



**TRAINING PROGRAM
FOR NATIONAL GOVERNMENT
OFFICIALS AND EXPERTS**

Energy labelling for domestic appliances

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This report was produced as a part of the CEECAP project.

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AUSTRIAN ENERGY AGENCY

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Energy labelling for domestic appliances

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May 2006

Prepared as a part of the “CEECAP – Implementing EU Appliance Policy
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1 Introduction

Despite there having been numerous successful measures and activities both on national level and EU level to reduce energy consumption by households, their electricity demand is still growing. Focusing on the period 1992 to 2002 in Europe, we see an annual increase of approx. 2% resulting in additional 20% for this decade.

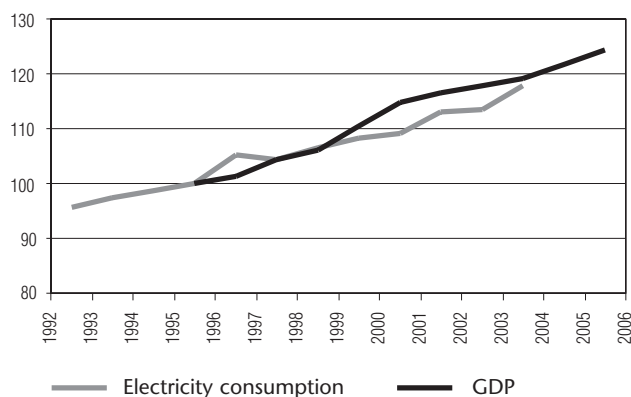


Figure 1: Electricity consumption by households (EU 25), index 1995 = 100

Source: Eurostat (2006)

Energy efficiency in household appliances has long been a key issue in the energy conservation policy of the European Union. The extended legislation in this area has resulted in a considerable reduction of energy throughout Europe, and significant energy cost savings for European households. The implementation of the directives however, demands a large effort of the countries that recently entered the European Community, or that are currently in the accession process. The required changes in legal procedures

and market practices require a considerable amount of time and money, as well as accessible information on the practical implications of these policies.

This information material is intended to assist national government officials and experts in Central and Eastern European Countries in the implementation process of the Energy labelling scheme setting emphasis on verification and enforcement actions. The principal aim of this brochure is to serve as a practical tool and guide, providing action orientated information based on experience of the EU 15 countries and explaining the duties and rules applied by the appliance label legislation.

Readers of this publication will learn about the current European label and standards legislation with its concrete focus on appliances and labels. The impact and importance of labels is explained, providing also concrete country examples. The main part of this publication provides a concrete list of steps, duties and suggestions for a proper label and standards implementation and usage on a country level. It also gives an overview of the process of new legislation adoption on the European Union level, with the aim to increase the active participation of Central and Eastern European countries in this process, and the addresses of relevant internet websites.

This manual is accompanied by a training programme for retailers and manufacturers, which provides special targeted information for those who produce and distribute electrical appliances.

2 Political and strategic aspect

The European Union, as a whole, has a lack of resources to cover its own energy. The EU is therefore obliged to import fossil energies from elsewhere. Even without high and volatile oil prices, which have led to a downgrading of prospects of economic growth in Europe, there would be very good reasons for the European Union to make a strong push towards an ambitious programme promoting energy efficiency improvement.

This chapter lists and explains the main current European legislation related to energy efficiency and most of all the appliance energy labels and standards and explains the motivation for its implementation.

2.1 Main stakes of EU energy policy

Three main stakes are driving the EU energy policy:

- **Increase competitiveness:**

Despite Europe is already a world leader in energy efficiency equipments and services, considerable investments are always needed to harness the potential of cost-effective energy savings. This means the creation of many new high quality jobs in Europe, better living conditions for EU citizens and the improvement of competitiveness. An average EU household could save between €200 and €1.000 per year in a cost effective manner, depending on its total energy consumption.

- **Develop environmental protection and reach EU's KYOTO commitments:**

The main part of green house gas emissions are provided by energy use. Energy efficiency is than the major way to reduce green house gas emissions to meet Kyoto commitments and further stakes to avoid world temperature increase.

- **Improve security of supply:**

By 2030, on the basis of the present trends, the EU will be 90 % dependent on imports for its requirements of oil and 80 % dependent regarding natural gas. It is impossible to predict energy prices in the next decades,

more particularly if demand from the new developing countries increase as rapidly as they do today. Making a real effort to reduce energy demand or to contain its speed of increase at present levels would represent a major contribution to promote security of supply for the EU.

2.2 Main EU energy directives

Within the current context of global uncertainty, the crucial issues of security of supply, green house gas emission impacts and energy prices consequences on European growth, must be addressed with a strong energy policy.

Since 10 years, not less than 8 main Directives related to the energy field have been discussed and adopted by EU Member States, influencing both sides from energy supply to energy demand management:

- **Energy labelling for domestic appliances**

(92/75/EEC): The objective of this Directive, which is presented in more details in this brochure, is to enable the harmonization of national measures on the publication, particularly by means of labelling and of product information, of information on the consumption of energy and of other essential resources, and additional information concerning certain types of household appliances, thereby allowing consumers to choose more energy-efficient appliances. This Directive shall apply to the following types of household appliances, even where these are sold for non-household uses: refrigerators, freezers and their combinations, washing machines, driers and their combinations, dishwashers, ovens, water heaters and hot-water storage appliances, lighting sources, air-conditioning appliances.

- **Ecodesign (2005/32/EC):** This Directive create a comprehensive and coherent legislative framework for addressing ecodesign requirements with the aim to ensure the free movement of energy-using products within the EU, improve the overall envi-

ronmental performance of these products and thereby protect the environment, contribute to the security of energy supply and enhance the competitiveness of the EU economy, preserve the interests of both industry and consumers.

