy option 3: Amend (recast) the ELD, including broadened scope to energy-related products

The third option includes amending the ELD, taking into account the amended Ecodesign Directive, in order to accommodate actions that help to reach the specific objectives. This policy option considers covering all energy-using products (excluding means of transport) and

⁴⁴ Implementing measures on ovens, air-conditioning appliances and refrigerators and freezers.

⁴⁵ The Integrated Pollution Prevention and Control Directive (IPPC) on energy and resource efficiency focuses on the production processes and not on product efficiency.

energy-related products (that have an impact on energy consumption when in use/installed) within the scope of the revised ELD, as defined in the draft Communication on SCP/SIP.

The implementing Directives/measures would serve as a framework for Member State public procurement and incentives across the Internal Market, subject to compliance with existing Internal Market and competition rules. The levels for public procurement or incentives would be based on class levels among those set out in the implementing measures while leaving the possibility for public authorities to take into account the affordability of consumers in each Member State. This would ensure sufficient choice of products on the market and guarantee budgetary neutrality of purchases over the life cycle of the product for procurers.

For the sake of clarity and simplification and to limit the discussions in co-decision procedure to the main elements of the ELD to be considered, the amendment of the Directive would be implemented through the recasting technique.⁴⁶

The actual energy-related products to be labelled can not be listed out in this impact assessment as it would require separate product specific impact assessments backed by preparatory studies. For indicative purpose, some products based on past studies and reports with most promising savings potential and suitability for energy labelling under the ELD are considered in Annex 9.

4.4 Policy option 4: Repeal the ELD and implement energy labelling within the Ecodesign Directive

This option would include repealing the ELD and implementing its provisions through the Ecodesign Directive, as also considered in the Action Plan for SCP/SIP. It would cover the same scope and include the same actions and general implementation framework as analysed under the option 3, including public procurement and incentives.

SECTION 5: ANALYSIS OF IMPACTS

In the following chapters, a qualitative and quantitative assessment is performed for impacts on which sufficiently reliable data are available. The analysis focuses on the achievement of the specific objectives by policy options considered against the BaU scenario (additional savings achieved against option 1a). Change in the scope of the ELD framework has no direct impacts, as the ELD is a framework directive. The environmental, economic and social impacts stem from implementing measures on specific products, which are adopted by the Commission in a comitology procedure (the ELD Committee) following a technical/economic preparatory study, stakeholder consultation, WTO/TBT notification and dedicated impact assessment. As a result of the studies, technical recommendations are made for minimum requirements under Ecodesign, energy labelling schemes under the ELD and other possible measures, as appropriate. Thus, figures and results presented in this impact assessment are examples of what could be achieved, if the scope of the framework directive would be extended with a parallel action by an amended Ecodesign Directive (extension to energy-related products).

The policy options are considered keeping in mind that fluctuation in energy prices and energy dependency will continue having an impact on the EU economy. In the likely future economic context with rising energy prices, the urgency and pressure to achieve energy savings will continue and the usefulness of the labelling tool as a policy instrument will be reinforced.

⁴⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002Q0328:EN:HTML>

5.1 Policy option 1: BaU – business as usual

The policy option 1 is divided in two sub-options (1a and. 1b) in order to consider the BaU in an analytically useful 'no-change' (baseline) option and in a 'full implementation' (BaU +1) option. This allows considerations on issues such as resources needed for full implementation of the current ELD against the baseline as well as the comparison of other policy options against both BaU sub-options.

5.1.1 Policy option 1a: BaU - no further action

A number of policies and instruments is already in place: the climate package (Emission Trading Scheme (ETS), sectors beyond ETS and renewables), Directives on industrial emissions, waste, air quality, Energy Services, Energy Performance of Buildings, Energy Labelling and Ecodesign, Energy Star, Eco-label, Combined Heat and Power, Energy Efficiency Action Plan, EMAS and ETAP.

EU energy labelling affects all products covered by an implementing Directive and put on the Internal Market, irrespective if they are manufactured in the EU or in a third country. Therefore the impacts are the same for EU and non-EU companies. In principle, energy labelling stimulates innovation within the affected industry. Companies putting most efficient appliances on the European market increase their chances to be competitive also on other markets, as the demand for energy efficient products will grow steadily together with the global fight to mitigate climate change. The possibility to differentiate products and promote the better ones helps manufacturers to recover R&D-investments for more efficient products.

The BaU is based on the European Commission Baseline scenario for energy trends⁴⁷ assuming a steady growth of the EU economy with a sustained industrial component. It also assumes relatively high world energy prices compared with previous projections and similar to reference projections from other sources, which increase at a moderate pace. It takes account of policies and measures already in place at the end of 2006.

The carbon intensity of GDP, expressed as CO₂ emissions per unit of GDP, is projected to decrease by 1.8% per year during 2005-2030, slightly down from 2.2% per year in 1990-2005. For the period 2005-2030, this result is almost exclusively due to energy efficiency gains, while in the past the reduction of carbon intensity of GDP was also due to the reduction in the carbon intensity of energy (by 33%).

The final energy demand sectors continue to use more natural gas instead of more carbon intensive fuels. Consequently, direct CO₂ emissions by these sectors, namely in industry, residential, services and agriculture, are shown to be stable or to increase only at a moderate pace between 2005 and 2020.

Synergies and complementary with other energy efficiency activities would continue mainly with Ecodesign, Energy-Star and Ecolabel as depicted in Annex 2. Possible synergies may well appear also when the EPBD and ESD are implemented, particularly if they are revised, as currently planned for the EPBD. Member States and industry would continue the existing schemes (e.g. Blaue Engel, Nordic Swan and industry voluntary action) on product groups not regulated at EU level. CECED, the European Committee for Domestic Equipment Manufacturers, and EICTA are not proposing new voluntary agreements, as they consider that the Ecodesign together with the ELD are a better framework for implementing European product policy, as it leaves no space for free riders.

⁴⁷ Trends to 2030 – Update 2007, European energy and Transport, European Commission: http://ec.europa.eu/dgs/energy_transport/figures/trends_2030_update_2007/index_en.htm

It is estimated that with present policies in place, 65 TWh to 75 TWh per year including the related CO₂ emissions could be saved by 2010⁴⁸. The climate change and energy policy package has an impact due to its increased emphasis on reducing emissions and the likely increase in electricity prices by 10-15 % by 2020 in comparison to today's level. For final consumers, increases in unit electricity prices are partially compensated by overall increased energy efficiency, which is resulting in a reduction of electricity consumption of around 10 %. This, to a large extent, will counter the above mentioned increases in electricity prices. These combined effects lead to a rather moderate energy cost increase prediction for households which is estimated to be about € 150 per year (in 2020)⁴⁹. Therefore, electricity price increases alone cannot be expected to stimulate a stronger push for more efficient appliances than current policies.

The Ecodesign Directive is under revision in order to include all energy-related products. This will allow setting requirements on all these products but will not have any impact on the functioning of the ELD. The impact is relevant only in the case that a product group covered by an ELD implementing directive is subject to Ecodesign requirements. However, in practice, new minimum requirements would just empty some of the lower labelling classes in the existing labels without the need to review the existing ELD implementing Directives, as long as some models have better performances than the minimum energy performance requirement set under the Ecodesign measures.

Under this option, Member States would continue implementing public procurement and incentive schemes on national basis with distortions of the Internal Market⁵⁰. It shows that policies in place are not sufficiently aligned and linked with each other to realize synergies but send conflicting signals and leave gaps that result in a fragmented regulatory framework rather than a consistent one. As an exception, the Energy-Star Programme on office equipment provides coordinated levels for mandatory public purchases of the products covered, contributing to solving information asymmetries for public procurers by showing the 'hidden' costs of use over the expected life span.

No stakeholder supported this policy option.

5.1.2 Policy option 1b: “BaU + 1”, including optimal implementation of the current ELD

The current scope of the ELD allows addressing the technical energy saving potential of 91 Mtoe by 2020 in the residential sector⁵¹. While a big part of this technical potential could be addressed with minimum energy performance requirements under the Ecodesign Directive, some of it - one third as an order of magnitude - should be addressed with the ELD, subject to product specific preparatory studies. However, it is not appropriate to set minimum requirements at the level of best available technology. Affordability, competition and differentiation in functionalities usually justify some diversity on the market; in turn, such diversity justifies providing reliable information to consumers on the products' performance through labelling.

⁴⁸ Electricity Consumption and Efficiency Trends in the Enlarged European Union – Status Report 2006. P Bertoldi, B Atanasiu. 2007.

⁴⁹ SEC(2008) 85/323 of 23 January 2008.

⁵⁰ Impact Assessment on SCP/SIP.

⁵¹ Defining the border line between residential and commercial products may be easy in the case of vacuum cleaners or coffee machines of certain type but is more difficult in the case of vacuum cleaners of bigger size, which could also be used by SMEs in the commercial sector. This is why this impact assessment refrains from defining products specific to these sectors but refers to the general technical savings potential estimated by Commission official documents.

The BaU+1 option is considered as an option to fully implement the existing provisions and tools, that is, continuing to develop implementing measures on product groups covered by Article 1 of the Directive, such as household boilers and water heaters. Also, it includes fully exploiting the possibilities offered by the Article 1.2 of the Directive in setting energy labelling requirements on any household appliance not yet explicitly mentioned in Article 1, such as TVs. This option would also include the updating of the existing implementing Directives.

In the past, the introduction of more efficient appliances has been extremely cost-effective. However, due to exhaustion of the "easy" saving potential for some appliances and higher R&D-costs the cost-effectiveness will decrease, but remain quite positive, especially when considering raise of the price of energy.⁵² Precise quantifications are impossible to give but Annexes 9, 10 and 11 provide indicative figures in the case of exemplary product groups.

To date, there has been no upgrade of values for efficiency classes (A-G scale values), except for refrigerators and freezers. As a consequence, most of the appliances today have reached the A or B level, which risks undermining the effectiveness of the scheme on the longer run. However, it also confirms the success of the scheme; appliances have become more energy efficient. Although energy labelling and technological development have made further energy savings more challenging in the case of the product groups already labelled, considerable savings can still be reached in upgrading the existing implementing Directives with a corresponding estimated savings of some 2 Mtoe⁵³ by 2020 (without minimum efficiency requirements under Ecodesign), corresponding to emission savings of some 8,4 Mt of CO₂ and of some €3 billion by 2020. The potential is particularly important in the Implementing Directives on air-conditioning appliances, dishwashers and washing machines⁵⁴.

Full implementation of the ELD would include addressing the savings potential of heating and water heating appliances, which has not yet been done under the ELD. These heating appliances are estimated to represent about half of the total cost-efficient savings potential of the considered appliances within the scope of the present ELD. The Ecodesign preparatory study aims at about 58 Mtoe total savings⁵⁵ in primary energy (90 Mt of Co₂)⁵⁶ by 2020 in residential heating and water heating with the combination of the Energy Performance of Buildings Directive (EPBD), Ecodesign Directive and ELD. The mixture of Ecodesign, installation and labelling requirements would result in yearly net savings of €45 billion as of 2020, out of which about €15 billion⁵⁷ could be reached by energy labelling.

While most savings on heating and water heating appliances will be achieved through Ecodesign and EPBD requirements on installation, the estimated impact of the ELD could

⁵² Impact Assessment Report for the Action Plan for Energy Efficiency 2006:
http://ec.europa.eu/energy/action_plan_energy_efficiency/index_en.htm

⁵³ This is slightly more than the above 1 Mtoe saving estimated in the Impact Assessment Report for the Action Plan for Energy Efficiency 2006: http://ec.europa.eu/energy/action_plan_energy_efficiency/index_en.htm, which estimated the savings potential to be equal to some 30% of already realised energy savings. However, the latest technological developments show that the potential is higher (Ecodesign preparatory studies: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm).

⁵⁴ Ecodesign studies: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

⁵⁵ The Ecodesign preparatory studies http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm estimate that the total energy saving potential of boilers and water heaters in the residential and commercial sectors is 77 Mtoe. Some 75% (58 Mtoe) of these savings come from the boilers and water heaters of the size typically used in residential sector.

⁵⁶ Conversion factor from primary energy (Mtoe) to emissions (Mt of Co₂) is 2,597. MEEuP Ecodesign methodology: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

⁵⁷ On electricity price of €0,136/kWh.

account to savings of some 18 Mtoe⁵⁸ by 2020, corresponding to emissions saved of some 46 Mt of CO₂ and yearly net savings of some €15 billion. The estimate made by the background study on the impact of labelling on boilers alone is slightly lower but in the same order of magnitude (savings of 20 Mt of CO₂ vs. €5.5 billion from labelling on boilers alone). For clarity, the above saving figures through energy labelling, like the other figures in this chapter, are estimates based on the most probable future scenario with impact assumed from a joint action of EPBD, Ecodesign and ELD.

It is important to notice that heating and water heating appliances are often sold through installers rather than directly to customers (principal-agent problem), which can lead to low-efficient and over-sized appliances. However, it is currently considered to include mandatory requirements in the EPBD (under review) obliging installers to match efficient heating systems (rated under the labelling scheme) with the heat demand of the particular building. This requirement would further increase the effect of the labelling scheme and the synergy between the two Directives.

An energy label is planned on televisions with a total savings potential of 46 TWh by 2020.⁵⁹ Out of this total potential, it is estimated that energy labelling could catch around 12 (about 1 Mtoe) by 2020, corresponding to emission reduction of 4,8⁶⁰ Mt of CO₂ and €1,6 billion⁶¹ pa by 2020. As to lighting, the Ecodesign preparatory studies indicate that general lighting appliances would provide some 74 TWh of savings potential of which energy labelling could catch some 16 TWh (about 1,5 Mtoe) by 2020, corresponding to reduced emissions of 6,4 Mt of CO₂ vs. €2.2 billion.

Based on the above considerations, it is estimated that vigorous implementation of the current ELD, including the upgrading of the existing implementing Directives and the development of new ones would help to reach savings of some 22 Mtoe⁶² by 2020 in the case of the considered priority appliances alone, corresponding to emission reduction of some 65 Mt of CO₂, or €22 billion by 2020.

Office equipment is covered by the Energy Star Programme under the International Agreement signed between the EU and the USA to coordinate their energy labelling schemes for office equipment. Although the Agreement would legally allow covering also the office equipment under the ELD, such an overlap is considered inappropriate and inefficient.

Under the BaU+1 option, the ELD can only be implemented with Directives leading to a transposition cost of €4 million per updated or new implementing directive (see Annex 12).

Apart from its scope, the focus and the legal requirements of the ELD have an impact on its potential to reach the policy objectives. Some of the main issues are discussed below.

The way to integrate fast decision making procedure under the current legal framework of the ELD would be to introduce staged energy labelling with gradually increasing 'A-levels'.

⁵⁸ The estimated savings potential of 31 Mtoe from commercial heating and water heating appliances would remain outside the ELD. However, the division between residential and commercial sector savings potential must be seen indicative, as there is no clear cut between residential and commercial sector heating and water heating appliances; the main difference being the size of the appliances. Thus, the savings figure include the impact of the labelling of some 25% heating and water heating appliances foreseen for residential use but sold to commercial customers.

⁵⁹ Ecodesign preparatory study lot 5: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

⁶⁰ Average specific EU emissions in 2003 for EU-25: 400g CO₂ per kWh, EURELECTRIC, Environmental Statistics of the European Electricity Industry, Trends in Environmental Performance 2003-2004.

⁶¹ On assumed electricity price of €0,136/kWh, as in the Ecodesign MEEuP methodology: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

⁶² Savings in electricity (TWh) are converted to savings in primary energy (Mtoes). A conversion factor 0,086 is used based on the EU Energy and Transport in Figures, Statistical pocketbook, 2007/2008.

However, although the ELD does not prohibit this, it would be difficult to predict the technological development and assess the corresponding impacts over a long period of time.

Article 5 of the ELD makes provision on the content of the implementing Directives in order to cover mail order and other sales situations, where the potential customer cannot be expected to see the appliance displayed. The three most recent implementing Directives⁶³ make requirements on the provision of labels and information in mail orders and in other distance selling, including the Internet.

Manufacturers and retailers sometimes provide energy labels or other type of energy efficiency related information when advertising in media, depending on the type of product, size of advertising and media used, but in practice only when the appliances are “A”-graded. Manufacturers and retailers selling appliances below A-grade do not publish such information, if it is not specifically required in the implementing Directives, as it would harm sales.

The current wide measurement tolerances for the regulated appliances often allow manufacturers to claim that appliances are of higher class than they would be under tighter tolerances. This can partially affect the credibility of the label. The situation can not be corrected under business as usual. The enforcement authorities have not reported any badly displayed or missing labels since the beginning of the energy labelling scheme although a recent study shows the contrary⁶⁴. Also, several actors have recently reported compliance problems or requested strengthened market surveillance⁶⁵. The necessary Community legislation on market surveillance is in place but it does not seem to be adequately implemented.

Under this policy option, the energy label would be used by third parties for voluntary labelling under no legal rules or agreed approval procedure. The voluntary use within the EU has not yet led to major identified problems but could potentially do so without legal protection and clear framework rules with the major risk of jeopardizing the value of the EU energy label and the investments made since years by all parties involved. This cannot be adjusted under the current ELD.

As to the stakeholder preference, interviews conducted for the background study showed highest interest in reinforcing the implementation of the articles of the present ELD while the stakeholder consultation for the impact assessment showed strongest preference for broadening the scope (option 3). The background study was based on a sample of interviews, while the stakeholder consultation included all relevant stakeholders; the stakeholder consultation meeting allowed stakeholders to consider the pros and cons in an open manner (see Annex 13).

5.2 Policy option 2: Non-regulatory action

This policy option looks at the potential for non-regulatory action to further reinforce energy labelling in combination with other relevant tools, such as ELD, Ecodesign Directive, Ecolabel, Energy-Star, national/regional schemes (such as Blaue Engel or Nordic Swan). Synergies and complementary with other energy efficiency activities would continue mainly with Ecodesign, Energy-Star and Ecolabel as depicted in Annex 2. Possible synergies or overlaps could appear with the EPBD and ESD. Voluntary initiatives could not be monitored

⁶³ 2003/66/EC, 2002/40/EC and 2002/31/EC.

⁶⁴ Survey of Compliance Directive 92/75/EEC, Draft Final Report to the Commission, 25 August 2008.

⁶⁵ E.g. ANEC-R&T-2006-ENV-008 (final), January 2007; CECED paper on the Commission Proposals on the Marketing of Products: COM (2007) 37 and COM (2007) 53, PP 07-01, named "Fair play for all economic operators", 24 April 2007. STEM test on fridges, May 2007; Intelligent Energy for Europe project, CEECAP, no. EIE / 05 / 195 / SI2.419686 of June 2008, CECED: <http://www.ceced.org/>

under the current legal framework and their impacts on the other instruments could not be controlled.

Voluntary initiatives by industry (self-regulation) may be an alternative to legislation or may be a complementary measure, which contributes to the achievement of the legislative objective. While the voluntary initiatives taken by CECED⁶⁶ to set energy reduction targets for refrigerators, freezers, and washing machines and dishwashers have complemented the compulsory energy labelling schemes for these products (BaU), CECED is not proposing any more voluntary schemes but prefers action under the combination of mandatory Ecodesign and ELD. Similarly EICTA has abandoned the use of self-commitments as an alternative to EU legislation under Article 95 for consumer electronics. For several years members of EICTA run a self-regulatory initiative for reducing the stand-by energy consumption of TVs and DVD players. Though it had positive effects, it was considered not to be a viable option for this sector where the market is very fragmented and in which the self-regulatory initiative could not ensure level playing field for the industry.

Self-regulatory action by the industry would help to avoid administrative cost for European and national administrations. However, as comparative labelling schemes must be set for each product group, voluntary labelling of different product groups would risk using different principles in labelling schemes, which is one of the main reasons that has triggered mandatory labelling across the world (see Annex 7). This was also one of the main reasons for the development of the ELD on 1992. However, although there is no question in replacing the ELD by self-regulatory measures, these measures could maybe complement the ELD. The problem is that voluntary action seldom includes the whole industrial sector but leaves free riders outside the scheme⁶⁷, which can affect competitiveness of those who commit obeying the rules.

As to other energy-using products, no proposal for voluntary labelling has been made.