- **Energy efficiency in buildings (2002/91/EC):** The purpose of this Directive is to promote the improvement of the energy performance of buildings within the Community, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.
- **Common rules for the internal electricity (96/92/EC) and natural gas (98/30/EC) markets:** These two Directives establish common rules for the generation, transmission and distribution of electricity and natural gas.
- **Promotion of electricity produced from renewable energy sources (2001/77/EC):** Its purpose is to promote an increase in the contribution of renewable energy sources to electricity production in the internal market for electricity and to create a basis for a future Community framework thereof.
- **Combined heat and power (2004/91/EC):** This Directive aims to increase energy efficiency and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power.
- **Promotion of end-use efficiency and energy services (2006/32/EC):** The prime objective of this directive is to ensure more efficient end use of energy supporting and accelerating the development of a smooth functioning, commercially viable and competitive market for cost-effective energy efficiency measures.

2.3 The EU green paper on energy efficiency

A first European Green Paper "Towards a European strategy for the security of energy supply" was adopted by the Commission in November 2000. It came in a calm period. European

citizens seemed to be unconcerned by origin of energy as the petrol for their cars or the electricity for their lights at home. The price of energy was low and was not a matter of concern. And yet the Commission was focusing on facing forecasts of an energy dependency of more than 70 % in 2030, compared to 50 % today, and additional constraints caused by climate change.

Then price and security of supply long term crisis appeared in the recent period and the Commission launched a second general debate to identify the best ways to improve European energy efficiency: "The Green Paper on Energy Efficiency: Do more with less" and to propose to joint Member States efforts to define a common EU energy policy.

This Green Paper, published in 2005, therefore seeks to identify the bottlenecks presently preventing these cost-effective efficiencies from being captured – lack of appropriate incentives, lack of information, lack of available financing mechanisms for example. It then seeks to identify options how these bottlenecks can be overcome, suggesting a number of key actions that might be taken. Examples include:

- Establishing Annual Energy Efficiency Action Plans at national level. Such plans might identify measures to be taken at national, regional and local level and subsequently monitor their success both in terms of improving energy efficiency and their cost-effectiveness;
- Giving citizens' better information, for example through better targeted publicity campaigns and improved product labelling;
- Improving taxation, to ensure that the polluter really pays, without however increasing overall tax levels;
- Better targeting state aid where public support is justified, proportionate and necessary to provide an incentive to the efficient use of energy;
- Using public procurement to "kick-start" new energy efficient technologies, such as more energy efficient cars and IT equipment;
- Using new or improved financing instruments, both at Community and national

level, to give incentives, but not aid, to both companies and householders to introduce cost-effective improvements.

This Green Paper is an important document, not only because of its economic importance, but also because it marks the beginning of this new Commission's attempt to renew Europe's energy policy, centring its different elements on the need to really develop competitiveness, sustainable development and security of supply.

European Energy Council suggest Members States to elaborate a common European

Energy Policy bases on "common EU energy supplies and energy demand forecasts" including objective and clear assessment of different advantages and negatives effects of each individual energy resource.

An energy efficiency action plan should be proposed by the Commission at the end of 2006 to realize 20 % of energy savings until 2020, compared to the current energy consumption in EU.

Last but not least, the Commission wants to give a clear priority to energy research within the 7th EU research framework programme.

3 Energy labelling for domestic appliances

3.1 Policy Development in the European Union – appliances energy efficiency Directives and commitments

The present position of Central and Eastern European Countries (CEECs) – New Member States of the European Union or countries that are currently preparing EU Accession – provides the driving force for harmonisation of product related legislation on a national level with the EU internal market regulations and policies. The EU policy framework in the area of appliance energy efficiency is implemented by a combination of two elements: the EU Acquis and Negotiated Agreements.

3.2 EU Acquis

From the viewpoint of CEECs, major attention is paid to the EU Acquis, which takes the following forms:

3.2.1 Regulations – binding and direct applicable

Regulations, which are binding and directly applicable in all Member States from the date of their coming into force. In the area of appliance energy efficiency, this refers to the Regulation (EC) No 2422/2001 of the European Parliament and of the Council on a Community energy efficiency labelling programme for office equipment.

3.2.2 Directives

Directives, which are binding as to the result to be achieved but leave the national administrations to decide on the method of achieving that result. Member States are required to make the necessary changes in their laws and administrative arrangements to comply with the requirements of the directive by the date specified in it. With reference to the purpose of the respective directives, two main areas need to be distinguished:

Energy Labelling:

This area is based on a framework directive (92/75/EEC), which provides a legal basis for energy labelling of household appliances, requiring the manufacturers and the retailers to attach an energy performance indicating label to appliances when displayed for sale. Its implementing directives provide a description of what the indication should be for a specific appliance (household lamps, air-conditioners, electric ovens, etc.), given the energy consumption measured according to a European test standard.

- Directive 92/75/EEC on energy labelling for appliances and implementing measures
 - Refrigerators, freezers and combinations
 - Washing machines
 - Tumble driers
 - Dishwashers
 - Lamps
 - Ovens
 - Domestic air conditioners

3.2.3 Decisions – binding upon those to whom they are addressed

Decisions, which are binding upon those to whom they are addressed. They may be addressed to Member States, but are usually addressed to particular undertakings or individuals as, for example, Commission Decision 2003/367/EC on the coordination of energy efficient labelling programs for office equipment between the EU and the US (Energy Star, which is a labelling programme that manufacturers can voluntarily participate in), which directly affects all EU-based companies, though the Energy Star mark is to be implemented by national administration.

The implementation of EU Acquis is dependent on national administrations for its transposition into national law. The European Commission, which is responsible for overseeing the application of EU law in the Member States and across the EU generally, scrutinises steps taken by each of the national administrations. The non-compliance can lead to sanctioning measures, either against the in-

dividual free-riding companies, or against the responsible Member State(s). For this reason, it is of high importance that the Acquis reflects the national circumstances and priorities.