Voluntary labelling could be set at Member State (MS) level. However, the ELD superseded a number of largely voluntary energy labelling initiatives at Member States in order to achieve a harmonised provision of product information and to ensure the use of harmonised standards avoiding market fragmentation⁶⁸. Since 1992, the need for harmonised approaches in the Internal Market have further increased, not reduced, so national/regional action in this domain is opposed by the industry. Also, self-regulatory initiatives would require endorsement and monitoring by Commission and Member States to avoid affecting the credibility of the official EU scheme. This would reduce the benefits in terms of administrative burden and leave various loopholes for possible legal action where necessary.

Self-regulation would not provide a harmonised framework applicable across the Internal Market, therefore it could not be used for the setting of levels for public procurement and fiscal incentives. Several parallel labelling schemes could risk increasing the cost for the consumer to obtain relevant information on product characteristics (manufacturers would have to transfer the cost of market fragmentation to consumers) and lead even greater information asymmetries and bounded rationality, as has been the case in the past. This could lead to social costs as low income households would be the first to suffer from irrational purchase choices. Also, during the stakeholder consultation, industry expressed their clear preference for mandatory labelling in order to create level playing field⁶⁹. Under voluntary schemes, companies whose products perform badly in terms of environmental impact are

⁶⁶ <http://www.ceced.org/>

⁶⁷ Such as the Europump voluntary circulator labelling scheme:
<http://work.sitedirect.se/sites/europump/europump/index.php>

⁶⁸ Background study: http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation

⁶⁹ See e.g. <http://www.ceced.org/>

unwilling to display a label on their products, catalogues, media, Internet, etc., as it would negatively affect sales.

Thus, it is estimated that while non-regulatory action could in theory help to broaden somewhat the scope and focus and to decreasing administrative burden, in practice there are no signs of self regulatory initiatives that could be considered as a valid alternative to a legal scheme. Accordingly, the estimated savings of this policy option are equal to the baseline (policy option 1a) and clearly less than in sub-policy option BaU + 1 (1b), that is, no additional significant savings are expected from this policy option.

Stakeholders did not support policy option 2.

5.3 Policy option 3: Amend (recast) the ELD, including broadened scope with energy-related products

The Ecodesign Directive currently only applies to energy-using products and the ELD to household appliances. The Communication on the Sustainable Consumption and Industrial Policy (SCP/SIP) considers enlarging the scope of the two Directives also to all energy-related products, maintaining the exception of means of transport, which already is subject to separate policies and legislation for reducing environmental impacts.

The broadening of the scope of the ELD would be coordinated with other product policy tools such as Ecodesign, Ecolabels and Energy-Star ensuring complementarity and coordination. The amendment of the ELD includes the extension of its scope to energy-related products. The recast of the ELD would include requirements for implementing measures to identify labelling classes at a level below which public authorities would not be allowed to procure or provide incentives such as rebate schemes. The level in general should not be more burdensome to public finance than under the present procurement practices taking into account the full life time of the product. Thus there will be significant impetus for choosing the more energy and resource performing products whilst encouraging and inducing innovation for the industry (see Annex 11).

Below these aspects are analysed in two sub-sections focusing on impacts from the broadening of the scope on the one hand and on the expected impacts from measures to improve the functioning of the scheme, including the provision of a harmonized basis for public procurement and incentives.

5.3.1 Expected impacts from a broader scope of the ELD

The background study provides ample information on the expected impacts of the amendment and broadening of the scope of the ELD. It identifies no negative social or environmental impacts. Potential economic and environmental benefits are identified depending on the exact scope of the amendments. The main savings potential from a broadened scope would be expected to come from products such as heating or cooling in the commercial or industrial sectors. Technical savings potential in commercial and industrial sectors is estimated to 157 Mtoe by 2020. How much of this potential could be reached by product labelling would have to be considered in separate product specific studies⁷⁰.

Commercial refrigeration, industrial motors, windows, tyres, and construction materials have been proposed by stakeholders as possible energy-related products to be labelled. However, tyres are excluded as belonging to 'means of transport'. Also, a separate proposal on the labelling of tyres is under preparation by the Commission.

⁷⁰ A revised ELD would not save any energy. This will be achieved only after the development of product specific implementing measures.

As shown in Annex 9, commercial refrigerators, freezers, chillers, display cabinets and vending machines are expected to provide savings of some 5 TWh (about 0.5 Mtoe) by 2020, corresponding to a reduction of emissions around 2 Mt of CO₂. The border line between 'household' and 'commercial' refrigeration is not clearly defined; the bigger power range of 'household' refrigeration and freezer appliances are also used e.g. in the SMEs, which lowers the above savings figure (it is estimated that some 25% of the smaller power range 'commercial refrigeration' is already included into the implementing Directives on household refrigeration and freezer appliances)⁷¹.

Commercial heating is estimated to save some 3-4 Mtoe by 2020, corresponding to reduced emissions of some 9 Mt of CO₂. The savings potential of industrial products would have to be considered in separate technical studies and impact assessments but information from the Ecodesign preparatory study on industrial motors, pumps and fans shows that energy labelling under ELD might not be the best choice due to the specificities of the market for industrial products and to the latest developments in standards (see Annex 9).

As shown in the Annex 9, based on the background study, windows would offer an estimated € 4 billion/a savings corresponding to 25 million tonnes of CO₂, if conventional double glazing was replaced by low-e windows. Product specific technical studies and impact assessment analysis would have to be developed in order to assess the feasibility of setting labelling requirements on windows, taking into account climatic zones. This might require developing the necessary multi-criteria scheme based on different weather requirements in different climatic zones and altitudes as is done in the US and in some Member States, such as in Finland. However, it would be important to consider the related impact of the Energy Performance of Buildings Directive, which sets minimum energy efficiency requirements on buildings and several of its components; windows may be subject to specific requirements under this Directive in the line of heating and cooling systems, chimneys etc.

The impact assessment of the Ecodesign Directive shows that the reduction potential in the construction sector is 78 Mt of CO₂ due to the use of construction products. These reductions would be partly due to the combination of the product specific approach of the Ecodesign and Energy Labelling Directives but first of all to installation requirements under the Energy Performance of Buildings Directive. How much of this technical potential could be realised with help of a labelling scheme would have to be backed up by a technical study, which should also look at the suitability of the construction product market for product labelling (see further discussion on the impact of different types of markets in Annex 9).

Energy-related products could also alternatively be covered by a Directive of the legislator (co-decision) as is the case of cars (Directive on the labelling of cars is under revision) or tyres (proposal under consideration).

In summary, compared with the baseline, a conservative estimate is that broadening the scope of the ELD to energy-related products⁷² could result in additional energy savings, in conjunction with simultaneous additional Ecodesign measures, based on the above priority product groups considered alone, in the magnitude of 27 Mtoe⁷³ by 2020, corresponding to

⁷¹ Ecodesign studies: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

⁷² The estimate exclude the impact of product groups with possibly very important savings potential (e.g. commercial and industrial lighting) but does not yet consider any industrial products in proper sense. Sufficient information for further considerations of these products will be available from the current and future Ecodesign preparatory studies.

⁷³ Savings in electricity (TWh) are converted to savings in primary energy (Mtoes). A conversion factor of 0,086 is used based on the EU Energy and Transport in Figures, Statistical pocketbook, 2007/2008.

emission reductions of some 78 Mt of CO₂⁷⁴ (excluding the technical savings potential from construction products of which the majority would be stemming from the EPBD). Compared with BaU + 1 option, this would correspond to additional savings of some 5 Mtoe when extending the ELD only to windows and to selected cooling and heating appliances in the commercial sector.

These figures seem a realistic estimate given that, although there is an important technical savings potential in the other energy-using products, many of them beyond the household sector are often not sold to consumers but to specialised people or to OEM manufacturers, who do not sell/purchase these products from outlets/shops but directly from other manufacturers. Due to these market differences, the product specific impact assessments would have to carefully consider what kind of energy labelling information and procedure would best address the specificities of the markets of each individual product group. The revised ELD could provide the scope for this leaving the final considerations for product specific technical studies and impact assessments at the level of the implementing measures.

As to employment effects, the impact assessment on the amendment of the Ecodesign 2005/32/EC Directive identifies some evidence for job creation in Europe due to energy efficiency measures. While no evidence is available on the relations between energy labelling and employment, there are no reasons to assume negative employment impacts induced by energy labelling. The labelling of products does not affect the overall demand for products; it just shifts demand towards more efficient products, which basically include more technology and added value, hence stimulates innovation.

5.3.2 Expected impacts from improved functioning of the ELD

Apart from its scope, the focus and the precise legal requirements of the ELD have an impact on its potential to reach and further contribute to the policy objectives. Some of the main issues with impact on achieving the objectives are discussed below.

In order to achieve more dynamic labelling the Commission could adopt implementing measures defining staged introduction of labelling thresholds defined in advance for ensuring that the "A" class would be populated only by a limited number of appliances (as far as it is technically possible to predict products' technological development and assessing corresponding impacts). As for option 1b, dynamism largely depends on the resources made available within the Commission to develop new measures and on the support of the Regulatory Committee. The outcome sought by the increased dynamism is the frequency of updated labelling scales, which should happen when the A class is populated by more than 50% of appliances.

The extended ELD could provide a framework for public procurement and incentive schemes by Member States as shown in the SCP/SIP. Many Member States already provide incentives (e.g. rebate schemes) for energy performing products and make significant efforts to green their public procurement practice; however, the extent and level of this may differ from country to country.

The impact of harmonised energy efficient public procurement and incentives has been analysed in Annex 11. On public procurement, the main conclusion is that even very ambitious public procurement requirements can be less expensive than current procurement

⁷⁴ Total savings potential from heating and water heating appliances is estimated to 77 Mtoe by 2020 of which energy labelling would catch close to 20 Mtoe (household 18 Mtoe + commercial 0,5 Mtoe). The rest of the savings (57 Mtoe) would come from minimum energy performance standards and EPBD requirements.

practices and save substantial amounts of energy and CO₂ emissions; public procurement can be used to accompany market transformation towards more energy efficient goods. The product groups considered show considerable savings potential. Public procurement rules on water heaters would save 18 Mt of CO₂ and €1.5 billion over the life cycle of the product. Similarly, energy efficient public procurement of street lighting would save 8 Mt of CO₂, corresponding to € 320 million over the life time of the product.

Combining labelling with incentive schemes delivers equally positive and dynamic effects. An example on washing machines in the Netherlands, backed by a broad literature survey for energy-using and energy-related products indicates that for every doubling of the cumulative volume sold, costs for these products would decrease between 15-20 %.⁷⁵ The main conclusion is that the inclusion of provisions for incentives encourages sales of innovative products. This is also important for learning effects.

In order to further minimize fragmentation in the Internal Market, it would be beneficial to introduce harmonized measures within the context of the ELD along the lines of what the Legislator recently introduced under the Energy Star Regulation⁷⁶. In this way, the ELD would contribute solving information asymmetries for public procurers in line with Energy Star by showing the 'hidden' costs of use over the expected life span. Thus, the revised ELD should aim at linking Member State public procurement and incentive schemes to the minimum efficiency thresholds indicated for these purposes in product specific implementing measures, backed by an impact assessment.

Article 5 of the ELD makes provision on the content of the implementing Directives in order to cover mail order and other sales situations, where the potential customer cannot be expected to see the appliance displayed. As mentioned earlier manufacturers and retailers selling appliances publish regularly information on the efficiency level, even if not required in the implementing Directive, when the appliance is rated in the “A” class but fail to do so for obvious reasons when the appliance scores lower. This reduces the potential impact of the label. It is not expected that the situation would change without mandatory requirements on the provision of information in mail orders and in other distance selling, including the Internet.

Legal provisions on adequate information would be particularly important in the case of advertising in the context of distant selling through various media, such as the Internet, newspapers, leaflets etc. Such information provision would help to convey the message on comparative negative environmental impacts (externalities) of all products covered by implementing measures/Directives and reduce information asymmetries. Administrative

⁷⁵ Junginger et al (2008) Technological learning in the energy sector. This study has been performed within the framework of the Netherlands Research Programme on Scientific Assessment and Policy Analysis for Climate Change (WAB).

⁷⁶ The current list of products covered include: Appliances (Battery Chargers, Clothes Washers, Dehumidifiers, Dishwashers, Refrigerators & Freezers, Room AC, Room Air Cleaners, Water Coolers) Heating & Cooling (Air-source Heat Pumps, Boilers, Central AC, Ceiling Fans, Dehumidifiers, Furnaces, Geothermal Heat Pumps, Home Sealing (Insulation), Light Commercial, Programmable Thermostats, Room AC, Ventilating Fans) Home Envelope (Home Sealing (Insulation and Air Sealing), Roof Products, Windows, Doors, & Skylights), Home Electronics (Battery Charging Systems, Cordless Phones, Combination Units, Digital-to-Analog Converter Boxes (DTAs), DVD Products, External Power Adapters, Home Audio, Televisions, VCRs), Office Equipment (Computers, Copiers and Fax Machines, Digital Duplicators, Notebook Computers/Tablet PCs, Mailing Machines, External Power Adapters, Monitors, Printers, Scanners, and All-in-Ones), Lighting (Compact Fluorescent Light Bulbs (CFLs), Residential Light Fixtures, Ceiling Fans, Exit Signs), Commercial Food Service (Commercial Dishwashers, Commercial Fryers, Commercial Hot Food Holding Cabinets, Commercial Ice Machines, Commercial Solid Door Refrigerators & Freezers, Commercial Steam Cookers), Other Commercial Products (Battery Charging Systems, Exit Signs, External Power Adapters, Roof Products, Vending Machines, Water Coolers).

burden for manufacturers and retailers would be limited to advertising in the case of low-efficient appliances given that the provision of labelling information on 'A' level appliances is already commonplace. Accordingly, the ELD should allow setting requirements to display the energy class of a product in mail order, media advertising and other distant sales situations leaving the details of these requirements for each product specific implementing measure.

Input from stakeholders showed that there is a need for legal protection of the energy label against possible fraudulent use. The label could primarily be protected by public law which means that under the basis of the ELD (Article 95 of the EC Treaty), Member States protect the label through market surveillance and enforce it with the means of administrative law (e.g. fines, decision or banning of the product). Some stakeholders requested private law protection, which would mean that the energy label be protected by intellectual property law in the territory of the European Economic Area (this in practice would mean a sort of trademark protection). However, the label as it looks currently, due to its commonplace elements, cannot be protected with the means of intellectual property law unless a specific trademark is added to the label. The impact of such an exercise should be subject to a thorough analysis (for example, even the "Community flag" is not the property of the EU, but of the Council of Europe).

A discussion paper on verification and enforcement⁷⁷ showed that one of the shortcomings of the ELD was the enforcement of the labelling in the field. Although the market surveillance authorities have discretion to decide what to do with a retailer/manufacturer that has a non-compliant label (normally a warning, fine or banning of the product), enforcement of proper labelling is often weak and lack of resources is cited as the reason. Therefore, a framework on better and less burdensome enforcement in the amendment of the ELD could be useful. However, this would not include any additional market surveillance but just the implementation of the existing requirements stated in Community legislation. In particular, aligning requirements with the Ecodesign Directive seems appropriate.

The background study estimates that the administrative and transposition cost together is 5 €⁷⁸ million for the development of new implementing Directives. The cost for upgrading the existing ones is estimated to € 4.7 million per Directive⁷⁹ (see more detail in Chapter 5.5 and in Annex 12).

Stakeholders welcomed the broadening of the scope to energy-related products, which would offer additional savings opportunities. Italy and UK reminded about the importance of impact assessment in defining the products to be covered. Euroace did not support labelling of insulation products. Vehicle parts were considered out of scope. Also, additional improvements to the ELD functioning, such as requirements on display of label in distance selling and on media, legal protection of the scheme and the use of implementing regulations or decisions instead of Directives, was supported by stakeholders. Consumer groups, green NGOs and Eurocommerce requested clear labels focusing on energy consumption in use as the main information. Consumer groups and NGOs also requested labelling information to be indicated in second-hand shops. Industry, in particularly CECED and Marcogaz requested that each actor be held responsible for its tolerances (manufacturers vs. test laboratories) and requested explicit figures on these tolerances. Support to implementation through Regulations rather than Directives was unanimous due to its cost-effectiveness (For details see results of

⁷⁷ Frank Klinckenberg: Discussion Paper. Experiences with Verification and Enforcement of the EU Energy Label.

⁷⁸ €1 million of administrative cost for the revision and €4 million for the transposition by Member States.

⁷⁹ €720.000 for the development/revision of the implementing Directive and €4 for transposition by Member States. See chapter 5.5.

the stakeholder consultation in Annex 13 and on http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation).

5.4 Policy option 4: Repeal the ELD and implement energy labelling within the Ecodesign Directive

As discussed above and in the Annex 10, repealing the ELD without implementing its provisions in other Community legislation is considered as an unacceptable option both from the point of view of stakeholders and of its expected impacts. The ELD is the well known EU-wide instrument to address potential purchasers with comparative information on consumption and cost of an appliance in the use phase. Ecodesign sets minimum requirements for putting products on the market and addresses all environmental parameters throughout the whole life cycle of the product.

Under the EPBD, the performance of the whole building (overall performance of the building integrating the physical characteristics; building shell and its design, shape, construction material etc.) is labelled, including lighting, heating and air-conditioning installations in the relevant climate zone. Some Member States may even include in the label the impact of other electric appliances although this is not a mandatory requirement. That is, apart from selected appliances, EPBD includes the whole system and its controls. This is important as even the most efficient appliance (e.g. a motor) can not compensate losses due to bad controls or system characteristics. The same applies in the other way around; even the most efficient system does not help avoiding the losses of an inefficient appliance. Moreover, the EPBD falls under the national building codes and the Article 175 of the Treaty while the ELD is based on Article 95.

Accordingly, this policy option includes repealing the ELD and implementing its provisions instead through the Ecodesign Directive as envisaged in the Action Plan on SCP/SIP. The Ecolabel and Energy Star would continue coexisting with synergies and complementarity, as described in Annex 2, with the difference that Ecodesign would cover the application areas of both the ELD (comparative labelling of products on the market) and the Eco-design Directive (setting minimum requirements for putting products on the market).

One Directive instead of two would reduce the number of legislative instruments but would create other problems.

First, there would be a need to integrate the eight existing labelling implementing Directives into the Ecodesign framework where they do not fit, in particular with the model implementing measure defined in Ecodesign Annex VII. Also, as identified in the draft SCP/SIP Communication, the amendment of the Ecodesign Directive beyond its Article 1 (on scope) would not be appropriate considering that the Directive was adopted recently (July 2005), is not transposed yet by all Member States and is in the process of being implemented with the first draft measures being submitted to a Regulatory Committee.

Second, the Ecodesign Directive sets requirements (technical specifications to be met by products) on manufacturers only, while the ELD sets requirements also on retailers (display of the label). The Ecodesign Directive addresses all significant environmental parameters during the life cycle of the product while the ELD focuses on energy and other consumables during the use phase; the message is comparative and targets product performance that is directly of interest to the consumer. Drastic changes would be needed to incorporate the ELD provisions and its implementing Directives into the Ecodesign Directive, which would be disproportionate compared with the benefits, and would risk complicating rather than simplifying the legal framework.

Putting requirements of to these two different legislative instruments within one single Directive could seriously endanger the clarity of both Directives. As described above, the

ELD has led to success because it provides a powerful marketing tool for manufacturers and retailers, and a clear message for customers (buy “A” to save money). It focuses on product performance in use phase directly of interest to consumers.

The criteria for successful (energy) labelling, as presented above, are decisive in assuring that information asymmetries and bounded rationality are avoided. The energy labelling scheme must allow end-users to easily compare which product is more resource efficient during its use phase than another, thus help to avoid buying products that are cheaper at the purchase but more expensive over the life cycle of the product.

In addition, the lack of applicable methodology that would allow rating, comparing and ranking products on their global environmental performance (mixing energy consumption with emissions to air or soil, noise or recyclability etc) throughout lifecycle makes that the introduction of a comparative “Ecodesign” label is not a feasible option at this stage. This is part of the reason why the Communication on SCP/SIP considers reviewing the situation in 2012.

Third, the repeal of the ELD would not be understood by many stakeholders and by third countries that copied the scheme (see Annex 7) or intend to introduce it.