With the recent accession of New Member States, the role of many CEECs in the EU policy process has changed, and they are gradually moving away from originally only implementing the existing EU Acquis to the position of becoming involved in its creation. The possibility to influence the development opens new challenges and creates new opportunities.

3.3 Negotiated Agreements

The second element of EU policy in the area of appliance energy efficiency covers Negotiated Agreements, which are based on negotiations between the European Commission and appliance manufacturers or their associations, who agree to increase the energy efficiency of their products in return for not adopting mandatory legislation. The pay-off for the manufacturers, besides gaining a potential competitive advantage in terms of corporate image improvements, is the fact that the voluntary effort can be implemented to their preference, leaving upon them the decision of how and when to achieve the objective of the agreement, which allows them to minimize the cost of the measure. Up to now, the European Commission concluded the following Negotiated Agreements:

- Washing Machines (agreed on 24. 7. 1997; applicable from 22. 10. 1997 to 31. 12. 2001) followed by 2nd CECED Unilateral Commitment on reducing energy consumption of domestic washing machines (2002-2008) (agreed 31. 10. 2001)
- Dishwashers (agreed on 19. 9. 2000)
- Domestic Electric Storage Water Heaters (DESWHs) (agreed on 19. 9. 2000)
- TV and VCR reduction of standby power consumption (agreed on 30. 4. 1997), superseded by the Industry Self-Commitment to Improve the Energy Performance of Household Consumer Electronic Products

Sold in the European Union (in force from 1. 7. 2003)

- Electric motors (agreed on 15. 6. 2000)
- Voluntary commitment on reducing energy consumption of household refrigerators, freezers and their combinations (2002-2010) (agreed 31. 10. 2002)
- Code of Conduct on Energy Efficiency of Digital TV Service Systems (version 2; 26. 5. 2004)
- Code of Conduct on Efficiency of External Power Supplies (version 2; 25. 3. 2004)

It can be assumed that some CEECs will profile themselves as production markets due to the expected shift of appliance manufacturers. This will of course increase the significance of the involvement of national administrations in the formulation of negotiated agreements.

3.4 Ongoing Process: Ecodesign of Energy-Using Products

Apart from the user's behaviour, there are two complementary ways of reducing the energy consumed by products: labelling to raise consumer awareness on the real energy use in order to influence their buying decisions (such as labelling schemes for domestic appliances), and energy efficiency requirements imposed on products from the early stage on the design phase.

The production, distribution, use and end-of-life management of energy-using products (EuPs) is associated with a considerable number of important impacts on the environment, namely the consequences of energy consumption, consumption of other materials/resources, waste generation and release of hazardous substances to the environment. It is estimated that over 80% of all product-related environmental impacts are determined during the design phase of a product. Against this background, ecodesign aims to improve the environmental performance of products throughout the life-cycle by systematic integration of environmental aspects at a very early stage in the product design.

The Council and the European Parliament therefore adopted a Commission proposal for a Directive on establishing a framework for setting ecodesign requirements (such as energy efficiency requirements) for all energy using products in the residential, tertiary and industrial sectors (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). Coherent EU-wide rules for ecodesign will ensure that disparities among national regulations do not become obstacles to intra-EU trade. The directive does not introduce directly binding requirements for specific products, but does define conditions and criteria for setting requirements regarding environmentally relevant product characteristics (such as energy consumption) and allows them to be improved quickly and efficiently. It will be followed by implementing measures which will establish the ecodesign requirements. In principle, the Directive applies to all energy using products (except vehicles for transport) and covers all energy sources.

The products for which currently (2006) an implementing measure is prepared are: *boilers and combi-boilers; personal computers (desktops & laptops) and computer monitors; imaging equipment: copiers, faxes, printers, scanners, multifunctional devices; consumer electronics: televisions, standby and off-mode losses of energy using products; battery chargers and external power supplies; street lighting; residential room conditioning appliances electric motors 1-150 kW, water pumps (commercial buildings, drinking water, food, agriculture), circulators in buildings, ventilation fans (non-residential); commercial refrigerators and freezers, including chillers, display cabinets and vending machines; domestic dishwashers and washing machines.*

Efficiency Standards:

The efficiency standards are now the implementing measures under the Ecodesign directive. Legislation in this area prohibit sales of appliances, which fail to meet certain energy performance limits. Concrete directives have been issued presently for refrigerators, free-

zers and their combinations (96/57/EC), boilers (92/42/EC) as well as ballasts for fluorescent lighting (2000/55/EC).

The directive 96/57/EC regulates that only refrigerators and freezers with energy consumption that meets or falls below the specified limits of energy efficiency required, can be placed on the market (please see therefore Table 3.1). The compliance has to be proven by a CE marking on the appliance. Therefore manufacturers of cold appliances are responsible for ensuring that each appliance placed on the market conforms with the directive's requirements.

	Energy Class
Refrigerators	C
Fridge-freezers	C
Upright freezers	C
Chest freezers	E

Table 3.1: Minimum efficiency level for cold appliances

3.5 What is the energy label?

The labelling scheme is in general based on an "energy efficiency index" generated by comparing the appliance with the average European model when the bands were set at the end of 1993, using values that vary according to the category of appliance. This average is constant, and was set at the point dividing classes D and E, to allow efficiency improvements over time. The energy efficiency index is of course continuous, while the Label groups each appliance into one of seven classes. The class into which the individual appliance falls is determined by segmenting the energy efficiency index as outlined in Table 3.2 for the example of refrigerators and freezers.

For instance the energy efficiency index for cold appliances is derived from dividing annual energy consumption under standard test conditions by the net volume of the appliance (adjusted to equalise for different temperature zones), and corrected for vari-

Energy efficiency index: I	Energy efficiency class
$I < 30$	A++ *)
$30 \leq I < 42$	A+ *)
$42 \leq I < 55$	A
$55 \leq I < 75$	B
$75 \leq I < 90$	C
$90 \leq I < 100$	D
$100 \leq I < 110$	E
$110 \leq I < 125$	F
$125 \leq I < G$	G

*) Please note: The classes A+ and A++ are applicable for refrigerators, freezers and their combinations only

Table 3.2: Freezers and refrigerators energy efficiency index and energy efficiency classes (example of cold appliances)

ous features of the products. It effectively reflects the consumption in kWh per litre of net volume. This makes it possible to compare appliances, even though they are of varying sizes with different proportions of cool and frozen space.