What is said about public procurement under the policy option 3 and about administrative cost in chapter 5.5 would also apply under the policy option 4.

Stakeholders rejected this option, including the indication of other environmental information over the life cycle of the product on the label. Consumer groups, supported by Italy and France, saw a particular danger in mixing the energy label with other environmental information. They requested care in indicating any further such information on the label; "consumers need a simple message and carbon discussion should be kept out of the label". Eurocommerce reminded that sales personnel can not take the responsibility to convey complex environmental information to consumers; the label must remind simple. Environmental NGOs stressed the urgency to address energy consumption without affecting other environmental parameters. Within the industry, CECED did not see the indication of e.g. CO₂ neither feasible nor enforceable while Orgalime considered that it could be useful to open the label for the indication of other environmental parameters. (For details see results of the stakeholder consultation in Annex 13 and on http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation).

5.5 Administrative and transposition cost

For the EU administration, the background study estimates the administrative cost to amend the ELD framework to about €1 million to which a transposition costs of some 4 € million should be added for the Member States. The cost for the development of new implementing measures or upgrading the existing ones is estimated to €720.000 per Directive⁸⁰. The figures do not include overhead costs.

The cost for transposition of (implementing) Directives by the Member States is estimated to about €4 million⁸¹ per new or upgraded implementing directive (see Annex 12). Assuming

⁸⁰ The background study estimates that the administrative cost of developing a new Implementing directive is about € 720 000 per new Directive and that the revision of an existing Implementing directive would be half of this cost € 360 000⁸⁰. However, halving the cost for the revision of an existing Implementing directive is based on an assumption that the revision process would involve less work. However, revision of a Directive follows the same legislative process and in both cases a solid background study is needed, as the technological and market development makes the results of the initial study useless for revision. Accordingly, the cost of € 720 000 is used in this impact assessment for developing a new or revising an existing Implementing Directive/measure.

⁸¹ 27 Member States x €150.000 = €4.040.000.

that the eight existing implementing Directives would be revised and two new ones⁸² be developed before the adoption of a possibly revised ELD the total administrative and transposition cost for this action would be about € 47 million⁸³ under the option 1b.

Would any further implementing Directives be developed or upgraded, the total administrative and transposition cost would be € 4.7 million⁸⁴ per Directive.

Transposition costs would be saved if the ELD was implemented with Regulations or Decisions instead of Directives. It can be assumed that, on the period of 2009-2011, about 10 new implementing measures would be developed on the basis of the on-going preparatory studies⁸⁵, which alone would correspond to the savings of total transposition cost of €40 million. To these savings should also be added the savings from the fact that there would be no resources needed for the follow-up of the national transposition, infringement procedures or similar. Furthermore, it would bring important advantages to the Internal Market and the industry as the absence of national transposition would ensure that implementing legislation came into force at the same time across the Internal Market in an identical form.

The administrative cost caused due to labelling activity are closely related to the overall activities of the product policy, in particularly that of the Ecodesign Directive, as described in the impact assessment of the Ecodesign Directive. The main activities causing the administrative costs for Member States and the Commission are:

- Definition of ELD implementing Directives/measures; Ecodesign preparatory studies and product specific impact assessments.
- The extension of the product scope of the ELD would broaden the choice of product groups for which implementing Directives/measures could be adopted. If this would happen, the administrative expenditure would be covered by the usual annual budgetary allocation.
- Costs for the Comitology procedure. (See Annex 12.)

The expected integrated decision structures of the Ecodesign Directive and the ELD and the informative role of the eco-label suggested in the SCP/SIP Action Plan will provide synergies which guarantee that resources are used as cost-efficiently as possible.

As to the administrative cost for manufacturers and retailers, extending the scope of the ELD implies that more products can potentially fall under the ELD implementing measures. The total administrative burden impact depends on the nature of these measures and the number of products affected by each implementing measure. Therefore it is here only possible to provide a general indication of the possible impacts on administrative burden.

The administrative burden due to a possible extension of the scope of the ELD, and subsequent increased number of implementing measures, is composed of actions as follows:

- printing labels and including them in product packaging (paid by manufacturers)
- putting labels on products displayed in shops (paid by retailers)
- testing products (paid by manufacturers but usually already part of the cost for assessing compliance with other legislation like the Ecodesign Directive)

⁸² Planned on TVs, boilers and water heaters.

⁸³ Administrative cost for developing/upgrading 10 implementing Directives x €720.000 and transposition cost of 10 implementing Directives x €4.

⁸⁴ Administrative cost of €720.000 + transposition cost of 27 Member States x €150.000.

⁸⁵ The most immediate candidates being vacuum cleaners, household fans, comfort fans, commercial refrigerators, commercial freezers, certain types of solid fuel boilers and household lighting appliances http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

- industry 'self-policing' of voluntary agreements, 'challenges' etc. (paid by manufacturers).

To this can be added the activities paid by the governments for the 'enforcement' in shops and the 'enforcement' of the accuracy of efficiency information. As can be seen, for manufacturers, administrative burden is limited to printing of the label and the strip. The rest of the activities will take place as part of the normal business. The information provided in the label is already readily available for the manufacturer and provided also in product documentation. The printing costs of several hundred euros in relation to an appliance and the related information documentation and manuals and packaging seems negligible. It is to be noted that only the black-and-white strip needs to be put into each product packaging. The coloured background of the label is to be provided in limited numbers by manufacturers to retailers for affixing on products to be displayed in shops, not for every product shipped (see Annex 4). Additionally, an information fiche is provided with more complex technical information for customers willing to get more detailed technical information on the product (see Annex 5).

It has to be noted that the administrative burden for manufacturers seems very small given that the existing provisions would not require 'additional' information but rather the provision of already existing information in a given agreed format. It must be noted also that no additional market surveillance is requested but only the application of the existing Community legislation on market surveillance in line with the Ecodesign Directive. For retailers, administrative cost is the cost in displaying the label on the product. The burden for retailers of putting the label on the right appliance in shops looks minimal compared with the benefit of making available information that allows comparative differentiation of products for consumers.

SECTION 6: COMPARING OPTIONS

As mentioned above, the possible extension of the scope of the ELD does not change any direct costs or benefits for economic operators (except administrative cost for the EU Institutions and Member States). They will only occur when implementing measures are set on specific products. Accordingly, table 6.1 shows some expected impacts of the considered policy options based on the exemplary product groups analysed above.

Table 6.1⁸⁶: Comparison of expected annual indicative impacts (savings) of policy options against objectives and potential costs/burden – based on consideration on selected product groups only

Policy option	Energy Mtoe by 2020	Environment Mt of CO ₂ by 2020	Monetary € billion by 2020	Administrative and transposition cost/burden increased/reduced cost	
				Administrations (MS, EU)	Manufacturers and retailers
1a	Baseline	Baseline	Baseline	Baseline	Baseline
1b	22 Mtoes	65	€22 billion ⁸⁷	New or revised Directive = €4.7 million per Directive in	Manufacturers: cost for printing and

⁸⁶ Note that the table only summarises impacts from the broadening of the scope. Impacts and additional potential savings from improved functioning of the ELD, including harmonised public procurement and incentives, are summarised below.

		Mt of CO ₂		total, including €4 of transposition cost.	including labels in product packaging and testing products (ca €3000/product ⁸⁸). Retailers: putting labels on products in shops.
2	About as baseline	About as baseline	About as baseline	+/- (Insufficient basis for estimates)	Potentially reduced burden
3	27 Mtoes	≈ 78 Mt of CO ₂	€26 billion ⁸⁹ + improved competitiveness and innovation.	Amend Directive = €5 million in total, including €4 million for transposition. If new or reviewed Directive = €4.7 million per Directive, including €4 million for transposition. If Regulations or Decisions the cost is €720.000 (no transposition cost, that is, savings of €4 million from non-transposition cost)	Manufacturers: cost for printing and including labels in product packaging and testing products. Increased cost for testing and labelling of newly introduced products. Retailers: putting labels on products in shops.
4	27 Motes	≈ 78 Mt of CO ₂	€26 billion + improved competitiveness and innovation.	Amend Directive = €5 million in total, including €4 million for transposition. If new or reviewed Directives = €4.7 million per Directive, including €4 million for transposition. If Regulations or Decisions the cost is €720.000 (no transposition cost, that is, savings of €4 million from non-transposition cost)	Manufacturers: cost for printing and including labels in product packaging and testing products. Retailers: putting labels on products in shops.

Figures in table 6.1 and elsewhere in this report, including conversion between units, are based on the Ecodesign MEEuP methodology and preparatory technical studies⁹⁰ and on the EU Statistical pocketbook on Energy and Transport in Figures 2007/2008⁹¹, as detailed in the above chapters and in relevant Annexes. For the average specific EU emissions, Eurelectric environmental statistics have been used. Despite of the seemingly clear figures they hide a complex reality of interlinked impacts. These indicative figures will be further considered in product specific impact assessments. For the needs of this impact assessment, the relevance and underlying assumptions of the figures used have been approved through the Eurostat and Ecodesign processes.

⁸⁷ Includes savings of about €15 billion from boilers and water heaters as defined in the Ecodesign Lot 1 and 2 technical studies. Savings in electricity in upgrading the old implementing Directives and developing new ones on televisions and lighting are calculate with electricity price of €0,136/kWh.

⁸⁸ Shared cost with Ecodesign.

⁸⁹ To be noted, for monetary savings of primary energy in commercial heating, the same relation has been used as in Lot 1/2 technical study on household heating and water heating appliances.

⁹⁰ The Ecodesign technical preparatory studies are based on a common (MEEuP) methodology: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

⁹¹ http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/

A particular issue is the definition of the border line between residential and commercial sector products. It may be easy in the case of e.g. smaller vacuum cleaners or coffee machines but be more difficult in the case of vacuum cleaners of bigger size, which could also be used e.g. by SMEs in the commercial sector. This is why this impact assessment refrains in general from defining products specific to these sectors but rather focuses on the type and power range of appliances most typical to these sectors. However, in the option 3 and 4, commercial heating and water heating appliances and their savings potential have been considered on the basis of the Ecodesign preparatory studies on heating and water heating appliances in general while this report focuses on 'commercial' heating and water heating only (options 3 and 4). Considering the typical power ranges of these appliances used in each of these sectors⁹², an assumption of a possible 25% overlap of appliances between these sectors have been assumed. Moreover, the different conversion factors from energy to CO₂ take into account the difference between oil and gas as defined in the Lot 1 and 2 Ecodesign preparatory studies⁹³. The concrete impact of this on the aggregate figures on options 3 and 4 is that the conversion factors between units (Mtoes, CO₂ and €) do not match one-to-one.

Table 6.2 below compares the effectiveness, efficiency and consistency of each policy option.

In summary, **policy option 1b** can reach important energy savings involving minor administrative burden for manufacturers and retailers and no administrative burden for Member States from the amendment in co-decision of the Framework Directive. However, an estimated transposition cost of €4 million for Member States from the transposition of each new or updated implementing directive is imposed.

Stakeholder position varied from neutral to positive.

Policy option 2 would not reach the objectives and was rejected by stakeholders, including industry.

Policy option 3 can deliver the same energy savings as the option 1b but would also open the way to further savings, subject to product specific preparatory studies and impact assessment. Using the recasting technique would keep the legislative amendment proportionate and simple but would include an administrative burden of €1.2 million from the revision in co-decision of the ELD. However, if implemented with Regulations or Decisions instead of Directives, €4 million of transposition costs would be saved per every new or revised implementing measure (compared to option 1b).

Apart from impacts due to a broadened scope of the ELD, the revision would allow clarifying the framework provisions on information provision in distant selling on various media, legal protection of the label, principles for measurement tolerances and market surveillance activities. Also, the revision would allow setting a harmonised framework for public procurement and incentive across the Internal Market with important additional savings potential, e.g. emission savings of 18 Mt of CO₂ from water heaters and 8 Mt of CO₂ from street lighting, corresponding to savings of 1,5 billion vs. €320 million over the life time of the product respectively.

These changes in the labelling scheme would allow upgrading the ELD according to the recent and expected market development, including an adequate response to the continuous pressure on security of supply and climate change. In this context, energy labelling must be seen as one crucial element in the broader context of market transformation within the SCP/SIP.

⁹² Oil and gas boilers above 70 kW and water heaters of XXXL and XXXXL -sizes are used mainly in non-residential sectors .

⁹³ http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

Policy option 3 had strong stakeholders support.

Table 6.2: Effectiveness, efficiency and consistency

Policy option	Effectiveness	Efficiency	Consistency
1a	Policy objectives are not achieved	Some of the resources available for energy efficiency could be released; little resources are needed	Negative balance of indirect impacts on environmental terms (no savings achieved beyond 'negajoules')
1b	Most policy objectives can be achieved with savings of some 65 tons of CO ₂ based on considered product groups	Resources available at present will allow achieving the expected impacts, except a major administrative burden from the transposition of the implementing Directives and unfavourable impact on Internal Market	Positive balance of environmental impacts, potential positive social impacts (employment impact) and positive balance on economy (savings for consumers and society, expected increased competitiveness and innovation).
2	Unlikely to achieve the policy objectives	Necessary resources needed are difficult to estimate due to expected scattered implementation of energy labelling with no guarantee of impacts	Environmental balance unlikely to be positive. Positive balance for industry in short-term and negative in long-term, negative expected economic balance for consumers and for Internal Market operators.
3	Specific objectives can be achieved with savings of some 78 tons of CO ₂ based on considered product groups only. Potential to further benefits with legal protection introduced (reliability of scheme and use of regulations or decisions).	Resources available at present will allow achieving the expected impacts, no significant resources needed by manufacturers or retailers. Potential to reduced administrative burden for Member States and Commission linked with increased positive environmental and economic impact.	Positive balance of environmental impacts, potential positive social impacts (employment impact) and positive balance on economy (savings for consumers and society, expected increased competitiveness and innovation).
4	Specific objectives can be achieved only (equalling to some 78 tons of CO ₂), if requirements on retailers are included into the amended Directive.	Resources available at present will allow achieving the expected impacts, no significant resources needed by manufacturers or retailers. Potential to reduced administrative burden linked with increased positive environmental and economic impact, if implemented with implementing measures.	Negative balance of unintended social impacts in form of unclear legislation, potential negative environmental impact from loss of clarity in labelling information.

Policy option 4, though technically capable of delivering similar savings as policy options 3 once the new legislation would be in place, would risk leading to confusion with two policy measures different in nature within one single piece of legislation; one focusing on minimum requirements on energy-related products throughout the life cycle of the product with requirements on manufacturers only and another one on the labelling of energy-related products with focus on use phase with requirements on manufacturers and retailers. The legislative effort to import the energy efficiency labelling provisions into the Ecodesign Directive would not be proportionate and would add complexity instead of clarity for the stakeholders affected with risk to generating a label with unclear or confusing information to consumer.

Cost-effectiveness

As already explained before, the extension of the scope of the ELD has little impact beyond making it possible to launch new implementing measures. The cost-effectiveness of implementing measures will be addressed in detail in specific product impact assessments for which the Ecodesign preparatory technical studies provide input.

Based on the analysis provided in this impact assessment option 3 is the most cost-effective option.

SECTION 7: MONITORING AND EVALUATION

Monitoring and evaluation should be looked in the broader framework of the Sustainable Consumption and Production Policy and Sustainable Industrial Policy (SCP/SIP) together with the Action Plan on Energy Efficiency and relevant product policy instruments. As the Action Plan on Energy Efficiency⁹⁴ states, monitoring and evaluation capabilities of public authorities will depend to a large extent on the human and financial resources that can be attributed to these tasks at EU, national, regional and local level.

The Action Plan foresees regular reporting to the European Parliament. Monitoring on the ELD (Framework Directive) could provide information on the various stages of the implementation process of the ELD in line with the information provided on the advancement of the Ecodesign Directive, such as the number of preparatory studies launched and finished and implementing measures adopted. As foreseen also for Ecodesign, collaboration with the working group of Eurostat on Sustainable Development indicators is envisaged to assess the possibility to include statistics on products for which implementing measures are developed (e.g. reporting market share of products per labelling category).

The main indicator to monitor progress towards the specific objectives and to verify whether the implementation of the policy provides the expected results and contributes to the objectives of the Climate Package, the renewed Lisbon agenda and more generally to the renewed Sustainable Development Strategy, is the energy savings achieved with product groups labelled and the evolution of the level of efficiency of appliances for which implementing measures are in force by 2020.

In the short term, evaluation should be implemented at the level of the existing Framework Directive and its implementing Directives. On the medium term, the revised Directive and its implementing measures should be evaluated in order to more clearly measure and compare the impact of the amendment with the past achievements and the set objectives.

Due to the general nature of Framework Directives, the specific objectives (energy saved as defined in Section 3) will be achieved by means of the operational objectives that are defined in each implementing measure, including the levels for efficiency classes to be applied. These indicators are the changes in market share towards higher efficiency appliances/classes over time and the amount of energy saved.

The above indicators should be considered as subject to fine-tuning, including possible shift in timelines according to the development of the implementation process, in collaboration with the Member States through the Energy Labelling Committee and affected stakeholders.

⁹⁴ COM(2006)545 final: http://ec.europa.eu/energy/action_plan_energy_efficiency/index_en.htm

It is important to evaluate the impact of the implementing measures also on the long term in coordination with the Eco-design and other product policy instruments. Particular attention must be paid on the impact of each individual instrument.

Many past evaluations of labelling programs have focused on consumer awareness of the label but have not explicitly linked the label to actual behaviour (i.e., to the efficiency of the appliances purchased and to the most likely purchase if there had been no label). Future evaluations should be more comprehensive than has been the case so far and include the analysis and assessment of all instruments foreseen for market-transformation under the SCP/SIP.

ANNEX 1: PRODUCT GROUPS COVERED BY THE ELD AND THE IMPLEMENTING DIRECTIVES

The table below shows the coverage of household products by the ELD (Article 1) and products covered by the existing implementing Directives. Other household products, such as televisions or comfort fans, could be covered under Article 1.2 of 92/75/EC. Products beyond the household sector, such as commercial air-conditioning and refrigeration, industrial cooking appliances, industrial motors, machine tools, and energy-related products that do not consume energy in use (e.g. windows) could be covered only if the ELD was amended or implemented within an amended Ecodesign Directive.