The Energy Label communicates the relative energy efficiency of models through colours, arrows and the alphabet (Figure 3.1). The A-G scale ranks appliances from the best (A) to the worst (G): green denotes “more efficient” and red “less efficient”; the arrows show relative energy efficiency for a given level of service.

The A-G scheme is also applied for performance indicators where relevant, as for washing machines there is a declaration regarding the washing performance and spin drying performance.

There are two parts to the Energy Label: a colour background and a data strip. These often come separately and have to be combined, when they are stuck on the appliance. A few manufacturers print the Label as a single entity. The colour background is generic and can be applied to any appliance in given category, e.g. cold appliances (provided it is in the correct language). The data-strip contains model-specific information and is applied to

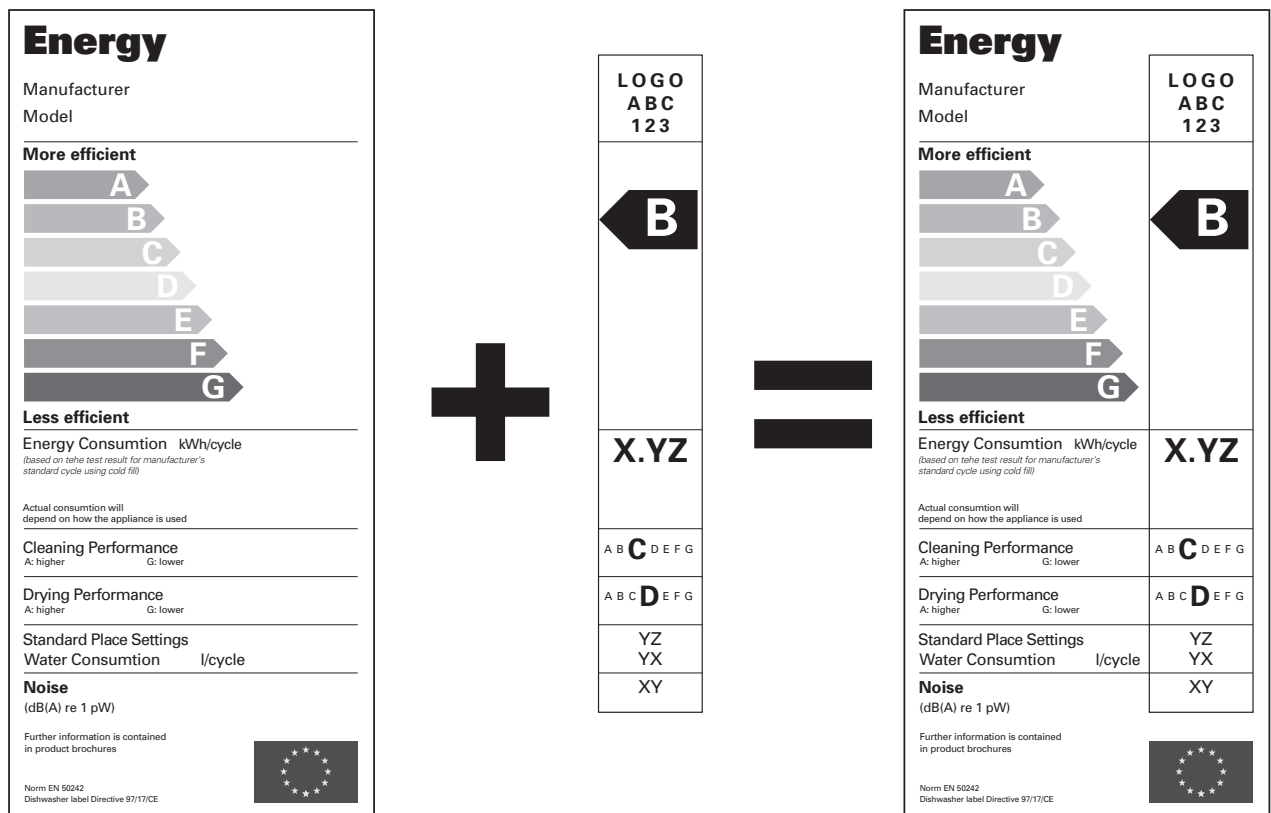


Figure 3.1: The Energy Label and its components

all identical models irrespective of the language of the destination market.

The following information is required

- Supplier’s name or trade mark
- Supplier’s model identifier
- Energy efficiency class
- Eco-label (if awarded to the appliance)
- Energy consumption
- Further data specific to the appliance type:
 - e.g. for **cold appliances**:
 - net cold (fresh food) storage volume
 - net frozen storage volume
 - star rating of frozen storage compartment
 - noise (optional).
 - e.g. for **air-conditioners**:
 - cooling output
 - energy efficiency ratio
 - type
 - noise
 - e.g. for **dishwashers**:
 - cleaning performance class
 - drying performance class
 - capacity
 - water consumption
 - estimated annual consumption
 - noise, where applicable

The Energy Label has to be supported by an information fiche, a standard table of information relating to a particular model of appliance. The fiche has to be contained in all product brochures and, if these are not provided, with other product literature supplied with the appliance. The fiche was introduced in order to give the consumer an additional source of information to the label, so that consumers who wish to take more time to decide on their purchase can take the information away with them in the same way as other product information.

A third mechanism set out in the labelling framework directive is product information in mail-order catalogues and by the internet sales. The information to be included in mail order catalogues is similar to that required on the standard label and it should be concretely specified in the national legislation.

3.6 Impact of Energy Labelling

3.6.1 Principle Effectiveness of Standards and Labels

As a basic principle, energy efficiency compulsory standards shift the distribution of energy efficient models of products sold in the market upward by eliminating inefficient models and establishing a baseline for programs that provide incentives for “beating the standard.” On the contrary, energy labels shift the distribution of energy-efficient models upward by providing information to consumers that allows them to make rational decisions and by stimulating manufacturers to design products that achieve higher ratings than the minimum standard.

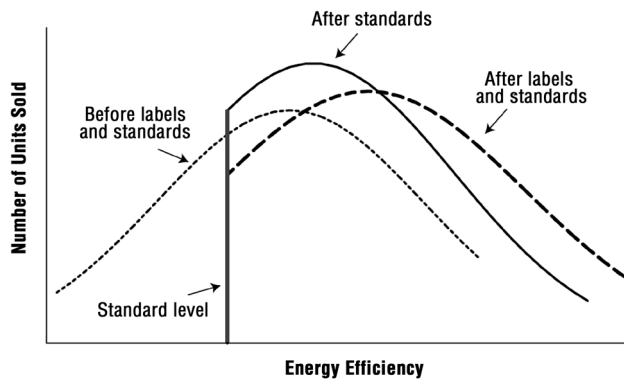


Figure 3.2: The impact of energy-efficiency labels and standards on the distribution of products in the marketplace: The Concept

Source: CLASP, 2005

Key advantages of mandatory energy efficiency requirements – like labels and standards:

- They can produce very large energy savings.
- They can be very cost effective and helpful at limiting energy growth without limiting economic growth.
- They require change in the behaviour of a manageable number of manufacturers rather than the entire consuming public.
- They treat all manufacturers, distributors, and retailers equally.
- The resulting energy savings are generally assured, comparatively simple to quantify, and readily verified.

Energy labels affect stakeholders in four interconnected ways:

- They provide consumers with data on which informed choice and selection of the most efficient and suitable product is possible,
- They encourage manufacturers to improve the energy performance of their models by making energy efficiency transparent to the market place,
- They encourage distributors and retailers to stock and display efficient products,
- They can provide a basis for a wide range of other stakeholders, including other government programs, consumer and environmental groups, electric utilities and other organisations to implement outreach and education.

3.6.2 Evaluation based on EU 15 experience

The following graphs are intended to give direct evidence on the abovementioned effectiveness of energy efficiency standards and labels.

Case study – United Kingdom

The following subchapter gives a description of the impact of the introduction of energy labels on the appliance market in the United Kingdom. It shows, that even with little ad-

ditional promotional activities, labels have a significant impact on the appliance markets.

Generally speaking the UK market for domestic appliances appeared to have a large share of relatively low cost products. Tending to behave more traditionally behind neighbouring countries in terms of energy efficiency at least in the last decade, relatively little action was taken in the promotion of Standards and Labelling until late 1990s. In this context the Market Transformation Programme has been established since 1998, which was followed up by the Energy Saving Trust programme. For this reason this context could be widely applicable for Central and Eastern European countries.

The proportion of sales of cold appliances meeting the minimum standard from 1995 to quarter 3 2000 is shown in Figure 3.3. Over this period the proportion of total sales meeting the standard grew from 40% to 93%. By quarter 4 1996, just after the legislation for the minimum standard was adopted, 48% of sales met the standard, ranging from 21% of upright freezers to 77% of refrigerators. By quarter 4 1999, the first full quarter after the minimum standard had come into force, this had risen to 89%, ranging from 73% of upright freezers to 93% of fridge-freezers.

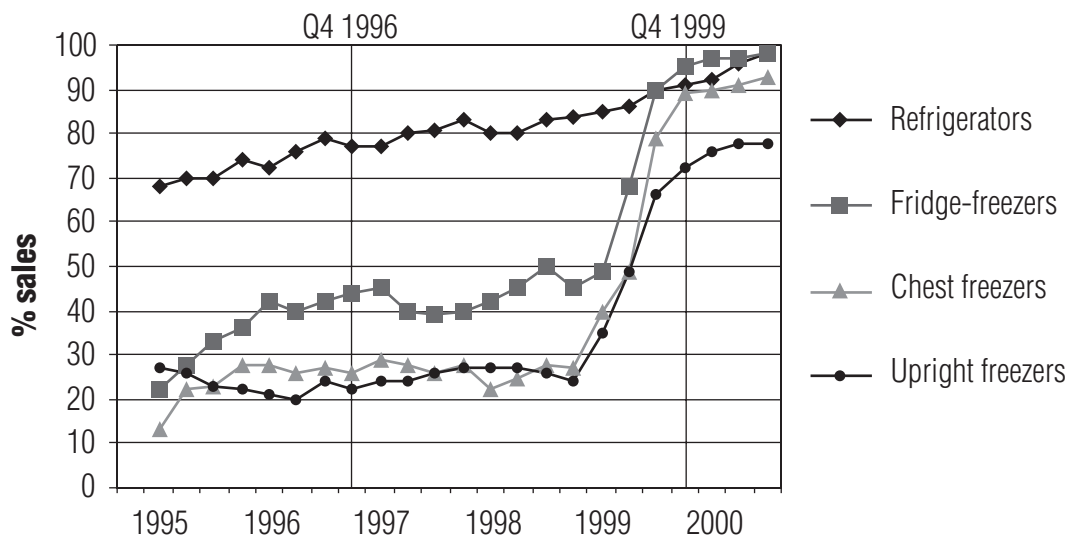


Figure 3.3: Cold products meeting EU Minimum Energy Performance Standards (1999) level.