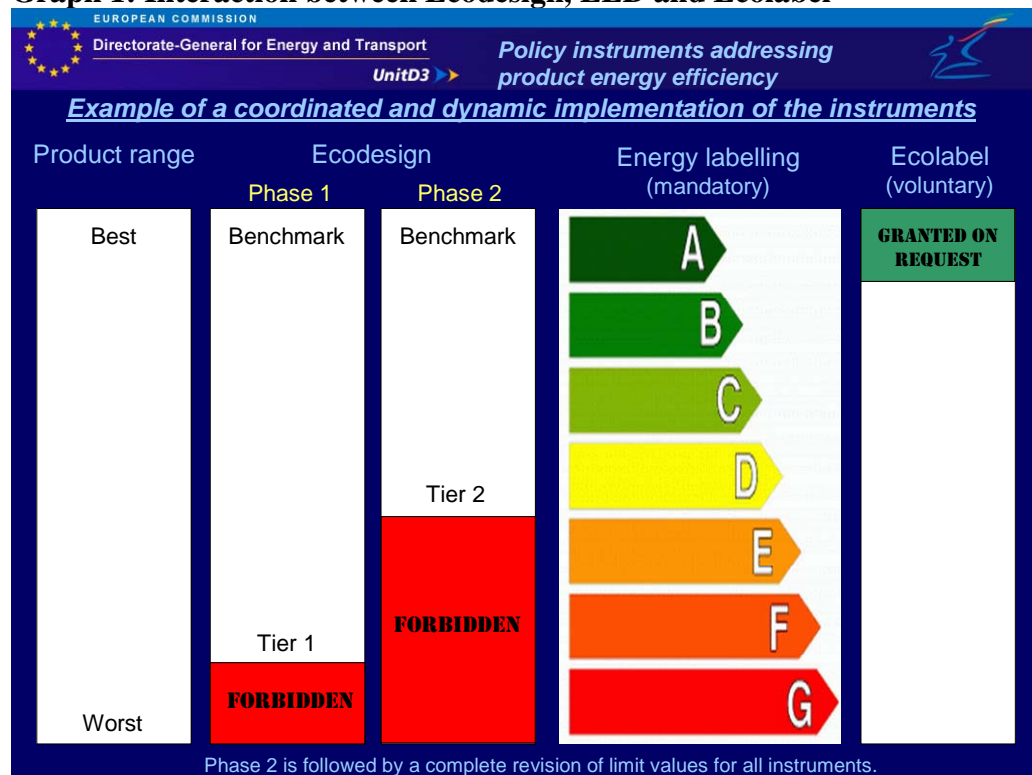
Table on actual vs. possible coverage of products by energy labelling

Household appliances covered by Article 1 of 92/75/EC	Covered by implementing Directives	Information provided on the label	Information that could be provided on the label
Refrigerators, freezers and their combinations	2003/66/EC (94/2/EC)	Energy efficiency class, energy consumption, fresh food volume, frozen food volume, noise	Annual consumption or any other significant environmental impact or product performance characteristics relevant to use phase for consumers
Washing machines, driers and their combinations	96/89/EC (95/12/EC) 95/13/EC 96/60/EC	<u>Washing machine</u> : Energy efficiency class, energy consumption, washing performance class, spin drying efficiency class, maximum spin speed, capacity, water consumption, estimated annual consumption, noise. <u>Tumble drier</u> : energy efficiency class, energy consumption, capacity, water consumption, estimated annual consumption, noise. <u>Washer-dryer</u> : as above.	Idem.
Dishwashers	1999/9/EC (97/75/EC)	Energy efficiency class, energy consumption, cleaning performance, drying performance, water consumption, noise	Idem.
Ovens	2002/40/EC	Energy efficiency class, energy consumption (conventional and forced air convection), usable volume, size (S,M,L), noise	Idem.
Water heaters and hot-water storage appliances	No implementing measure was developed.		
Lighting sources	98/11/EC	Energy efficiency class, luminous flux, input power, average rated life of the lamp (hours).	Idem.
Air-conditioning appliances	2002/31/EC	Energy efficiency class, annual energy consumption, cooling output, energy efficiency ratio, type, heat output, heating performance, noise.	Idem.

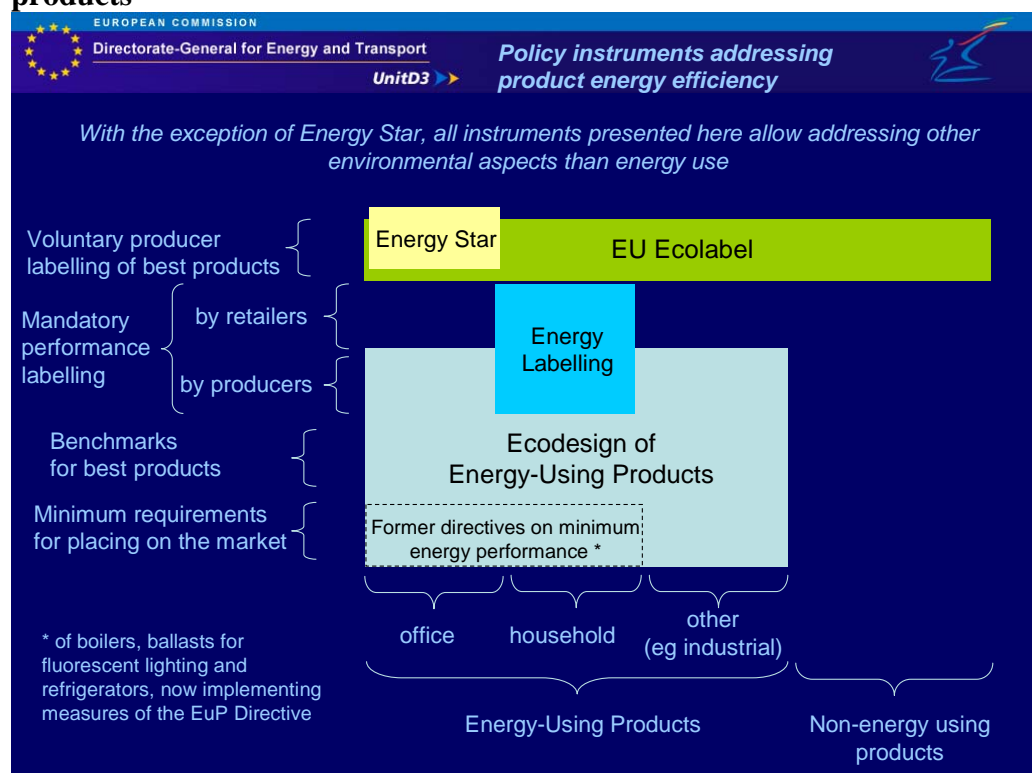
ANNEX 2: EU POLICY INSTRUMENTS ADDRESSING ENERGY EFFICIENCY OF PRODUCTS

This Annex illustrates the dynamic process created by various policy instruments with synergy, complementarity and overlaps of the various policy instruments addressing energy labelling.

Graph 1: Interaction between Ecodesign, ELD and Ecolabel



Graph 2: Interaction between EU policy instruments addressing energy efficiency of products



ANNEX 3: PRODUCT LABELS IN THE EU

This Annex aims at giving an overview of the product labelling and, in particular, of the energy labelling in the EU. There are three Community product labels applied in the Internal Market. The 'Energy Star' label is an endorsement label used to show the most energy efficient office equipment (PCs, printers, faxes, copying machines, monitors etc.).



The Energy Star label is voluntary and may be affixed by manufacturers only on those products that meet the qualifying criteria (usually around 25% best range).

The Energy Star is a labelling programme owned by the US Government but the Community signed an international agreement with the USA in 2000 to coordinate energy labelling for office equipment using the Energy Star scheme and logo. The Energy Star Programme was considered to be more appropriate to follow fast evolving technologies used for office equipment and to cover equipment traded worldwide.



The Agreement was renewed in December 2006 for five years and currently provides for voluntary labelling of 24 office products.

The “Ecolabel” is a voluntary label. It acts as a label of excellence providing the benchmarks for top performance for all environmental aspects during the complete product’s lifecycle. The Commission recently reviewed the Ecolabel Regulation, which currently provides for voluntary labelling of 24 product groups.

The main tool for energy labelling at EU level is the “energy label” under the ELD, which focuses on the energy efficiency of household appliances (on coverage of product groups, see Annex 1).

Energy	
Manufacturer Model	
More efficient Less efficient	 A
Energy consumption kWh/year (Based on standard test results for 24h)	325
Actual consumption will depend on how the appliance is used and where it is located	
Fresh food volume l	190
Frozen food volume l	126
Noise (dB(A) re 1 pW)	
Further information is contained in product brochures	
<small>Norm EN 153 May 1990 Refrigerator Label Directive 94/2/EC</small>	

This is achieved with the help of a transparent and easy-to-understand energy label, which is fixed at the point of sales on household appliances covered by specific implementing Directives. The label provides consumers comparative information about the estimated energy consumption between similar appliances enabling them to make a more informed purchasing choice in by alerting them on the cost of running the appliance.

In 1979, the Council passed a Directive⁹⁵ intended to introduce a Community-wide voluntary scheme for energy labelling of domestic appliances. The Directive allowed, but did not oblige, the Member States to introduce energy labels. However, due to a disagreement over technical measurement standards and their tolerances, none of the Commissions proposals was accepted by the Council. In a climate of general disinterest to make the voluntary European scheme work, several Member States and industry groupings started developing their own voluntary schemes. As the voluntary schemes proved to be failures, Denmark⁹⁶ notified a national obligatory scheme in 1983. With a view to avoid several voluntary schemes based on different technical basis on a variety of products, and considering the Danish notification the Commission made a proposal for a harmonised scheme at European level in order to avoid hindering the functioning of the Internal Market. The ELD was adopted in 1992 introducing a framework that allows the Commission, assisted by a regulatory committee, to adopt implementing Directives for specific household appliances.

The energy label is compulsory and obliges manufacturers to declare the energy consumption (and possible additional relevant information on the performance in use, such as noise or water consumption) irrespective if the product is doing best (“A” class) or poorly (“G” class). The setting of criteria/classes under the ELD is based on the Article 95 legal basis ensuring a level playing field for industry and consumers, including for a harmonised measurement method (standard) to be applied for the determination of the product performance. Under the ELD, there are eight Implementing Directives⁹⁷, three⁹⁸ of which have been updated due to technological developments.

Beyond the primary objective of the energy labelling to save energy, the label also provides consumers with comparative information on the use of other resources such as water (e.g. dishwashers and washing machines) or emitted levels of noise in use. The Ecodesign preparatory studies⁹⁹ have shown that typically more than 90% of the life-cycle environmental impacts of energy-using products take place during the use phase. As such, although the energy label focuses on consumption of resources in the use phase, it usually addresses in practice the most significant environmental impacts over the life cycle of the energy-using product.

Currently, given that oldest existing implementing Directives have already had their impact (most sold appliances correspond now to the levels A or B) there is no incentive for the industry to further develop more efficient appliances. Furthermore, even if such appliances would exist, there is no mechanism for the industry to market the more efficient products based on a reliable (harmonized) European-wide scheme such as the energy labelling. For

⁹⁵ OJC, 145/1 of 13.06.1979.

⁹⁶ Danish notification to the Commission OJL 109/8 of 26.04.1983.

⁹⁷ http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation

⁹⁸ 94/2/EC on household electric refrigerators, freezers and their combinations, 95/12/EC on washing machines and 97/17/EC on dishwashers.

⁹⁹ http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm


these appliances, there is a need to upgrade the criteria for the energy label. This is being prepared under the current ELD.

The success of the ELD labelling scheme is partly due to it being used by the Member States for setting levels for incentives (rebate schemes for the best classes) but no quantitative information is available to estimate the actual effect of this. Minimum efficiency levels for national public purchases also push manufacturers to design appliances above the minimum level. The downside is that there are many different procurement/incentive levels across the 27 Member States, and sometimes none at all.

ANNEX 4: COMPOSITION OF ENERGY LABEL: LABEL AND STRIP

The energy label is composed of a coloured background label fixed on products displayed in shops and of a black-and-white strip provided with each product. The information to be given on the label and strip is regulated in implementing Directives. For printed packaging the energy label is black-and-white.


Label:

Energy	Dishwasher
Manufacturer	
Model	
More efficient	
A	
B	
C	
D	
E	
F	
G	
Less efficient	
Energy Consumption kWh/cycle <small>(Based on test results for manufacturer's standard cycle using cold fill)</small>	
<small>Actual consumption will depend on how the appliance is used</small>	
Cleaning Performance <small>A: higher G: lower</small>	
Drying Performance <small>A: higher G: lower</small>	
Standard Place Settings	
Water Consumption l/cycle	
Noise <small>(db(A) re 1 pW)</small>	
<small>Further information is contained in product brochures</small>	
<small>Norm EN 50242 Dishwasher Label Directive 97/17/CE</small>	

Strip:

acme
ACM 123 E
A
0.81
A B C D E F G
A B C D E F G
9 14
<small>[code]</small>

Energy label for printed packaging (e.g. on lamps):

Ενεργειακή Energy	
A	B
B	
C	
D	
E	
F	
G	

ANNEX 5: CONTENT OF AN INFORMATION FICHE

This Annex shows an example of requirements set on the content of the information fiche on dishwashers under the implementing Directive 97/17/EC.

"The fiche shall contain the following information.

The information may be given in the form of a table covering a number of models supplied by the same supplier. The information shall be given in the order specified below unless it is contained in a more general description of the appliance:

1. Supplier's trade mark.
2. Supplier's model identifier.
3. The energy efficiency class of the model determined in accordance with Annex IV. Expressed as 'Energy efficiency class ... on a scale of A (more efficient) to G (less efficient)'. Where this information is provided in a table this may be expressed by other means provided it is clear that the scale is from A (more efficient) to G (less efficient).
4. Where the information is provided in a table, and where some of the appliances listed in the table have been granted a 'Community Eco-label' pursuant to Regulation (EEC) No 880/92, this information may be included here. In this case the row heading shall state 'Community Eco-label', and the entry shall consist of a copy of the Eco-label mark. This provision is without prejudice to any requirements under the EU Eco-label scheme.
5. Manufacturer's name, code or indication for the 'standard' cycle to which the information in the label and the fiche relate.
6. Energy consumption in kWh per cycle using standard, cycle determined in accordance with the test procedures of the harmonized standards referred to in Article 1 (2), and described as 'Energy consumption XYZ kWh per standard test cycle, using cold water fill. Actual energy consumption will depend on how the appliance is used'.
7. Cleaning performance class, determined in accordance with Annex IV. Expressed as 'Cleaning performance class ... on a scale of A (higher) to G (lower)'. This may be expressed by other means provided it is clear that the scale is from A (higher) to G (lower).
8. Drying performance class, determined in accordance with Annex IV. Expressed as: 'Drying performance ... on a scale of A (higher) to G (lower)'. This may be expressed by other means provided it is clear that the scale is from A (higher) to G (lower).
9. Capacity of appliance in standard place settings, as defined in Annex I, note VIII.
10. Water consumption per cycle in litres using standard cycle, as defined in Annex I, note IX.
11. Programme time for standard cycle, determined in accordance with the test procedures of the harmonized standards referred to in Article 1 (2).
12. Suppliers may include the information in points 5 to 11 in respect of other cycles.

13. The estimated annual consumption of energy and water equal to 220 times the consumptions expressed in points 6 (energy) and 10 (water). This shall be expressed as 'estimated annual consumption (220 cycles)'.

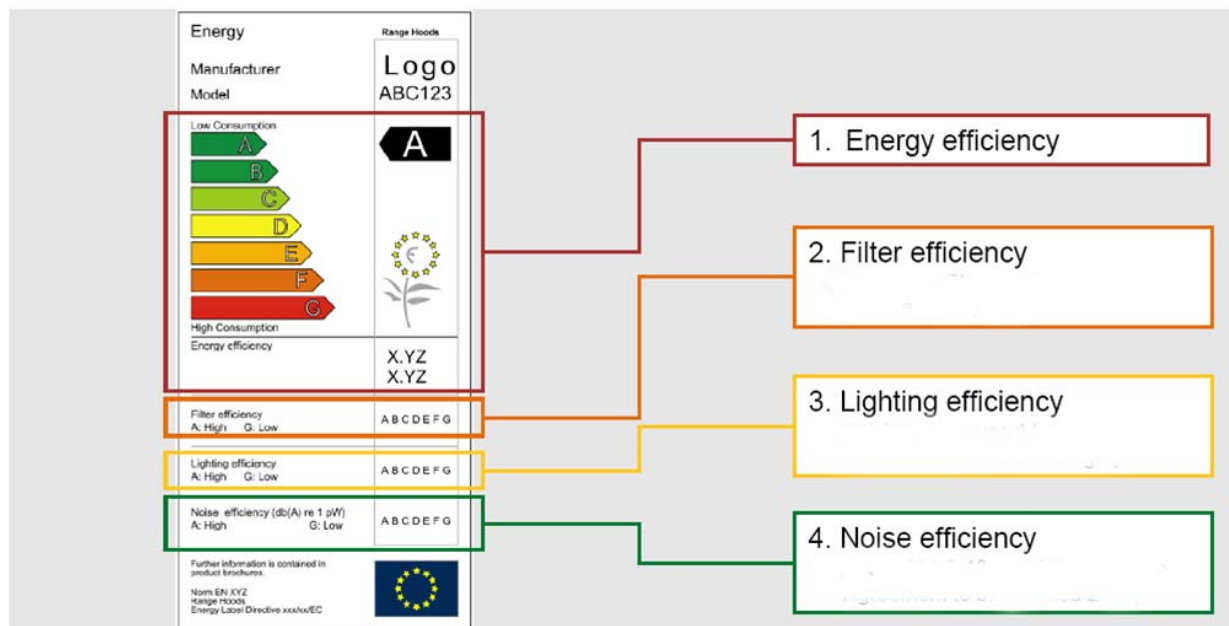
14. Where applicable, noise during standard cycle, in accordance with Council Directive (EEC) No 86/594.

The information on the label may be given in the form of a representation of the label in colour or in black and white."

ANNEX 6: PROVISION OF PRODUCT INFORMATION IN THE ENERGY LABEL

The Annex 6 illustrates how product information is displayed on the energy label with an example of a possible label on cooker hoods. Information provided on the label focuses on product performances directly of interest to consumers allowing comparison between products displayed in shops or in adverts. Product information in the existing eight implementing Directives (see Annex1) follows this structure.

Example of a possible energy label on cooker hoods with use phase related information.



ANNEX 7: ENERGY LABELS ADOPTED IN THIRD COUNTRIES

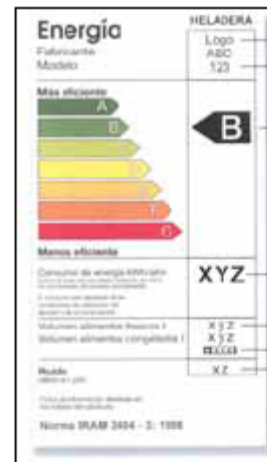
This Annex provides a sample of energy labels adopted in third countries based on the EU energy label as a model.



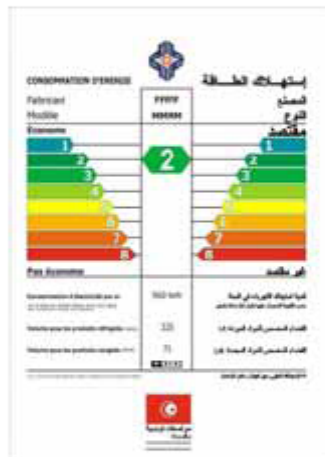
South Africa



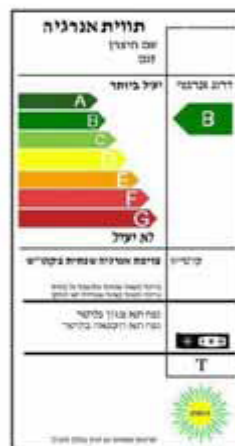
Brazil



Argentina & Chile



Tunisia



Israel



Iran



China



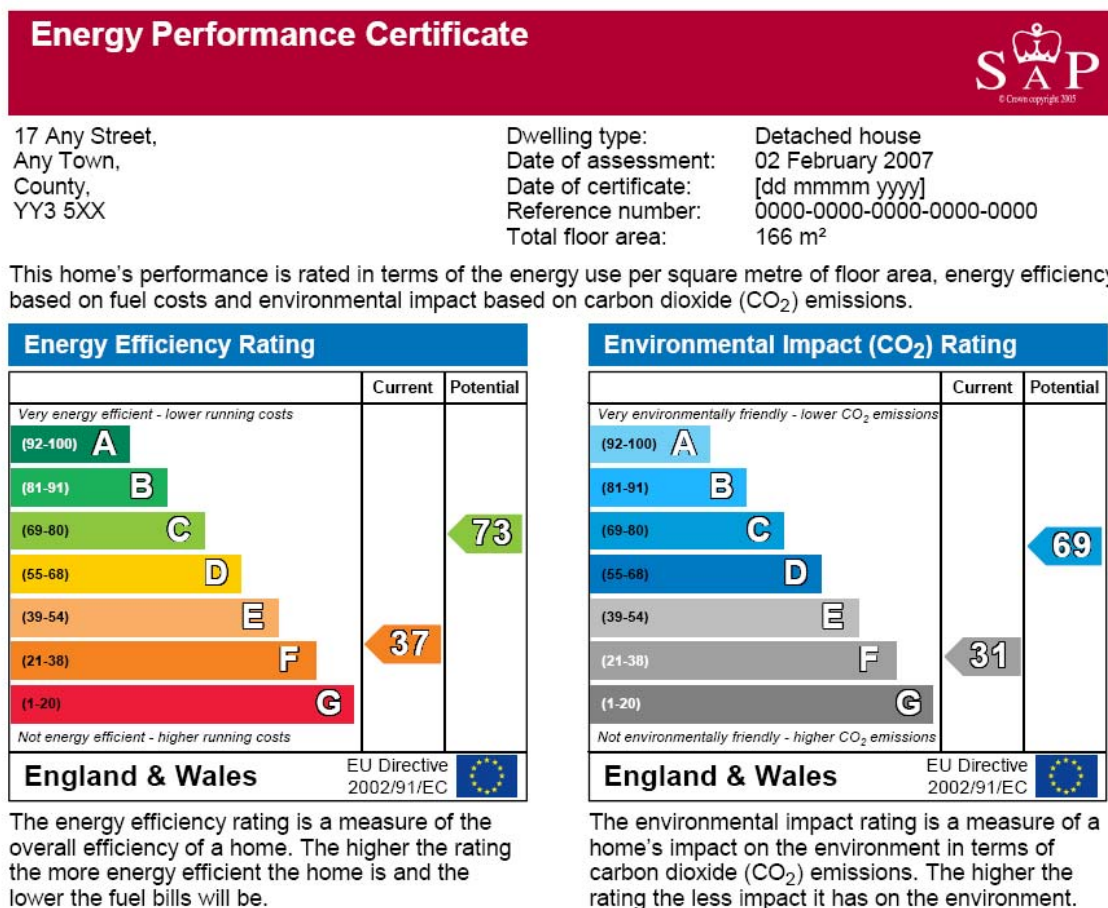
Mexico



Egypt

ANNEX 8: ENERGY LABELS ADOPTED IN OTHER SECTORS

The Annex 8 illustrates how the EU energy label on household products has been applied in the building sector. There are similar applications of the energy label in other sectors at the EU and Member State/third country level too (EU car label, window label in UK and Finland...).