Source: Schiellerup, 2001

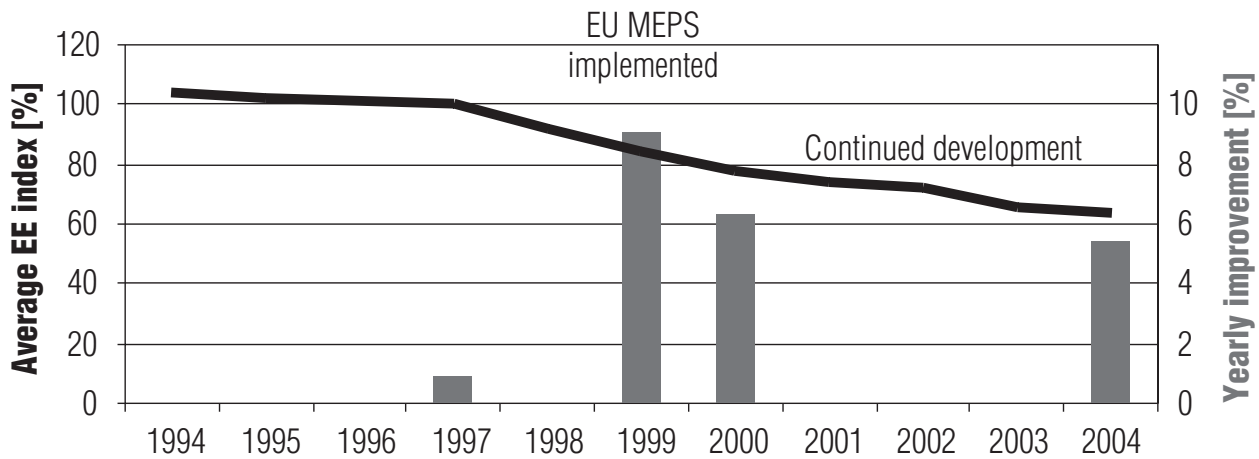


Figure 3.4: Development of Energy Efficiency Index in the UK

Source: compilation of Schiellerup (2001) and GfK (2004)

In spite of substantial improvements, during 1999 in particular, it appears from Figure 3.3 that more than one year after the minimum standard came into effect, a substantial proportion of cold appliances did not meet the minimum standard. The upright freezer market is most behind, with 20% of sales still not meeting the standard. In the refrigerator, fridge-freezer and chest freezer markets about 95% of sales meet the standard. However the refrigerator market has always been much closer to full compliance than the other markets.

This suggests that retailers had a substantial stock of products that did not meet the standard when the legislation came into effect even with three years notice. An alternative explanation would be that models that do not meet the standard continue to be placed on the EU market illegally. It could also be that manufacturers make changes to model so that they comply, but without changing the model number and without informing market survey conductors that the energy class of models has changed.

The importance of standards is that they ensure a specified level of improvement in technology to a specific timetable for society and that they provide a planning framework for industry. They are therefore likely to form the backbone of any broader market transformation strategy.

Appliance market transformations in the EU 15

An evaluation of the impact of labels and standards in the EU shows a dramatic upward shift in the energy efficiency of models offered for sale after the labels and standards were implemented.

The first evaluation of the impact of the EU labelling scheme showed that the sales weighted average energy efficiency of refrigeration appliances improved by 26% between 1992 and late 1999, with over one third of the impact attributable to labelling.

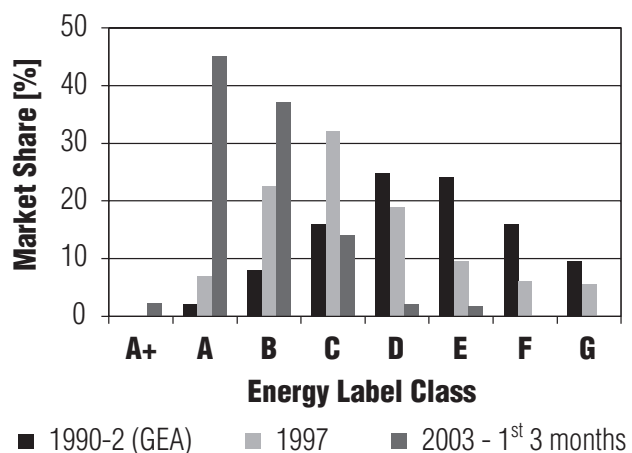


Figure 3.5: The impact of energy-efficiency standards and labels on the distribution of products in the marketplace: refrigerators in the EU

Source: CLASP, 2005

4 Outline of legal obligations

4.1 Legal obligations for Member States

Regarding Energy Labelling Framework Directive 92/75/EEC

- Member states shall adopt the provisions necessary to comply with this Directive (art 14(1))
- Member states shall take all necessary means to ensure that all suppliers and dealers established in their territory fulfil their obligations under this Directive (art7(a))
- Member states shall take all necessary means to ensure that if this is likely to mislead or confuse, the display of other labels marks, symbols or inscriptions relating to energy consumption which do not comply with the requirements of this Directive and of the relevant implementing directives is prohibited (art 7(b))
- Member states shall take all necessary measures to ensure that the introduction of the labelling scheme is accompanied by educational and promotional information campaigns aimed at encouraging more responsible use of energy by private consumers (art 7(c))

Regarding Directive 96/57/EC on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof

In particular:

- Member states shall take all necessary measures to ensure that refrigeration appliances covered by this Directive can be placed on the Community market only if the electricity consumption of the appliance in question is less than or equal to the maximum allowable electricity consumption value.

4.2 Legal obligations for Dealers (Retailers)

Regarding Energy Labelling Framework Directive 92/75/EEC

- Attachment of an appropriate label, in the

clearly visible position specified in the relevant implementing directive, and in the relevant language version (art 4(a))

- Potential customers are provided with the essential information in the label or the fiche before buying an appliance, in the case the potential customer cannot be expected to see the appliance displayed. (art 5)
- No other misleading or confusing labels, marks, symbols or inscriptions related to energy consumption should be displayed (art 7(2))

4.3 Legal obligations for Suppliers (Manufacturers)

Regarding Energy Labelling Framework Directive 92/75/EEC

- Supply of labels and (product) fiches, complying with the directive and implementing directives (art 3(1,2))
- Supply the necessary labels free of charge to the dealers (art 4(b))
- Accuracy of the labels and fiche (art 3(3))
- Technical Documentation shall be established which shall be sufficient to enable the accuracy of the information contained in the label and the fiche to be assessed (art 2(3))

Regarding Directive 96/57/EC on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof

In particular:

- The manufacturer of a refrigeration appliance covered by this directive, his authorized representative established in the Community or the person responsible for placing the appliance on the Community market shall be responsible for ensuring that each appliance placed on the market conforms with the requirement described in this Directive.

5 Requirements for an effective verification & enforcement infrastructure

5.1 Preparation of legal framework

Essential steps in the implementation of energy labels are listed in general terms in the EU energy labelling framework directive and implementing directives. Three main subjects can be distinguished:

- preparation of the legal framework,
- verification, and
- enforcement.

Following the results of the evaluation of the introduction of appliance energy efficiency labelling in EU countries (EU-15), these steps can be translated into practical actions.

5.1.1 Step 1: Introduction of legal framework for appliance energy efficiency policy

A legal framework is needed to provide the basis for national appliance energy efficiency regulations. This should define the competences of the government regarding appliance energy labelling and other appliance energy efficiency policy, assign a government department or agency to be in charge of exacting the policy and define the sanctions that may apply when a market party fails to comply with the provisions of the legal requirements. This legal framework is often introduced as a law or regulation covering multiple regulations (for different appliances).

However, it can also be introduced as part of the transposition of a single implementing directive (a separate legal framework per product covered) or as an integrated package with all implementing directives. The latter solution has been chosen for appliance energy labelling directives by some accession countries, as it allows for a single legal hurdle to be taken when transposing the EU directives. This may result in difficulties when updating regulations or adding new regulations (for new products).

Most EU countries have (therefore) chosen to implement a legal framework for applian-

ce energy efficiency and separate implementing regulations.

5.1.2 Step 2: Transposition of (implementing) directive under national legal framework

All EU implementing directives must be transposed into national law (according to the national legal framework), at the date indicated in the directives. For new member states, these dates are dependent on the accession agreements between the EU and the new member.

There is no prescribed format for this transposition, and all countries have chosen their own format to introduce appliance energy efficiency regulations in national law.

Member states are obliged to make a reference to the relevant EU implementing directive in the national law, although they are free to choose the format for this reference.

One issue is that the EU appliance energy efficiency regulations refer to EN (test) standards as the basis for the energy consumption calculation. These test standards are automatically introduced in EU member states and are harmonised according to an EU decision. Non-members, however, have to transpose these standards separately, and make a reference to the relevant national test standard in the national energy efficiency regulation.

5.1.3 Step 3: Assign responsibilities to appropriate services and/or agencies

An effective implementation requires that institutions (government departments, services or agencies) are assigned to actually perform the legal tasks that a government is responsible for: drafting the legislation, planning and executing product compliance verification and planning and executing retailer compliance verification.

Member states are free to choose the most appropriate way to organise these tasks, as long as they fulfil their obligation to ensure that “all suppliers and dealers established in

their territory fulfil their obligations". One issue is that assigning responsibilities needs to be done not only "on paper", thus identifying an agency that is legally allowed to verify compliance, but also in practice, by drawing up specific plans and assigning personnel and/or budgets for these tasks. A second issue is the possibility to sanction (or punish) a non-compliant market party (supplier or retailer), which may exist in principle, but may need to be tailored to the actual plans and the situation in the country.

5.2 Verification

In general verification aims to answer the question whether a supplier or dealer complies with the obligations of the framework directive and the implementing directives. As indicated in table 1, the practical steps to take are:

- visiting shops,
- checking web sites and mail order catalogues, and
- testing appliances.

Usually, it is impossible to test all appliances on the market, visit all shops that sell appliances or check all websites. Therefore, each verification procedure starts with a selection procedure.

Preparations	appliance selection
	shop selection
	make check list
	instruct staff
Shop inspections	visit shop
	record label status of appliances
	inform shop of next steps
Follow-up	assess the results and process them (in case of sanctions)
	feedback of the results to the shops
	store the results for the next shop/appliance selection
	report the results in an anonymous way

Table 5.1: Shop inspection steps

This section deals mainly with shop inspections and verification tests. Checking mail order and internet sales is briefly discussed in the shop inspections section.

5.2.1 Step 4: Shop inspections

Verification by means of shop inspections can be summarised by the items listed in table 5.1.

Step 4.1. Preparation

It is likely that in the case of shop visits all appliances covered by implementing directives will be checked. However, in some cases an appliance selection (e.g. restriction to appliances covered by recently introduced directives) can be useful. In these cases the appliance selection may guide the shop selection, because not all shops will sell all the selected appliances.

Shop selection can be performed by applying various (or a combination of) criteria:

- regional selection
- large – small shops
- shops already visited – shops not visited before
- shops that didn't comply with the label obligations during previous visits

Table 5.2 provides input for a shop visit checklist.

Staff instruction for shop visits should include:

- introduction to the checklist: what to fill in where
- how to carry out the shop visits: introduction, what to say and do, and what not to say or do
- practical tips, e.g. where to find a name plate

Make sure that all persons conducting the shop visits have the same information and the same instructions.