Estimated energy use, carbon dioxide (CO₂) emissions and fuel costs of this home

	Current	Potential
Energy Use	453 kWh/m ² per year	178 kWh/m ² per year
Carbon dioxide emissions	13 tonnes per year	4.9 tonnes per year
Lighting	£81 per year	£65 per year
Heating	£1173 per year	£457 per year
Hot water	£219 per year	£104 per year

Based on standardised assumptions about occupancy, heating patterns and geographical location, the above table provides an indication of how much it will cost to provide lighting, heating and hot water to this home. The fuel costs only take into account the cost of fuel and not any associated service, maintenance or safety inspection. This certificate has been provided for comparative purposes only and enables one home to be compared with another. Always check the date the certificate was issued, because fuel prices can increase over time and energy saving recommendations will evolve.

To see how this home can achieve its potential rating please see the recommended measures.



Remember to look for the energy saving recommended logo when buying energy-efficient products. It's a quick and easy way to identify the most energy-efficient products on the market.

For advice on how to take action and to find out about offers available to help make your home more energy efficient, call 0800 512 012 or visit www.energysavingtrust.org.uk/myhome



CERTIFICAÇÃO ENERGÉTICA
E AR INTERIOR
EDIFÍCIOS

Nº CER 1234567/2007



CERTIFICADO DE DESEMPENHO ENERGÉTICO E DA QUALIDADE DO AR INTERIOR

TIPO DE EDIFÍCIO: EDIFÍCIO HABITAÇÃO UNIFAMILIAR / FRACÇÃO AUTÓNOMA DE EDIF. MULTIFAMILIAR
Morada / Situação:

Localidade _____ Freguesia _____

Concelho _____ Região _____

Data de emissão do certificado _____ Validade do certificado _____

Nome do perito qualif. _____ Número do perito qualif. _____

Imóvel descrito na ☐ Conservatória do Registo Predial de _____

sob o nº ☐ Art. matricial nº _____ Fracção autón. _____

Este certificado resulta de uma verificação efectuada no edifício ou fracção autónoma, por um perito devidamente qualificado para o efeito, em relação aos requisitos previstos no Regulamento das Características de Comportamento Térmico dos Edifícios (RCETE, Decreto-Lei Nº 200/2006 da Lei, de 29.09.06), avaliando o imóvel em relação ao respectivo desempenho energético. Nesta certificação poderá estar descritos os vários métodos de melhoria de desempenho aplicáveis à fracção autónoma ou edifício, suas partes e respectivos sistemas energéticos e de ventilação, quer no que respeita ao desempenho energético, quer no que respeita à qualidade do ar interior.

1. ETIQUETA DE DESEMPENHO ENERGÉTICO

INDICADORES DE DESEMPENHO

Necessidades anuais globais estimadas de energia útil para climatização e águas quentes kWh/m².ano

Necessidades anuais globais estimadas de energia primária para climatização e águas quentes kgpe/m².ano

Valor limite máximo regulamentar para as necessidades anuais globais de energia primária para climatização e águas quentes kgpe/m².ano

Emissões anuais de gases de efeito de estufa associadas à energia primária para climatização e águas quentes Toneladas de CO₂ equivalentes por ano

CLASSE ENERGÉTICA



2. DESAGREGAÇÃO DAS NECESSIDADES NOMINAIS DE ENERGIA ÚTIL

Necessidades nominais de energia útil para...	Valor estimado para as condições de conforto térmico de referência	Valor limite regulamentar para as necessidades anuais
Aquecimento	<input type="text"/> kWh/m ² .ano	<input type="text"/> kWh/m ² .ano
Arrefecimento	<input type="text"/> kWh/m ² .ano	<input type="text"/> kWh/m ² .ano
Preparação das águas quentes sanitárias	<input type="text"/> kWh/m ² .ano	<input type="text"/> kWh/m ² .ano

NOTAS EXPLICATIVAS

As necessidades anuais globais estimadas de energia útil correspondem a uma previsão da quantidade de energia que terá de ser consumida por m² de área útil do edifício ou fracção autónoma para manter o edifício nas condições de conforto térmico de referência e para preparação das águas quentes sanitárias necessárias aos ocupantes. Os valores foram calculados para condições normais de utilização, incluindo os efeitos de ventilação, de forma a permitir comparações objetivas entre diferentes imóveis. Os valores apresentados não são o resultado de consumo com iluminação e outros equipamentos. Os consumos reais podem variar bastante dos indicados e dependem das situações e padrões de comportamento dos utilizadores.

As necessidades anuais globais de energia primária (estimadas e valor limite) resultam da conversão das necessidades estimadas de energia útil em kilogramas equivalentes de petróleo por unidade de área útil do edifício, mediante aplicação do fator de conversão de consumo específico para a(s) forma(s) de energia utilizada(s) (0,179 kgpe/kWh para electricidade e 0,086 kgpe/kWh para combustíveis sólidos, líquidos ou gasosos).

As emissões de CO₂ equivalentes indicam a quantidade anual estimada de gases de efeito de estufa que podem ser libertados em resultado da conversão de uma quantidade de energia primária, quer às respectivas necessidades anuais globais estimadas para o edifício, usando o fator de conversão de 0,055 toneladas equivalentes de CO₂ por kgpe.

A classe energética resulta da relação entre as necessidades anuais globais estimadas e as necessárias primárias de energia primária para aquecimento, arrefecimento e para preparação de águas quentes sanitárias no edifício ou fracção autónoma. O melhor desempenho corresponde à classe A+, seguida das classes A, B, B+, C e seguintes, até à classe G de pior desempenho. Os edifícios com classe ou subclasse de construção posterior a 1 de Julho de 2006 podem atingir classe energética igual ou superior a B+.

Para mais informações sobre o desempenho energético, sobre a qualidade do ar interior e sobre a climatização energética de edifícios, consulte www.dnec.pt

Entidade reguladora



Agência Geral do Ambiente e Energia



Instituto de Ambiente
e Energia

Entidade gestora



Dnec
Direção Nacional de Energia e Climatização

5/6

ANNEX 9: ENERGY CONSUMPTION IN THE EU AND SAVINGS POTENTIAL OF APPLIANCES

This Annex provides an overview of the energy consumption in the EU in general and of energy consumption of appliances in particular, including their savings potential.

Energy consumption in the EU is estimated to increase by 9% from 2005 to 2020 with current policies in place¹⁰⁰. The household, commercial and industrial sectors (excluding transport) represent some 70% of the total energy consumption in the EU, with energy savings potential of close to 30%. The current Energy Labelling Directive only allows addressing the energy efficiency potential of the household sector, which represents 25% of the total energy consumption in the EU. A revised/extended energy labelling could capture part of the potential from the commercial and industrial sectors and contribute to the EU energy savings objective as set in the Action Plans on Energy Efficiency and SCP/SIP.

The Action Plan for Energy Efficiency identified a high potential for energy savings by 2020 in the household, commercial and industry sectors (27%, 30% vs. 25%). In 2006, annual consumption of electricity by the household sector in the EU-25 was estimated to be in the region of 800 TWh and growing at just under 2.3 % a year¹⁰¹.

In addition to the electricity consumed in operating household appliances such as white goods (fridge, washing machine, oven etc), lighting or consumer electronics (TV, Hifi, gaming consoles etc), account also needs to be taken of boilers and water heaters. Some 270 million tonnes of oil-equivalent are used for space heating in the EU-27 of which over 75 % was consumed in the household sector. Overall the household sector in the EU-27 consumes 338 Mtoe.

Apart from boilers and water heaters, the consumption attributable to the main categories of household appliances covered by the current scope of the ELD is shown in table 2.1.

Table 1: Stock and energy consumption of household appliances – EU-25, 2004

Type of appliance	Stock (No of units, million)	Average unit energy consumption (kWh/year)	Total energy consumption (TWh/year)	Annual Sales (No of units, millions)
Refrigerators	199	305	61	14 *
Freezers	93	383	35	4.2 *
Washing machines	169	217	36	13.8 *
Dishwashers	71	286	20	5.8 *
Electric ovens	-	-	15	-
Lighting	-	509	92	-
TVs	-	177	48	30.6 **
Other household ***	-	-	457	-

¹⁰⁰ COM (2008) final annex.

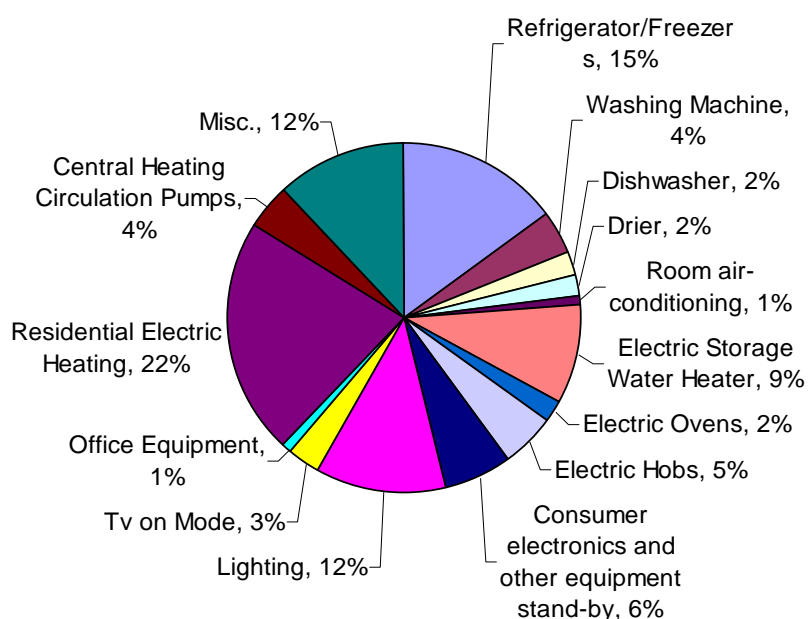
¹⁰¹ Europe's environment - The fourth assessment, European Environment Agency, State of the environment report No 1/2007.

•	Total	•	-	•	-	•	767	•	-
*The figures are the sum of sales in 2004 for West European countries and CZ, HU, PL and SK.									
**Figures are for EU25+, 2003									
— Source: Odysee, NMC, Ecodesign studies									
***consumer electronics (except TVs), air conditioning, electric heating and water heating, ICT...									

Detailed data is available only for a subset of appliances that account for roughly 300 TWh of electricity consumption¹⁰². Lighting, for which labelling has had a relatively low impact till now, is a major area of consumption, almost double the level for televisions which are not yet subject to mandatory labelling. Electric heating, air conditioning equipment and consumer electronics/ICT account for the bulk of electricity consumption not listed in this table.

The breakdown of electricity consumption by all categories of end use equipment is shown in figure 2.1 for EU-15 and in Figure 2 on the new Member States in 2004. Heating equipment and consumer electronics represent the main equipment not currently subject to mandatory labelling for the household sector.

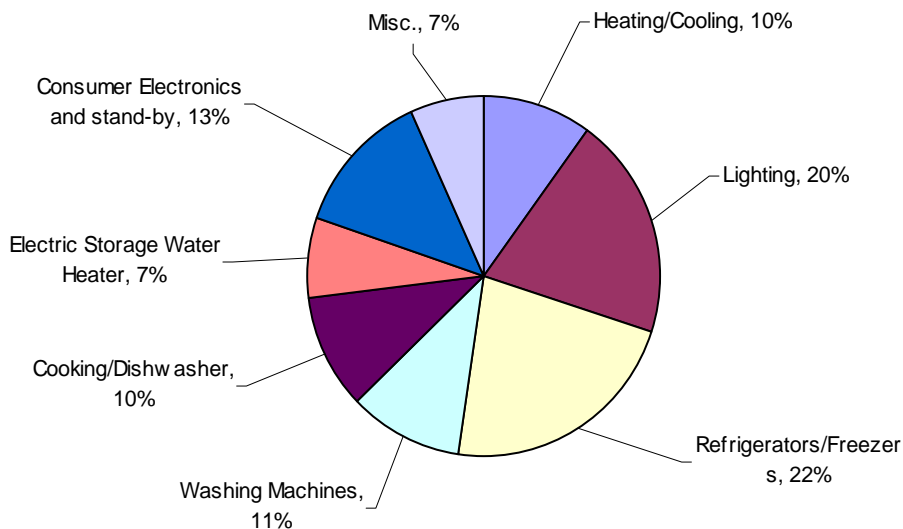
Figure : Breakdown of 704 TWh of electricity consumption among residential end-use equipment – EU-15, 2004



— Source: European Commission Status Report 2006, "Electricity Consumption and Efficiency Trends in the Enlarged European Union"

¹⁰² No detailed data is available on electric heating, office equipment, driers, air conditioning, water heaters, electric hobs, etc. However, figures 2.1 and 2.2 report a breakdown of consumption for more categories.

Figure 2: Breakdown of 63 TWh of electricity consumption among residential end-use equipment – New Member States, 2004



Source: European Commission Status Report 2006, "Electricity Consumption and Efficiency Trends in the Enlarged European Union"

The ELD only covers household appliances. However, the savings potential of other energy-using and energy-related appliances is significant, which to some extent could be addressed with energy labelling. Depending on the type of product and market, the provisions of the ELD can be used either for the setting of the label together with product information on products displayed in shops/outlets or for the setting of levels for efficiency classes only without the label for products sold in the OEM market. For example, the figure 3 shows the efficiency levels corresponding to the efficiency classes on the energy label of refrigerators. Energy efficiency levels are calculated for each appliance according to its consumption and its compartments' volume taking into account the appliance type. The level is thus not calculated in kWh but provides efficiency levels on a comparative basis. The value of the efficiency level speaks more for experts and informed purchases while the comparative energy efficiency class is more easily understood by non-professional customers.

Figure 3: Energy efficiency index and efficiency levels on refrigerators

A++	A+	A	B	C	D	E	F	G
<30	<42	<55	<75	<90	<100	<110	<125	>125

At best, the provision of energy efficiency information is combined with information provision requirements under the Ecodesign Directive, which allows addressing both non-professional and professional OEM purchasers, who might be more conscious of the cost of running and maintaining equipment.

The background study and the Ecodesign preparatory studies have identified savings potentials of selected products as follow¹⁰³:

- Industrial motors: 9.85 TWh/a would be saved, if today's motors were replaced by IE2 level motors and an additional 5.55 TWh/a would be saved with IE3 level motors. In the service sector, the respective amount would be 7.85 and 3.65 TWh/a;
- Commercial refrigerators and freezers, including chillers, display cabinets and vending machines: total estimated 21 TWh savings potential by 2020. As most of this will be achieved by Ecodesign some quarter of the savings could be achieved by energy labelling;
- Windows: € 4 billion/a savings (25 million tonnes CO₂) would be reached if the conventional double glazing was replaced by low-e windows. Although a significant proportion of those savings would also be in the household sector, windows cannot be covered under the current ELD as they do not consume energy in the use phase.

As a main commercial product, refrigerators and freezers, including chillers, display cabinets and vending machines, would offer an estimated 21 TWh savings potential by 2020¹⁰⁴. These appliances are among the best candidates for energy labelling in the commercial sector. It can be estimated that energy labelling could reach some quarter of this potential analogously to the household cold appliances, corresponding to 4-6 TWh of savings by 2020. The lower relative energy savings reached by energy labelling from these appliances compared to household appliances in general is due to the type of markets in which the 'user' is not always responsible for the purchase decision. Also, there is an 'overlap' of household and commercial appliances meaning that the present implementing Directives already include some 25% of the refrigerator and freezer sizes used in commercial sector, e.g. in SMEs.

As a main industrial product, motors have been proposed by stakeholders to be addressed with energy labelling, which at the first glance could make sense. However, the Lot 10 Ecodesign preparatory study¹⁰⁵ advises to label motors under the new ISO 60034-30 motor efficiency standard rather than under the ELD. The ISO standard includes an efficiency classification and thus provides a globally accepted basis for motor efficiency labelling. A simple indication of the efficiency level on the motor name plate and in the documentation is a more cost-efficient way of handling the labelling of a product mainly traded in the OEM market (industry to industry business). This could be achieved under the Ecodesign Directive (where retailers are not to be addressed). The same applies to fans and pumps which do not necessarily require labelling under ELD. However, labelling under the ELD would most probably make sense in the smaller power ranges of these products, as they are more frequently put on the market through outlets/shops.

However, it can be difficult to define the boundaries between 'residential/household', 'commercial' or 'industrial' product. The same lighting, refrigeration or air-conditioning household appliance could be used also in the smallest SMEs in the commercial sector. The approach to partially solve this problem in most reports is to consider appliances that are intended for households as household appliances, regardless in which sector they are used. The same applies to the border line between commercial and industrial products (e.g. motors, pumps, ventilation and air-conditioning products).

¹⁰³ Background study on industrial motors and windows and Ecodesign preparatory study lot 12 on commercial refrigeration: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm#studies

¹⁰⁴ Ecodesign studies: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm#studies

¹⁰⁵ http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm

ANNEX 10: ACHIEVEMENTS OF ENERGY LABELLING AND PROBLEMS THEREOF

This Annex provides a more detailed description of the achievements of the energy labelling than the body text, including complementary information on problems related to energy labelling.

In the absence of systematic monitoring and evaluation of the ELD over the past years, a specific background study¹⁰⁶ was launched by the Commission. The background study, together with a number of other reports on the performance of the energy labelling, provide a clear broad picture on main issues at stake, although many of the details are beyond the reach of this report.

There have been a number of studies on the impact of the ELD¹⁰⁷, including the external background study to this report. The studies demonstrate an increased take up of higher efficient appliances over the past decade. The impact has been greatest for white goods, particularly refrigerators, freezers and washing machines. The take up of higher energy efficient appliances has been greater in the EU-15, where the directives have been in place for a longer time, than in the new Member States. However, the New Member States are currently making a leap directly to A-class appliances thanks to the label that has made manufacturers less interested in producing lower-efficiency appliances. The success of the labelling scheme is also demonstrated in the high number of third countries that have adopted a similar label or sometimes an exact copy of the EU energy label¹⁰⁸ as show in Annex 7. Also, the energy label has been recently copied by other sectors within the EU and third countries (see Annex 8).

It is estimated that with all current policies already in place, a total of 65 TWh to 75 TWh per year would be saved by 2010¹⁰⁹. While it is difficult to separate out the impact of labelling from other factors such as minimum efficiency standards or "business as usual" technical development, it has been estimated that energy labelling schemes could account for about half of the increased take up of higher energy efficient appliances, contributing in total to some 35 TWh of savings per year (2010)¹¹⁰ and corresponding to some 3 Mtoe¹¹¹ of primary energy. The rest of the savings is composed mainly of technological development and minimum energy performance requirements set under Directive 2005/32/EC (Ecodesign Directive) for

¹⁰⁶ Study on a possible extension, tightening or simplification of framework directive 92/75/EEC on energy labelling of household appliances, Report by Europe Economics and Fraunhofer-ISI with BSR Sustainability and FfE, 19 October 2007.

¹⁰⁷ E.g. OECD/IEA, Energy labels and standards, 2000; GSK and Fraunhofer ISI, 2001, Evaluating the Implementation of the Energy Consumption Labelling Ordinance; IEA, 2003, Cool appliances: policy strategies for energy efficient homes; Atkins ad ATN, 2006, Impact Assessment of the Future Action Plan for Energy Efficiency; European Commission Joint Research Center, 2006, Electricity Consumption and Efficiency Trends in the Enlarged European Union; Benoit Lebot (UNDP-GEF) and Paul Waide (IAE), The European Energy Label: An energy efficiency success story with an impact beyond EU borders; ANEC-R&T, 2007, A review of the range of activity throughout Member States related to compliance with the EU Energy Label regulations in those countries

¹⁰⁸ Benoit Lebot and Paul Waide, The European label: an energy efficiency success story with an impact beyond EU borders.

¹⁰⁹ Electricity Consumption and Efficiency Trends in the Enlarged European Union – Status Report 2006. P Bertoldi, B Atanasiu. 2007

¹¹⁰ Background study: http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation

¹¹¹ Estimated electricity savings by the ELD are about 35 TWh by 2010. For convenience, savings in electricity (TWh) are converted to savings in primary energy (Mtoes). A conversion factor of 0,086 is used based on the EU Energy and Transport in Figures, Statistical pocketbook, 2007/2008.

fridges, freezers, ballasts for fluorescent lighting and hot-water boilers. For example, as to cold appliances, it has been estimated that between 1996 and 2004, the average efficiency of newly purchased cold appliances improved by 30 per cent, dishwashers by 35 per cent and washing machines by 23 per cent. The above estimate on the savings due to energy labelling is supported by a report from CECED estimating that annual electricity consumption by appliances installed in European households fell by 34 TWh per year on 1995 to 2005¹¹².

The scale of the current take up of higher efficiency appliances can be seen in Table 1 and Figure 1 for the EU15.

Table 1: Energy rating of household appliance - percentage of sales – EU 15, 2004-05

	% A or above	% B	% C or below
Refrigerators	61	30	9
Freezers	47	26	27
Washing machines	79	11	10
Dishwashers	81	11	8
Electric ovens	47	37	16
Lighting (households)	54% households with some CFLs		

Source: EC Status Report 2006

As one sees for all household appliances (excluding lighting), the majority of products are either rate B or above. (We discuss the new Member States below).

Figure 1: Energy rating of household appliance - percentage of sales – EU 15, 2004-05

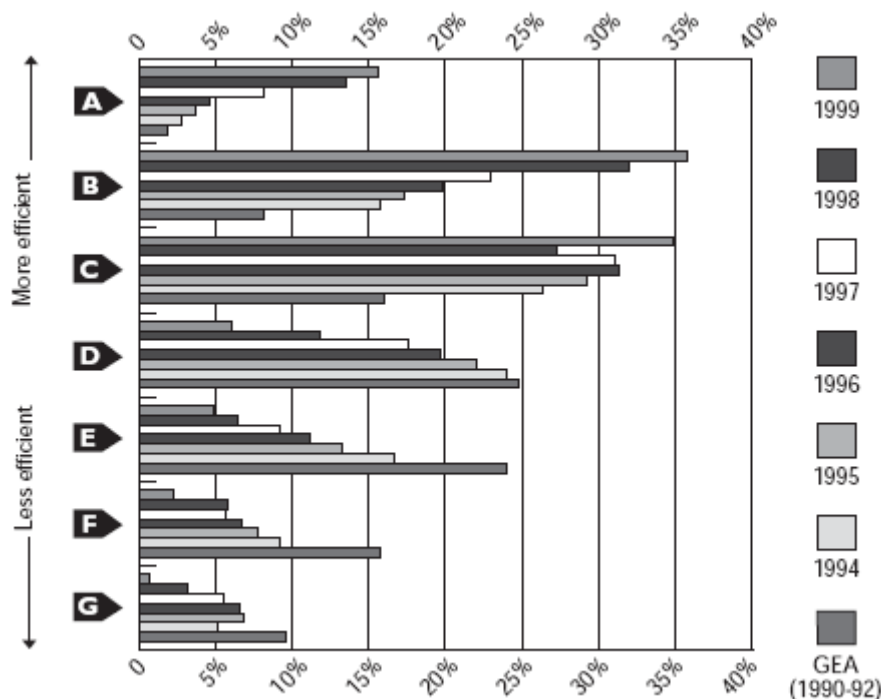


Source: EC Status Report 2006

¹¹² Energy Efficiency, A shortcut to Kyoto Targets. The Vision of European Home Appliance Manufacturers. Ceced 2006.

As has been emphasised in an IEA report¹¹³, the introduction of the labelling programme has shown a marked progression towards the more efficient categories (A appliances). The figure below illustrates this, with fewer and fewer products being sold in the less efficient classes of D or below.

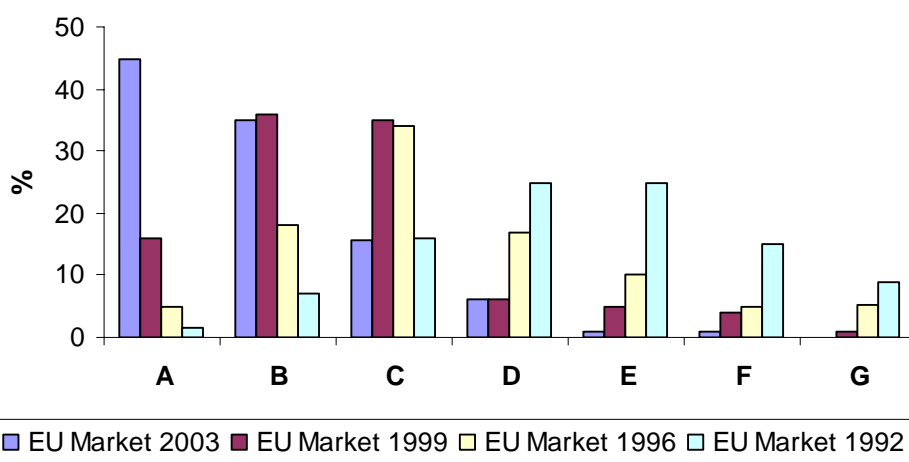
Figure 2: Share of EU cold appliance market by labelling class from 1990-92 to 1999



Source: Waide 2001

As an example we can look at refrigerators. Recent market data on the share of energy efficient appliances suggests that the EU market for refrigerators is moving towards a higher share of most efficient classes of appliances (i.e. the impact of labels on refrigerators seems to have been quite important).

Figure 3: Labels impact on EU refrigerator market

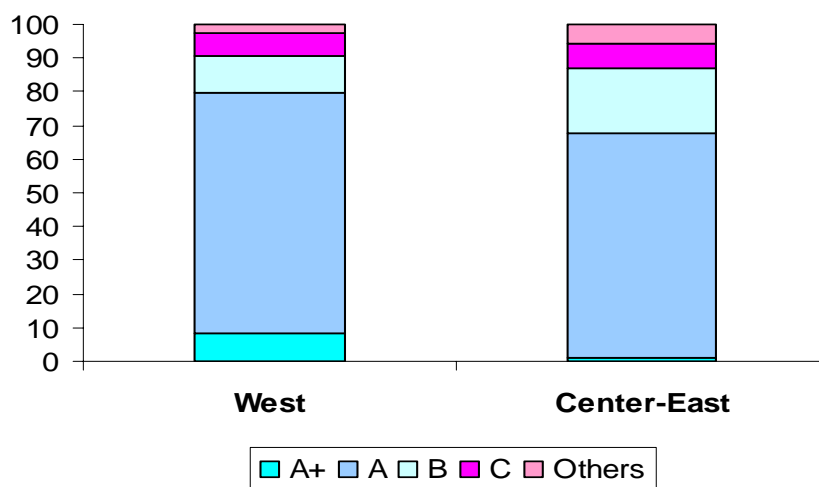


Source: Waide 2004

¹¹³ IEA, 2003, Cool appliances: policy strategies for energy efficient homes.

Encouragingly, within the new Member States the number of A rated appliances sold is also high, as can be seen in the case of washing machines.

Figure 4: Breakdown of 13.8 millions of sales per washing machines classes in EU, 2004



Note: 8 Countries East: PL, CZ, SK, BG, SI, RO, HU, and HR;

10 Country West: AT, BE, DE, ES, FR, GB, IT, NL, PT, SE

Source: Overview of sales and trends for main appliances, GfK 2004

The benefit of more efficient products being sold also has an impact on the stock of products. As older products are replaced, the flow of new, more efficient, products adds to the existing stock of products. This means over time the entire stock of products becomes more efficient and so energy savings accumulate.

It has been estimated that between 1996 and 2004/05, the average efficiency of newly purchased cold appliances improved by 30 per cent, dishwashers by 35 per cent and washing machines by 23 per cent. It is estimated that with the current policies already in place, 65 TWh to 75TWh per year could be saved by 2010¹¹⁴. It is assumed that more than half, some 35 TWh (3 Mtoe), is due to labelling, the remaining part is due to structural technical improvements.¹¹⁵ Industry comes to conclusions of the same order of magnitude estimating that annual electricity consumption by appliances installed in European households fell by 34 TWh between 1995 and 2005, a fall of 12 per cent.¹¹⁶

These results are similar to those in third countries, e.g. in Australia and Switzerland when the provision of information on appliance running costs has been increased. From the Australian NAEPP programme there is evidence to demonstrate decreases in energy consumption of 1 to 6% and increases in energy efficiency of 1.4 - 3.6% across the use of 5 main appliances during the period 1993-2001. It has been estimated if labelling had not been introduced, the annual electricity consumption of all new appliances (of the types labelled) in 1992 would have been about 11% higher than it was, and the total household electricity consumption in Australia would have been about 1.6% higher. Projections from the Swiss E2000 energy label (which were granted only to appliances which met targets of power consumption in different

¹¹⁴ Electricity Consumption and Efficiency Trends in the Enlarged European Union – Status Report 2006. P Bertoldi, B Atanasiu, 2007.

¹¹⁵ Impact Assessment Report for the Action Plan for Energy Efficiency 2006:
http://ec.europa.eu/energy/action_plan_energy_efficiency/index_en.htm

¹¹⁶ Energy Efficiency, A shortcut to Kyoto Targets. The Vision of European Home Appliance Manufacturers, Ceced 2006.

modes of operation, linked to running costs) also estimated savings of approximately 1% of Switzerland's overall electricity consumption.¹¹⁷

Using only energy savings as a benefit (that is allocating no monetary value to the environmental benefits), the NAEEEP is projected to deliver almost 4.2 billion Australian dollars to the community (after the projected \$2.6 billion costs are deducted from the \$6.8 billion energy savings at 10 % discount rate by 2018). This experience suggests that such schemes to increase awareness of running costs/energy efficiency are cost effective. Savings can be achieved at a negative cost to society. The extra costs of more efficient appliances are offset by savings in running costs over the life of the appliance. No effect expected on availability or cost of inputs, access to finance or investment cycle. Action will promote the most efficient technologies available over inefficient technologies.

Table 2: Overall effectiveness of labelling

		• Compliance	• Importance of energy efficiency	• Influence of label on purchase
•	Denmark	• ***	• ***	• 56
•	Netherlands	• ***	• ***	• 45
•	Austria	• **	• ***	• 39
•	Sweden	• **	• ***	• 39
•	Finland	• **	• **	• 41
•	Portugal	• *	• **	• 35
•	UK	• ***	• *	• 24
•	France	• **	• *	• 32
•	Ireland	• **	• *	• 15
•	Spain	• *	• *	• 19
•	Greece	• *	• *	• 4

Note: ***>70%; **50-70%; *<50%

– *Source:* Shiellerup, Winward, Boardman, Cool Labels 1998

The background study also note that the European energy label design has been successfully copied in a number of other jurisdictions for a number of products (for illustration, see Annex 7). Nonetheless, one must be careful not to attribute the increase in sales of energy efficient products wholly to energy labelling. Given the range of policy instruments directed at encouraging the take up of energy efficient products and the financial benefit to consumers from reduced energy costs, it is difficult to attribute a specific degree of influence to the introduction of the mandatory labelling schemes. One study¹¹⁸ suggested that the impact of labelling was closely linked both to the level of compliance and to general awareness of the importance of energy efficiency. It was told that in favourable circumstances the existence of the label could account for over half of the take up of the higher efficiency appliances.

These studies also identified problems with labelling. In the early years, compliance in terms of failure to display labels or incorrect labelling, was an issue. The situation has improved but

¹¹⁷ Impact Assessment Report for the Action Plan for Energy Efficiency 2006:
http://ec.europa.eu/energy/action_plan_energy_efficiency/index_en.htm

¹¹⁸ Shiellerup, Winward, Boardman, Cool Labels 1998

compliance remains a concern. The design of the label has generally been commended for its effectiveness in signalling relative efficiency of products but there has been concern that consumers can be confused by a mix of formal and informal advice.

More recently criticism has focused on the fixed nature of the A-G scale and the need to recalibrate the scale to allow for improvements in technology which have taken place since the scale was first set which mean that “A” rated products are no longer at the leading edge of energy efficiency. A more detailed description of the directives and of the main evaluation studies is given in Appendix 1 of the background study.

The background study identifies some positive **social impacts** due to the broadening of the scope of the ELD but the impacts are rather speculative. Anyhow, energy labelling does not have the same possible short term social impacts on low income households than minimum performance requirements might have, as it does not cut off products from the market. On the contrary, energy labelling guides consumers towards appliances that are cheaper over the life cycle of the product and as such better also for the environment and society. Doing so, it promotes increased demand of higher energy efficient appliances implying that over time the cost of these appliances will go down due to increased demand, which is positive particularly for low income households. Energy labelling does not put a constraint on household budget or restrict the choice of products but guides consumers towards the most economic and environment-friendly products over the life cycle of the product. To help low income households to benefit from these savings, apart from labelling information, incentives for consumers are useful to further facilitate the uptake of higher class models, taking into account the specific economic and market situation in each Member State. Also, public procurement can support this objective in creating demand for high-efficient appliances and help reducing the price through higher production series.

ANNEX 11: ENERGY EFFICIENT PUBLIC PROCUREMENT AND INCENTIVES

This Annex describes the problems that can be tackled and the potential impacts (positive and negative) of changes to public procurement and incentives included in Options 3 and 4. Option 3 includes amending the ELD with coverage of all energy-using products (excluding means of transport) and energy-related products. The ELD would be implemented through implementing measures rather than through Directives, and they would serve as a framework for Member State public procurement and incentives across the Internal Market.

Option 4 includes repealing the ELD and implementing its provisions through the Ecodesign Directive. It would cover the same scope and include the same actions and general implementation framework as analysed under the option 3.

1. Problems

- **Significant energy use and the related environmental impact from public authorities' energy-using products:**

Energy consumption from public authority use of products forms a notable part of the problem tackled by the ELD in particular once expanded beyond household appliances. Public authorities spend around 16% of the EU's Gross Domestic Product. Part of this is spent on energy using products covered by the ELD with often even greater shares of expenditures on the energy used by the product during its lifetime.

- **Purchasing practices by public authorities cost them more over the lifetime of the product when purchasing cheaper but energy inefficient products**

Public authorities will lose significant amounts of money each year if they do not take into account the costs of the energy use of products when deciding on which products to buy. Although limited budget availability would incite public authorities to opt for products with lower purchasing price, they risk paying more at term for its use (even where energy labels are in place).

- **Slow market uptake of more energy efficient products holds back price decreases and innovation in energy efficient products**

The failure of consumers, including public purchasers to take into account energy prices reduces sales of energy efficient products. Slow increases of market share for more energy efficient products in turn reduces the return on investments in energy efficient design: – as manufacturers get longer pay back periods for any investments to improve their products, so are less willing to invest. Over time, the slower rate of improvements in energy efficiency will have a great effect on future energy use. This slow rate of improvement holds back energy saving goals.

2. Objectives

Better Public procurement and the introduction of incentives in Options 3 and 4 have the following objectives:

- To reduce costs for public authorities (over the lifetime of products) by reducing the annual energy bills;

- To reduce consumption of energy and of other essential resource by products bought by public authorities;
- To promote innovation in energy efficiency of products, by increasing the sales of the more energy-efficient products on the market;
- To avoid confused market signals to producers from a scattergun of incentive schemes.

3. The 'Do Nothing Scenario' – problems with current practices

A) Inefficient and costly Public procurement of energy using products

Currently, public procurers often buy products which are more expensive for the authority than other products on the market, particularly once the running costs are taken into account.

Taking an example from the market for water boilers (from an Ecodesign preparatory study): the table 11.1 shows that the product usually purchased is significantly more expensive over the lifecycle than many others on the market. It is also more energy consuming and environmentally harmful.

Table 11.1: Energy performance and costs of large size water heater

Large water heaters	Primary energy consumption KWh/a	CO ₂ emissions over life cycle tonne	Purchase price €	Life cycle cost €
Current model purchased	7375	75	1189	9001
Least life cycle cost	5023	51	937	6341
5	5004	51	4000	11605
6	4850	49	1750	7423
7	4549	46	2517	8328
8	4214	43	1800	7268
Best available technology	4014	41	2180	8053

Source: Task 6 of the Ecodesign preparatory study on water heaters

- The EU currently lags behind its global trade partners in implementation of public procurement measures aiming at improving energy efficiency and environmental improvement. In the US the public procurement provisions of Energy Star have been applied already for a long time and have for example contributed to driving upwards the entire energy efficiency market of office equipment. Similar provisions were introduced in the Community at the end of 2006 under the Energy star programme covering office equipment.
- No framework at the level of the Internal Market exists on energy efficient public procurement or incentives. Divergent practices weaken the market signals for business.
- The Commission services do not have information on the levels of public procurement that looks particularly at energy efficiency considerations. For "green" public procurement

a recent study “Take 5”¹¹⁹ shows that about 35% of procurement practices have significant 'green' criteria while in other cases Member States inclusion of green criteria is weak.

Drivers for Change

- The European Commission, the Council and the European Parliament have recognized the importance of using public procurement as a means of stimulating sustainable consumption and production and pulling environmental technologies into the market place¹²⁰.
- In June 2006, the Council has adopted the renewed EU Sustainable Development Strategy¹²¹ including the goal to bring the average level of EU green public procurement procedures that include energy and environmental considerations up to the standard currently achieved by the best performing member states by 2010. However, voluntary actions at national level are not sufficiently connected and implementation is not sufficiently dynamic and forward-looking to drive the performance of products upwards. Divergent national and regional approaches send conflicting signals to producers, and as a result the full potential of the Internal Market is not realized.
- Directive 2006/32/EC on energy end-use efficiency and energy services¹²² provides that the public sector should fulfil an exemplary role by adopting at least two measures from a list in Annex aimed at procurement of energy efficient equipment and buildings.
- The new Energy Star Regulation¹²³ already obliges central government to apply, in their procurement procedures for office equipment, the energy efficiency requirements as included in Energy Star Standards.

Experience points out that these commitments will not solve the problems by themselves¹²⁴. Option 3 and 4 are in line with these commitments and expand the policy approach in the Energy Star Regulation.

B) Lack of stimulation of innovation and the longer term impact on prices and energy efficiency

Different market signals from public purchasing limits sales of more efficient products. This has two effects:

- It limits innovation in more energy efficient products, by reducing the attractiveness of investment by manufacturers; and
- It limits the economies of scale that the producer could benefit from – and so the price of the more energy-efficient products remains higher.

¹¹⁹ http://www.ec.europa.eu/environment/gpp/pdf/take_5.pdf

¹²⁰ EP resolution of 5 July 2005 on the Communication on the implementation of ETAP (COM(2005) 16 final).

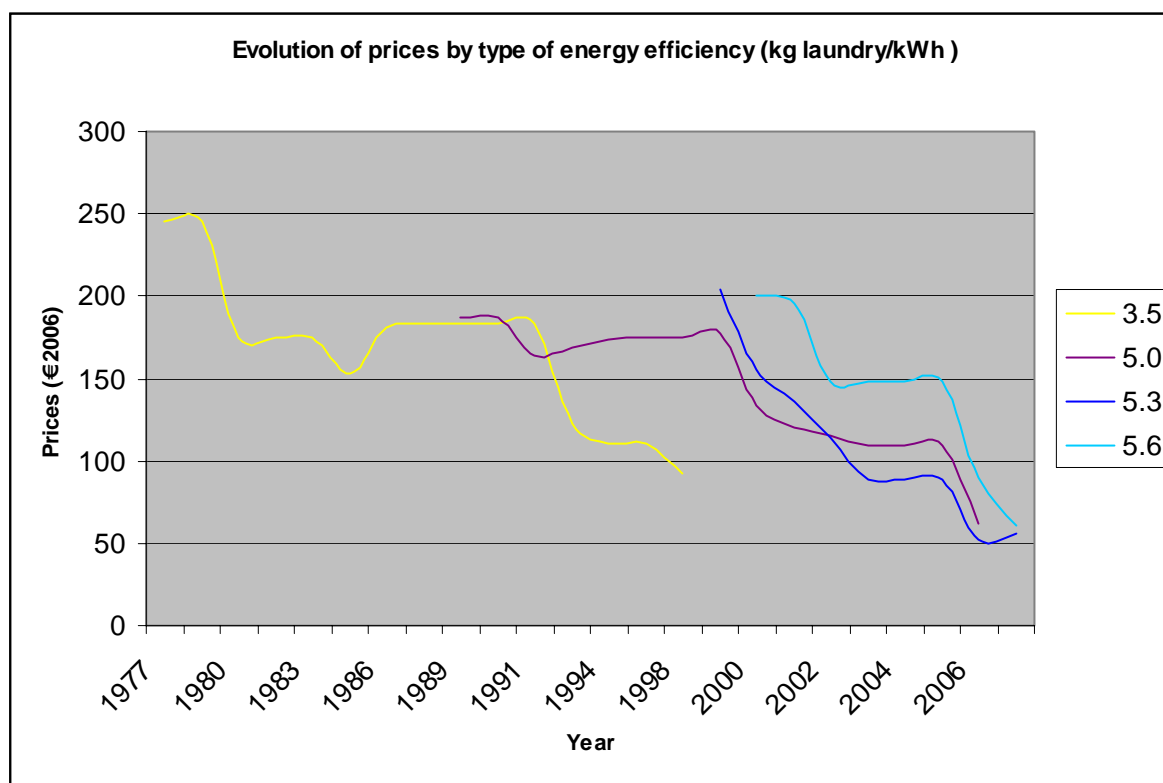
¹²¹ http://ec.europa.eu/sustainable/sds2006/index_en.htm

¹²² OJ L 114, 27/04/2006.

¹²³ http://ec.europa.eu/energy/demand/legislation/energy_star_programme_en.htm

¹²⁴ Also, see Commission Working Paper SEC(2008) 2126/2.

Figure 11.1: Dynamic effects of increasing market share (proxied by time) on price



Own calculations based on data provided by Copernicus Institute of the Universiteit Utrecht.

Figure 11.1 above points to this missed potential. This describes the market for washing machines in the Netherlands. The horizontal axis represents time. The vertical axis represents the price of the washing machines. The lines represent different models of washing machines based on the energy efficiency. (The energy efficiency is measured as the load (in kg) for a kWh of electricity. The higher the load per kWh the more efficient is the appliance¹²⁵).

The figure illustrates that the price for a given energy efficiency level declines over time which is due to learning and economies of scale in production as volumes of production of more efficient models increase. This price decline accelerates once a new, more efficient model is established on the market.

A broad literature survey for energy using products and energy related products indicates that for every doubling of the cumulative volume sold, costs for these products would decrease between 15-20 %.¹²⁶

In the Netherlands, according to a report by IVM¹²⁷, the introduction of incentives for more energy efficient white goods in the Netherlands from 2001 led to significantly faster market penetration of more efficient products. This is estimated to have brought forward the energy efficiency of the market by 3 years – so speeding up the decline of prices by 3 years.

¹²⁵ For example, to wash 5 kg of laundry, with an appliance whose efficiency is 3.5kg/kWh, the appliance will need to use 1.43 kWh (5kg/3.5 kg/kWh) and operate during almost 86 minutes (1.43*60 minutes). An appliance whose efficiency is of 5.6 kg/kWh would, for the same 5 kg of laundry, use only 0.88 kWh and run less than 53 minutes.

¹²⁶ Junginger et al (2008) Technological learning in the energy sector. This study has been performed within the framework of the Netherlands Research Programme on Scientific Assessment and Policy Analysis for Climate Change (WAB).

¹²⁷ IVM and consortium for the European Commission (DG ENV) "The use of differential VAT rates to promote changes in consumption and innovation" (2008).

Public procurement and incentives (as for energy labelling) have the same kind of effect, if designed correctly.

On the reasonable assumption that earlier returns on investment will lead to greater investment by manufacturers in efficiency, greater rates of innovation would result if incentives and public procurement across Member States pulled in the same direction. Public procurement can provide market rewards for more efficient products, providing manufacturers with incentives to invest in design of more efficient products (whilst still saving authorities costs).

A recent OECD Report on the Environmental Performance of Public Procurement (2003) refers to several examples of product invention in response to procurement initiatives, including the development of highly energy efficient clothes dryers, electric motors, and office copiers¹²⁸.

C) Reduced impacts on the market from a scatter-gun approach to incentives

Many Member States provide financial incentives, such as grants for substitution of electricity for heating (Sweden), ecological tax reform (Germany), refunds for Category A++ appliances (Belgium) that intend to encourage consumers to buy more energy efficient products. Many of these incentives are linked to the implementing Directives of the ELD. Where this is not the case, the criteria can differ substantially from one country to another. The result is a fragmentation of the Internal Market for the products concerned.

The following tables show the example of fiscal incentives on roof insulation and energy saving windows in some countries with similar climatic conditions.

Table 11.2: minimum requirements and incentives for insulation in some Member States 2005; the case of roof insulation.

Member State	Minimum R value ¹²⁹	Amount €	Maximum amount/share granted €
Belgium (Fed)	2.5	tax reduction: 40% of the price	2 600
Brussels	4	20/ m ²	20% of the price
Wallonia	3	4-8/m ²	10 000
France	3	Tax credit: 25 or 40 % of the price	-
Luxembourg	4.3	13-15 /m ²	-
Germany	4.5	100 % interest rate paid by the Bund	-

Despite of similar climate conditions, the incentives are based on quite different performance criteria. For example, a producer that supplies windows with a U-value¹³⁰ of 2.0 will benefit from increased demand due to fiscal incentives only in Belgium but not for example in Luxembourg or Germany. This limits the economies of scale that the producer and ultimately the consumer could benefit from, if the basis for incentives was the same across Member States for similar climate conditions.

Table 11.3: minimum requirements and incentives for insulation in some Member States 2005; the case of windows.

¹²⁸ Westling 2000.

¹²⁹ R-value is used to describe insulation properties of certain building insulation materials. The SI unit for R-value is Kelvin square meters per watt (K·m²/W).

¹³⁰ The U-value describes how well a building material conducts heat. It measures the rate of heat transfer through a material of known thickness over a given area under standard conditions (Unit: W/m² °C of temperature difference between both sides of the heat transfer).

Member State	Maximum U value	Amount €	Maximum amount granted €
Belgium (Fed)	2	tax reduction: 40 % of the price	2 600
Brussels	2	25/m ²	20 % of the price
Wallonia	2	40/m ²	10 000
France	1.5 - 2	Tax credit: 25 or 40 % of the price	-
Luxembourg	1-1.3	12-30/m ²	-
Germany	1.3	100 % interest rate paid by the Bund	-
Austria (Vienna)	1.9	2-3 % of the annual loan cost	-

4. Options on public procurement and incentives in Options 3 and 4

Under either of these two options, the ELD would provide that:

- **implementing measures for products would use the labelling classes to set performance thresholds for public procurement or incentive schemes.**

This would not necessarily cover all products for which there are implementing measures but only products that are directly relevant for the use of public procurement or incentives. The relevance would have to be demonstrated by product specific impact assessments.

For some of the most relevant products - office equipment – the Council and the Parliament have already accepted¹³¹ introducing compulsory public procurement based on energy efficiency criteria.¹³² These existing measures would not be duplicated, but the approach extended to other relevant products.

The thresholds set for public procurement in implementing measures would be set (in line with a requirement in the Directive) at a level that they would:

- be at an appropriate level which would ensure sufficient competition in the market;
- take into account the potential of the procurement to stimulate the market for energy efficient products. Considerations include setting the level at a sufficient high level to stimulate the market but also on whether the share of public purchases is sufficient to influence the market;
- assure that the threshold is such that the products' life cycle costs are lower than current practices.

Member States have already committed to make use of public procurement as an instrument to generate cost-effective energy savings. Article 5 and Annex VI of Directive 2006/32/EC on energy end-use efficiency and energy services sets out that they shall ensure that the public sector purchase energy efficient equipment with minimized life-cycle costs to ensure cost-effectiveness.

5. Benefits and Costs

The key benefits from introduction of the measures in Options 3 and 4 would be:

¹³¹ Regulation EC N°106/2008 on Energy Star.

¹³² Without prejudice to cost-effectiveness and taking into account the minimum thresholds laid down in Article 7 of Directive 2004/18/EC on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts.

- Net financial benefits to public authorities;
- Reductions in the cost for the public budget of achieving existing energy goals and related environmental goals;
- Reductions in environmental harm from public actions;
- Greater effectiveness of the Energy Label and Ecodesign Directives;
- Public procurement levels would be an incentive for manufacturers to invest in more energy- and resource-efficient products thus drawing the market upwards, the levels could also be set such that they facilitate the gradual adjustment of the minimum requirements over time.
- Stimulation of innovation in energy-efficiency and decreases in price of energy efficient products over time.

The key costs from the introduction of the measures could be for some product groups, but not all, thresholds that raise the upfront costs for authorities. Even where there are cost savings over the lifetime, this may cause problems with existing accounting practices and funding in some authorities.

Note that the choice on where to put the performance level with associated upfront costs and energy savings would be made in the implementing measures and decided through committee procedure. The Commission believes that this procedure offers sufficient guarantees to avoid the imposition of unjustified increases in upfront purchase costs when setting thresholds. Moreover, guarantees are taken up in the legislation on what should be considered when drafting the implementing measures allow for appropriate outcomes. It also ensures that sensitivity analysis is carried out to take into account various welfare and living standards in the EU.

These benefits and costs are described in more detail below.

A) Direct financial benefits to public authorities

There would be net financial gain for public authorities from the purchasing of more energy-efficient products that would result from the options including public procurement. The financial benefit of purchasing of products can not be judged only from looking at the purchase price – but must take into account the costs of energy over the lifecycle.

It is important to note that the most cost-efficient product over the lifetime might also have a lower purchase price than the products currently purchased.

• Example 1: Water heaters

7 % of water heaters sold on the EU market are bought by public authorities. The prices paid in the market and the life-cycle costs are shown above in Table 11.1. The Table shows the energy performance and prices for different types of large size water heaters. The current standard model costs € 1 200 in purchase cost and € 9 000 in life-cycle cost. As the table shows, the product with lowest life-cycle cost (€ 6 350) is also the least expensive to purchase (€ 950) but is not the most commonly purchased.

Therefore, public procurers could buy even more energy efficient products than least life-cycle cost without being worse off than with their current procurement practices. Indeed, in this particular case, on the assumptions used, public procurers would save € 950 by shifting from current models purchased to the *best* technology available on the market.

However, thresholds for public procurement would be likely to be set well below the best technology on the market, to take into account the difficulty some authorities have in funding purchases (partly due to budgeting rules that do not take into account future savings) and to leave sufficient competition on the market. This would have to be carefully considered in product specific impact assessments.

In cases like this, the structure of the market may not change significantly in future: the prices and costs of energy will change (energy costs probably being higher than those used in the data, which dates from before 2008). The Ecodesign of Energy Using Products Directive may bring forward implementing measures e.g. for water heaters with the aim of removing inefficient products from the market. However, in practice, future minimum requirements set by the Ecodesign Directive could well be set below the energy efficiency level that brings minimum life-cycle cost (to account for other considerations such as 'competitiveness' or affordability, in particular regarding low income households.) This would leave the market structure similar to the existing structure.

- **Example 2: Heating, Ventilation and Air Conditioning Systems (HVAC Systems)**

A life cycle cost evaluation of alternative HVAC systems carried out in the US in 2005, has led a public authority to buy a HVAC system, based on an alternative energy-efficient technology, whose energy consumption was markedly lower so that **cost savings outweighed higher capital and maintenance costs** as well as yielding environmental benefits in terms of reduced greenhouse gases and other air pollutants¹³³.

- **Example 3: Public street lighting**

Public procurement makes up 39 % of the market for lights that can be used for illuminating large spaces. Other uses are in industry or for example purchases for football stadiums. If the 2.1 million street lights currently procured per year would be upgraded to best available technology, there would be **savings of €323 million** over the life cycle (while at the same time saving an additional 7.7 million tonne of CO₂ over the life cycle of the product).¹³⁴

The above are examples where, after an extensive study, performance levels could be set below which public procurement and incentives are not allowed. Other examples can be found where it will not make sense to set such performance levels and the product by product assessment methodology would then not justify action.

Estimating the direct financial benefit

The full financial benefit to public authorities from introduction of Option 3 or 4 can not be calculated. It would depend on the thresholds set in implementing measures, the relative purchase price of products, energy costs and the number of products bought by authorities. Product specific impact assessments will be used to estimate benefits (and costs) of possible thresholds in implementing measures. However, indications of the potential financial benefits can be estimated for some examples and indicate that the potential financial benefits are very large.

In the water heater example, setting thresholds at the level of least life cycle cost is estimated to **save €2bn**.

¹³³ Fuller, Sieglinede and Stephen R. Petersen, 1996 *Life-Cycle Costing Manual for the Federal Energy Management Program*, referred to in 2003 OECD Report on the environmental performance of public procurement.

¹³⁴ Calculations based on PWC (2008) Study on public procurement for energy efficient products in the European Union. The same CO₂ per MWh conversion factor as for water heaters has been used.

Table 11.4: Aggregate results of public procurement (PP) requirements

Absolute differences	Current procurement practice	Compared with current procurement practice	
		100% PP with least life cycle cost	100% PP with more ambitious products
Purchase cost million €	594	-45	441
Total Life cycle cost M €	7,611	-2,063	-1,546
Energy consumption GWh	70,195	-22,734	-26,573
CO ₂ total emissions Mt	48	-15.5	-18.1

B) Reducing the cost for the public budget and environmental harm

By using energy efficiency to meet environmental goals, society is able to achieve environmental goals at a lower cost than through many other methods.

This is particularly the case under the threshold for public procurement likely to be set under the implementing measures; the purchase of a more efficient appliance would save authorities money over the life of the product.

Authorities could voluntarily go further, to gain additional environmental savings from purchasing best available technology. This would come at additional cost, though it would still be likely to be more efficient than other means – but this extra effort is not what Options 3 and 4 would require.

Environmental problems impose costs on society, for example through sickness from poor air quality arising from power generation emissions. Member States set environmental policy goals to reduce these harms and spend public money to achieve them. Yet, the expenditure decisions of public authorities tend to contribute to environmental harm. This is not efficient: a contradiction in public policy. Usually, the way to best cut those costs is to reduce the harm caused by public authorities.

In the example above, in purchasing the most efficient technology public authorities would save 34 tonne of CO₂ over the life cycle of each water heater, which at € 30 per tonne of CO₂ is valued at an additional € 920 savings/product. That €920 is a social benefit, but the public authority also benefits from reduced energy expenditure. If the public authority had to achieve that €920 benefit in ways which cost the same upfront, but which did not save energy, achieving that benefit would be more expensive.

In the water heater example, in terms of CO₂ savings, ambitious public procurement targets on energy efficiency would save 15.5 million tonnes of CO₂ compared to the current public procurement practices. This represents savings of 38 % and is valued at € 540 million at € 30 per tonne of CO₂.

C) Greater effectiveness of the ELD and Ecodesign Directives

The ELD labels provide information to consumers that allows them to choose products which fit their needs and save their money over the lifetime of the product – in particular to avoid selection of products with a cheap upfront cost but which has greater energy costs during use. By doing so, the Directive promotes energy efficiency across the EU for economic, geo-political and environmental goals.

The energy label promotes innovation by increasing market rewards for more efficient products. Shaping public procurement – which is a significant part of many markets – to reward the more efficient products simultaneously provides security of returns and higher returns for investments in innovation in energy efficiency. The higher the thresholds are, the greater this effect would be. The product specific impact assessments will have to consider the appropriate market share of appliances for appropriate competition based on the product group and the specificities of the market in question.

Although in principle minimum requirements for the Ecodesign Directive will be set at least life-cycle cost, for some products this might harm the competitiveness of the industry unduly or affect affordability for consumers. In such cases, minimum requirements will be only gradually set at the least life-cycle cost level. For those products, public procurement can be used to reward products that already satisfy higher energy efficiency standards and act as an incentive to accelerate and smoothen the transition towards more stringent minimum requirements.

For example, the technical study for water pumps suggests setting minimum requirements so that 10 % of the current less efficient water pumps on the market would be excluded in 2010. The requirements could be gradually strengthened so that 60 % of the current best performing products can remain on the market in 2020. In 2020, this would generate energy savings of 5.8 TWh per annum. In contrast, setting minimum requirements at the least life-cycle cost would imply that only 30 % of the best performing products currently on the market would remain viable. In 2020, this would generate energy savings of 8.8 TWh per annum but would come at an adjustment cost of € 1 billion to industry.¹³⁵ Here, the role of labelling and public procurement could be to allow for a smooth and accelerated transition towards more energy efficient products. Setting public procurement requirements at least life-cycle cost, would have direct environmental impacts, would drive the market upwards, would save money for public authorities and would leave from the start 30 % of the market open for competition.

D) Long-term economic benefits from increased innovation

There is also a long-term financial benefit for authorities from speeding penetration of energy-efficient technologies and innovation. Increasing volumes of energy-efficient products brings down purchase price of future purchases of efficient products (through economies of scale) so allowing authorities to save energy in future, whilst greater innovation means that more highly efficient products will become available to them in the future.

This would benefit both consumers and public authorities – but to bring about these innovation effects, public procurement would need to promote purchase of the products in the top of the market. Whilst this is possible, the thresholds in implementing measures are likely to be set below this level, to take into account financing considerations in public authorities.

• The benefits of thresholds for incentives

The benefits of incentives for promoting more energy-efficient products depend on a number of factors, but are similar to the benefits from public procurement measures – promoting the uptake of more efficient products, with both direct and long-term economic and environmental impacts.

The benefits of setting minimum levels for incentives in Member States come from the concentration of the market signal sent to manufacturers – if Member State incentives pull the market in the same direction, the greater the stimulus to market penetration and innovation.

¹³⁵ Note that the adjustment cost is provided by industry and not yet fully justified. See technical study on water pumps http://www.ecomotors.org/files/Lot11_Pumps_FinalReport.pdf

Typically, though depending on market structure, the minimum levels for incentives would need to be set at levels which concentrated market rewards on those products in the market which were innovative, and which assisted market penetration of products whose high upfront cost held back their penetration. The benefits achieved by the implementing measures in this regard would depend on the appropriateness of the level set. Clearly a sensitivity analysis should take into account disparities of welfare among consumers in the EU.

Costs

As shown above, for many products, thresholds for public procurement will create savings for public authorities, particularly over the life-cycle. In some cases, thresholds could be set at levels which require greater upfront purchase costs but which are paid back from saved energy costs. The product specific impact assessments will have to consider the pay back time for the proposed threshold included in the implementing measures. As the implementing measures have to be endorsed by the Regulatory Committee of Member States representatives, possible difficulty of some public authorities to fund upfront purchases will be flagged out during the discussions.

The level of benefits (or costs) from a life-cycle perspective for most office equipment is rather easy to determine, as the use pattern is rather homogeneous and predictable. However, as the use pattern for most other products is rather user specific, it should be properly considered in the product specific impact assessments. Also, the Regulatory Committee will have a say when setting levels for incentives; Anyway it would stay with the individual Member State to decide whether or not to have an incentive scheme – nothing in the Options 3 or 4 relating to incentives would place costs on the Member States, authorities or the private sector.

6. Conclusions

- Member States have already committed to make use of public procurement as an instrument to generate cost-effective energy savings. Article 5 and Annex VI of Directive 2006/32/EC on energy end-use efficiency and energy services sets out that they shall ensure that the public sector purchase energy efficient equipment with minimized life-cycle costs to ensure cost-effectiveness;
- Public procurement at the threshold levels are likely to be significantly less expensive over the life cycle than existing procurement practices: this will depend on the threshold levels set in implementing measures (even very ambitious public procurement requirements can be less expensive than current practices);
- Inclusion of provisions for incentives encourages sales of innovative products. This is important for reducing the prices of more-efficient products and increasing the rates of innovation in energy efficiency. A broad literature survey for energy using products and energy related products indicates that for every doubling of the cumulative volume sold, costs for these products would decrease between 15-20 %¹³⁶;

¹³⁶ Junginger et al (2008) Technological learning in the energy sector. This study has been performed within the framework of the Netherlands Research Programme on Scientific Assessment and Policy Analysis for Climate Change (WAB).

- Inclusion of the option would support and enhance the operation of the energy label and Ecodesign Directive and save substantial amounts of energy and related emissions, such as CO₂ or NO_x;
- Use of public procurement in this way is usually a cheaper way to achieve existing environmental goals than other public policy measures;
- The setting of harmonized levels for public incentives should take into account market realities in the EU and in particular the differences in welfare and purchasing power of consumers which are still divergent across the 27 Member States. Decisions in implementing measures will be based on analysis of the financial benefits and costs to public authorities.

ANNEX 12: ADMINISTRATIVE AND TRANSPOSITION COST

This Annex addresses administrative cost as discussed in Chapter 5.5 and based on the background study. The presented figures are indicative.

Main administrative costs for Members States and the Commission:

Amendment of the Framework Directive: €5 million in total (€1 million for administrative work on the amendment and €4 million for transposition by Member States).

Transposition cost for the 27 Member States from amended Framework Directive or amended or new implementing Directives of €4 million¹³⁷.

Amend an existing implementing Directive or develop a new implementing Directive under the existing ELD: €4.7 million (720.000¹³⁸ million for administrative work on the amendment/development of the new Directive and €4 million for transposition by Member States).

It is to be noted that if the amendment to the Framework ELD would lead to implementation of the ELD with implementing Regulation or Decisions instead of Directives, the one-off €5 million revision cost would lead to savings of €40 million in transposition costs alone for the ten first upgraded or newly developed implementing measure adopted under the new framework.

Administrative cost for manufacturers and retailers

Changes in administrative cost to manufacturers and retailers will occur only if the scope is extended and/or implementing measures are set on new products. These costs will be assessed in product specific impact assessments. The background study shows that the costs are likely to vary considerably depending on the product involved, the number of models subject to testing and the degree of testing already carried out for other purposes, such as under the Ecodesign Directive. One of such shared costs is the testing for conformity assessment, which is estimated to €1000-3000 per product type. Another cost for manufacturers is to provide the background label for retailers on products that are displayed in shops and the black-and-white strip for every product shipped (see Annex 4).

The information required for the label and information fiche is derived from measurements manufacturers already carry out in the course of product development and quality control. Most manufacturers already publish the basic information in their brochure or technical literature but not in easily accessible form for consumers.¹³⁹ Thus the matter seems to be more

¹³⁷ Precisely €4.050.000 (27 MS x 150 000€).

¹³⁸ The background study estimated that the revision of an existing implementing Directive would cost less (€360.000) than the development of a new one. However, there is no such difference in cost given that new technical studies are needed due to market and technical development, including product development, and the same administrative/legal procedure will be used for both. This does not include any add on for overhead costs.

¹³⁹ Compliance cost assessment, The energy labelling (refrigerators and freezers) regulations 1994, Department of the Environment.

about the accessibility and easiness to understand the information rather than the additional cost of providing it.

The cost for retailers is limited to the display of the right label on the product associated with the strip provided in the product packaging. Accordingly, given that only simple information requirements are set on manufacturers and retailers there is no risk that these actors would not be able to meet the set criteria, unlike in some cases when setting minimum requirements.

In summary, the background study shows that most of the energy efficiency measures are cost-effective, including energy labelling. In many cases there is some increase in operating cost to manufacturers and retailers due to energy labelling requirements. However, these costs can be passed on the consumer. The background study shows that energy labelling leads to net money savings for the use, as electricity cost over the life time of the appliance will be bigger than any additional purchasing cost for the more efficient model. For example, in the case of EU white goods manufacturers, their operation has become more profitable, appliances cost less and the efficiency has improved with help of technological development and guidance towards more efficient and profitable appliances by the energy label – despite fears by manufacturers when the policy action was initially introduced in the 90ies.

ANNEX 13: MINUTES OF THE STAKEHOLDER WORKSHOP



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY AND TRANSPORT

DIRECTORATE D - New and Renewable Energy Sources, Energy Efficiency & Innovation
Energy efficiency of products & Intelligent Energy – Europe

Brussels, 10.03.2008

MINUTES

Consultation meeting on the revision of the Energy Labelling Directive 92/75/EEC on 8 February 2008.

Centre Albert Borschette (CCAB), room 0D, rue Froissart 36, 1040 Brussels,

Participants: see Annex 1 to these minutes.

The Chairman opened the meeting and outlined the context for the stakeholder consultation. The renewed Sustainable Development Strategy calls upon the Commission to propose an EU Consumption and Production Action Plan (DG ENV) to "help identify and overcome barriers for SCP and to ensure better coherence between different related policy areas. The possible revision of the Energy Labelling Directive makes part of this context as well as of the parallel initiative on Sustainable Industrial Policy led by DG ENTR. The purpose of this consultation is to collect comments and views from all stakeholders on the main policy options for a possible revision of the Energy Labelling Framework Directive 92/75/EC. Part of the SCP/SIP would be to extend the scopes of the Ecodesign Directive 2005/32/EC and of the Labelling Directive 92/75/EEC, vehicles and their parts (such as tyres or air-conditioning) being excluded.

The Chairman then gave an overview on the next steps in preparing Ecodesign and energy labelling implementing measures. For SCP/SIP it is important to maximize synergies and consistency between these two legislative tools, as well as with Energy-Star, Ecolabel, RoHs, WEEE and other relevant legislation. In that context, it could make sense to extend the mandate of the Energy Labelling regulatory Committees to also cover the Ecodesign Directive.

Stakeholders were invited to continue providing comments by 22 February 2008; the Commission would aim making a proposal on revising 92/75/EC before the summer break 2008.

The meeting was structured based on the questions and policy options discussed in the Commission working document that was published on 20 December 2007 on http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm.

The comments made during the meeting and noted in these minutes are subject to possible fine-tuning or change by stakeholders by 22 February, at latest.

Due to the urgency to update the existing Energy Labelling Implementing Directives it was agreed to conduct a discussion on the design of the label outside the context of the revision process towards the end of the meeting.

The summary of the discussion is as follows:

The meeting participants fully agreed on the general principle of reinforcing the use of energy labelling (Q2).

Question/Policy Option	Yes	No
Q2. Do you agree to the general principle of <u>reinforcing the use of (energy labelling)</u> in order to more vigorously contribute to the Union's objectives on climate mitigation, competitiveness and sustainable product policy?	X	

Upon this agreement, a discussion was conducted on a possible wider scope of the revised directive, as summarised in below table.

Question/Policy Option	Yes	No
Q6. Would you like to <u>add other products</u> to the scope of the labelling Directive than those covered at present (household appliances only)?	X	
P1. Extending labelling to <u>additional household</u> appliances displayed in shops/outlets, such as televisions, water heaters, boilers ...	X	
P2. Extending labelling to <u>non-household energy-using</u> appliances, such as electric motors	X	
P3. Extending labelling to <u>non-energy using</u> products, such as windows, tyres or services	X	X

The majority of the meeting participants responded positively to the above questions, particularly as to adding other energy-using or (non energy –using but) energy-related products to the scope of the directive. On the question to add all non-energy using products into the scope of the directive the majority of participants expressed doubts.

ITALY supported by the UK expressed a negative position on adding systematically non-energy using products into the scope. Instead, it was supported that 'energy-related' non-energy using products could be covered (except vehicle parts, such as tyres) if an impact assessment so would advice; therefore the revised Framework Directive should keep that possibility opened in selected well justified cases. The NETHERLANDS felt that we should only label carefully selected non EUP. EUROACE supported labelling of windows, but felt that any label on insulation products would not be useful. FRANCE and GERMANY had doubts on going beyond non energy-related non EUP.

The discussion on the possible revised scope led to the question on content and type of the label to be used, as summarised in the below table.

Question/Policy Option	Yes	No
Q3. For energy using products, would you favour the use of an energy label focusing on the <u>energy consumption in use</u> or of an 'Ecodesign label', (near to the Eco-label showing the 'best') giving the global environment performance of the product throughout its life-cycle?	X	X
P5b. Replace the energy label by an 'Ecodesign' label combining several significant environmental parameters		X
Q4. Are you in favour of <u>adding CO₂</u> on the energy label? How could reliable information be assured in the light of different energy mixes in the 27 Member States		X
P5a. Provision of additional <u>product information</u> on the energy label, such as CO ₂ emissions or annual running costs		(X)
Q5. Are you in favour of <u>adding annual running costs</u> on the energy label?		X

For energy-using products there was unanimity on the need to maintain the energy label with focus on energy consumption in use phase, including the indication of the consumption of other relevant consumables during the use phase, in line with the present successful scheme.

Environmental NGOs stressed that the urgency was to address energy consumption (while not affecting other environmental parameters) and the need to urgently review the existing implementing Directives.

Stakeholders requested to keep the message clear and simple and not to indicate additional environmental information such as CO₂, except possibly if the scope was broadened towards non-energy using products. CECED reminded that indicating CO₂ would be neither feasible nor enforceable and therefore should not be a legal requirement. ORGALIME supports this view as far as the use phase is concerned and clarifies that for the rest of the life cycle information CO₂ emissions may be relevant for some products. Including this option into the legal framework may be appropriate, as the question is about possible practical difficulties to collect the necessary data. UK was not against indicating some CO₂ footprint as such but not necessarily on the label.

ANEC and BEUC, supported by Italy and France, saw a danger in mixing the energy label with other environmental information, as consumers need a simple message; carbon discussion should be kept out of the label. The energy label should focus on energy and other consumables at use phase and should not aim at including other environmental parameters during the life-cycle. The key for consumers is that the label provides reliable information on the energy consumption of running an appliance in real life situation and on the most consumer relevant functional performance (as running cycle of washing machines). This is in fact anyway a way to indirectly contribute to preserve the environment.

On the indication of the running cost, FRANCE, supported by ANEC and BEUC, stated that standard running cost in the context of the 27+7 countries implementing the European energy label would never match with the real running cost to the consumer. Instead of helping, it would contribute to disinformation of consumers. UK stated that running cost is important information to consumers but recognised that practicalities hinder their inclusion in the label.

EUROCOMMERCE reminded that sales personnel can not take the responsibility and are not able to convey complex environmental information to consumers. The label must remain simple and convincing for both consumers and sales personnel in order to be efficient.

ORGALIME considered that it could be useful in some cases to open the possibility for the indication of other environmental parameters in the revised Framework Directive. It would be a pity not to have this possibility, if the need was there in the future (change of priority in environmental concerns) and/or for particular product groups.

A request was made, supported by BELGIUM, for further synergies between various tools (Ecodesign, energy labelling, Energy-Star, Ecolabel, RoHs, WEEE).

It was summarised that the Framework Directive should:

- focus on consumption of energy and other resources in use for energy-using products and some non energy-using but energy related products
- keep the possibility to include additional information useful to consumers such as functional performance;
- open the possibility to include other environmental aspects throughout the life cycle for non-energy using products.

On policy options 10, 7 and 8, there was a full agreement, as shown in the table below.

Question/Policy Option	Yes	No
P10. Implementation through <u>Regulation</u> rather than Directive	X	
P7. Tighter <u>tolerances</u> in the measurement standards	X	
P8. <u>Better enforcement</u> of the labelling requirements in respect of both manufacturers meeting the set standards and retailers displaying correct information	X	

CECED supported by ORGALIME demanded that each actor be held responsible for its tolerances, that is, manufacturers to be responsible only for product variances and the variances in test laboratories to be decreased. MARCOGAZ supported CECED and considered that a general statement on tighter tolerances is not enough but should include explicit figures. ANEC and BEUC supported and requested that the present test standards be revised in order to better reflect the actual use of the appliance (such as test standard on washing machines).

To improve the situation, DENMARK proposed, supported by EUROACE, to increase information sharing and provision of technical data between test laboratories, although it is difficult as product models often differ in different Member States. A European database could be developed, e.g. within the Intelligent Energy Europe programme. ANEC requested that all market surveillance activities in Member States should be centrally registered and reported to the Commission. ITALY reminded that the Australian scheme also includes sanctions and covers some 20-30 products tested annually. CECED doubted how much of this can be brought into the legal text but was ready to contribute. The UNITED KINGDOM suggested that technical files should be open to all (at least MS), and the verification procedure should be made easier.

Question/Policy Option	Yes	No
P6a. <u>Reinforce provision</u> of labels on <u>internet sales</u>	X	
P6b. <u>Reinforce provision</u> of labels in the context of other type of <u>sales and advertising</u> : www-pages, newspaper and TV adds ...	X	
P6c. <u>Provision of information</u> on energy consumption (apart from labelling) <u>in media and advertising</u> : www-pages, newspaper, magazines and TV adds ...	X	
P9. <u>Legal protection</u> of the label	X	

As the table shows, stakeholders require stronger provisions across all of the above issues. Environmental NGOs requested better display of labels outside shops and in departments where the products are sold, including second hand shops.

The Netherlands foresaw difficulties in how to enforce a provision of information in media and advertising.

CECED was positive about legal protection of the label but wanted to avoid any possible royalty issues.

The issue of possible alternative routes beyond the considerations in the Commission working document was addressed with no reactions by the stakeholders, as shown in the below table.

Question/Policy Option	Yes	No
Q8. Do you want to propose an <u>alternative route</u> beyond the considerations in this document?		X

Finally, the issue of how to ensure dynamic labelling was addressed with considerations on the type of specific distortions relevant to manufacturers, retailers and consumers. The summary results of the discussion are shown in the below table.

Question/Policy Option	Yes	No
Q7. In view of <u>dynamic labelling</u> , which approach would you suggest for the transition from an existing labelling scheme to a new labelling classification in order to cause minimum distortions?		
P4. <u>Reinforce dynamic labelling</u> with periodic reviews and rescaling of the ratings, including a possible redesign of the label and upgrading of the existing Directive	X	

CECED reminded of the importance of an adequate return to the investment made by the industry, which is particularly important, if the scope of the directive is broadened and more products are to be labelled. Consequently, in order to respond to the request for a dynamic labelling scheme, CECED proposed a new numerical labelling scale, which had also been presented to Member States the day before. The scale would reduce the burden of manufacturers in the event of updating existing labelling schemes and would not require

manufacturers and retailers to 'downgrade' their products in the event of an upgraded label. The '*buy A*' -slogan would have to be replaced by a '*buy green*' -slogan.

CECED continued that the indication of the label is legally binding for manufacturers but they should not be held responsible for re-labelling of already sold products. EICTA supported CECED position reminding that products in the ICT sector develop very fast and could require frequent updates. CECED suggested that rescaling of energy labels that had taken place in Australia and Korea involved changes to the label design. For consumers, changing only the scale of the label is less disturbing than changing the whole label. All necessary efforts should be made to reduce the burden of the label for those involved in the process, e.g., the label must be translated to the languages of the 27+7 European countries in which it is implemented.

ANEC/BEUC reiterated that the shortcoming of the energy scheme comes from its lack of flexibility and not on its layout. ANEC/BEUC opposed the suggested numerical scale and wanted to keep the A-G scale, without A+ or A++. Consumers are used to A-G and they should not be confused with a numerical labelling scale. Any significant change to the label's layout should be evaluated through extensive consumer research. Also, the existing label has been copied by a number of other economies and Europe should not introduce a change to something that has proven to work. 'Buy A' has become a known slogan for efficient appliances among consumers and it works also with colour blind people.

EUROCOMMERCE confirmed that some of their members had reacted positively to the proposed numerical scale but that they did not make a final decision on the preferred option. EUROCOMMERCE was concerned about the number of revisions of existing labels, as it is the retailers that need to inform customers. They would prefer that appliances in the stock should not be re-labelled, only new appliances.

To facilitate the transfer from the old to the new label BEUC the label should include the date on which it has been introduced. DENMARK suggested a transitional label but BEUC and ANEC objected, as the indication of the year of introduction was considered less confusing than a third intermediary label.

Environmental NGOs preferred the existing A-G label and requested regular updates of implementing Directives every five years. CECED opposed this proposal and suggested to update labelling scales depending on the type of product and its specific technological development with 12 months of coexistence of the old and new label, at maximum. NETHERLANDS opposed the proposed 12-month coexistence but recognised the difficulty of manufacturers to update the underlying label. Also ANEC and BEUC opposed the 12-month coexistence suggesting 6 months as a maximum. Requests were also made to update old labels on a given foreseen specific date.

FRANCE found the numerical scale interesting but supports the A-G scale because it is well known for consumers. GERMANY recognised that there is no interest among retailers to downgrade their products in the event of an upgraded label. The NETHERLANDS requested that the revised framework directive identify responsibilities in the event of rescaling and specify the time for coexistence of different labels, which should be as short as possible. In the case of Energy-Star, manufacturers are responsible for implementing the requested changes and it works. UK welcomed the work undertaken by CECED in developing a constructive proposal but strongly favoured the existing A-G scale until more information was available on the pros and cons of the numerical scale.

The NETHERLANDS asked the Commission to investigate whether there would be a legally acceptable procedure which would allow dynamic and speedy decision on the date for updating the coloured background of the label in the “CECED” numerical scale.

At the end of the meeting, it was agreed that a working group be established in order to identify the advantages and disadvantages from the point of view of manufacturers, retailers, consumers and public administrations in relation to different labelling scales and design. Proposals for participation in the working group could be made to the Commission until 22 February, at latest.

End of meeting.

Annex 1: List of participants

EU Member States

Austria, Ministry of Economics and Labour
Belgium
Bulgaria, Ministry of Economy and Energy
Denmark, Danish Energy Authority
Estonia, Ministry of Economic Affairs and Communications
Finland, Ministry of Environment, Ministry of Employment and Economy
France, Ministère charge de l'énergie and Ademe
Germany, Ministry for the Environment, Federal Ministry of Economics and Technology, Dena, Fraunhofer ISI
Italy, ENEA
Lithuania, Energy Agency
Luxembourg, Service de l'Energie de l'Etat
Netherlands, Ministry of Economic Affairs and Senter-Novem
Poland, Ministry of Economy
Slovak Republic,
Slovenia, Ministry of Environment
Sweden, Swedish Energy Agency
United Kingdom, Defra and Market Transformation Programme

EFTA Member Countries: Norway, Ministry of Energy

Environmental NGOs and Consumer Associations

ANEC, The European Consumer Voice in Standardisation
BEUC, The European Consumer's Organisation
ECEEE, European Council for an Energy Efficient Economy
ECOS, representing WWF, EEB, Friends of Earth, Birdlife International, ...
Inforse-Europe, International Network for Sustainable Energy

Industry and Retailers

CECED, European Committee of Domestic Equipment Manufacturers
CELMA, Federation of National Manufacturers Associations for Luminaires and Electrotechnical Components for Luminaires in the European Union
EHI, European Heating Industry
EICTA, European Digital Technology Industry

ELC, European Lighting Industry

EPEE, European Partnership for Energy and Environment

EuroAce, The European Alliance of Companies for Energy Efficiency in Buildings

Eurocommerce, Association of retail, wholesale and international trade sectors in Europe

Marcogaz, Technical Association of the Natural Gas Industry

ORGALIME, The European Engineering Industries Association representing the interests of the Mechanical, Electrical, Electronic, Metalworking & Metal Articles Industries

ETRMA, European Tyre & Rubber Manufacturers' Association

European Commission: TREN, ENV, ENTR