Step 4.2. Shop visits

The selected shops are visited without warning. However, to enhance the effect of selected shop visits, a general information letter could be sent to the national retail

Checklist item	Comments
Shop (visit) specific items: <ul style="list-style-type: none"> • name of the shop • address, etc. • date and time of visit • name of person that carried out the visit 	This data is – amongst others – to ensure that the shop can be located and identified for further communication, including enforcement if necessary.
Appliance specific items: <ul style="list-style-type: none"> • definition of the appliance (see directives and EN test standards) • the appliance should be displayed for sale; appliances for repair, second hand appliances and appliances not for sale, e.g. in storage, need not be labelled. 	Knowing which appliances have to be labelled is essential. Several implementing directives exclude certain appliances from labelling, e.g. microwave ovens are excluded from labelling under the ovens directive because they are not included in the relevant EN test standard.
Label specific items: <ul style="list-style-type: none"> • the layout of the label, e.g. does the label contain the coloured bars (a black & white copy is not allowed, except for lamps) • does the label indicate the correct type of appliance, e.g. is a dishwasher label displayed on a washing machine? • does the label contain all the data, i.e. is the correct datastrip present and complete? The datastrip includes the model number of the appliance which should correspond with the model number on the nameplate. • Is the label correctly placed: in a clearly visible position specified by the relevant implementing directive (see table 5.3) • Are no (other) potentially confusing or misleading labels present on the appliance. 	<p>The label is defined exactly in the implementing directives. In practice the label consists of a coloured background sticker and a data strip. The reason is reducing costs and simplifying handling: only the black & white data strip needs to be packed with the appliance. The background sticker with the coloured bars, which is appliance-specific but not brand or model specific, is provided to the dealer separately.</p> <p>However, note that all legal obligations refer to the label. Thus the dealer who displays only the datastrip is not complying with legal obligations, since (s)he is not displaying the (full) label. Furthermore, it means that the supplier not only has to deliver the datastrip, but also the background sticker.</p>

Table 5.2: Items for a shop visit checklist

and/or industry organisation informing that shop visits will take place in the next months to check the energy label. This letter could also include a notice that the following excuses from dealers for not labelling one or more appliances will not be accepted:

- the dealer did not receive the labels (data strips) from the supplier (this is highly unlikely since the data strip is put in the packaging at the factory)
- the dealer did not receive the background sticker from the supplier, so only the data strip is displayed
- the dealer put the label on the side or inside the appliance because otherwise it would disturb the design of the appliance.

When relevant, this letter might also include a notice that non-EU energy labels are no longer allowed on appliances on display (e.g., if non-EU labels have been used for some time in the country).

The label status of appliances is recorded according to the checklist and the shop is informed of the next steps. Depending on the enforcement procedure in the national law, enforcement action, e.g. imposing a fine, can be taken during the visit or afterwards. In this section it is assumed that the enforcement action is taken after the visit.

Appliance	Position	Reference (article)
General	The label shall be attached in the clearly visible position specified in the relevant directive	92/75, art. 4(a)
Refrigerators, freezers and their combinations	The label shall be placed - on the outside of the front or the top of the appliance	94/2, art 2(4)
Washing machines	- in such a way as to be clearly visible, and not obscured.	95/12, art 2(2)
Tumble driers		95/13, art 2(2)
Combined washer-driers		96/60, art 2(2)
Dishwashers		97/17, art 2(2)
Air conditioners		2002/31, art 3(2)
Lamps	The label shall be placed or printed on, or attached to, the outside of the individual packaging of the lamp. Nothing else placed or printed on, or attached to, the individual packaging of the lamp shall obscure it or reduce its visibility	98/11, art 2(2)
Ovens	The label shall be placed on the door of the appliance in such a way as to be clearly visible and not obscured. For multi-cavity ovens, each cavity shall have its own label, except a cavity which does not fall within the scope of the harmonized standards referred to in Article 2	2002/40, art 3(2)

Table 5.3: Position of the label

Step 4.3. Follow-up

The results of the visits are assessed and evaluated. Evaluation means that a decision is taken whether or not to apply enforcement action. The nature of this enforcement action will depend on national law, but it should ensure that suppliers and dealers fulfil their obligations.

The effectiveness of (future) verification is enhanced if the results are reported back to the shops. If a shop is part of a retail chain, feedback could be provided to both the shop and the head office. Shops that comply feel rewarded by an official feedback that they comply. Shops that do not (completely) comply know that they have to improve. The feedback information for these shops could contain a notice that they will be visited again in the near future (with-out specifying an exact date).

Although the dealer cannot excuse him/herself for not displaying the label correctly by blaming the supplier, the result of shop visits could be that suppliers are informed about their obligation to promptly provide the labels at a request of the dealer. In general the results of shop visits (and/or verification test) could be

a reason for authorities to discuss these results with industry and retail organisations.

Finally, the results can be stored by the authorities to be used for next selections, e.g. to include non-complying shops in the next selection.

5.2.2 Step 5: Checking mail order catalogues and internet sales

Checking mail order catalogues and internet sales can follow the same structure as shop inspections, although the number of items to be checked is reduced considerably. The framework directive requires in these cases that potential customers are provided with the essential information in the label of the fiche before buying an appliance. Essential in most cases will mean the energy efficiency class and (if applicable) the performance class. Before buying means that the information should be present in the mail order catalogue (and not only in the packaging that is shipped to the customer) and, in case of internet sales, that the information should be displayed with the other information on the product.

A special item regarding checking of mail order and especially internet sales is the requirement that Member States shall take all necessary means to ensure that all suppliers and dealers in their territory fulfil their obligations. Authorities should check whether this condition is fulfilled, e.g. check whether the internet site that advertises the product refers to a physical (postal) address in their country.

Cost of shop inspections

Shop visits are – compared to verification tests – a relatively cheap way of verification. The main costs are for personnel to carry out the visits. To reduce costs, temporary staff (e.g. students) could be used; however, staff should have at minimum the official authority to enter the shops and collect the data needed.

In order to process the results efficiently a good, working information system is needed.

5.2.3 Step 6: Verification tests

Measurements (tests) on appliances are carried out to verify the obligation of the supplier regarding the accuracy of the label (and the fiche). Article 8(2) of the framework directive states: “Unless they have evidence of the contrary, Member States shall deem labels and fiches to comply with the provisions of this Directive and the implementing directives.” This means that the (main) goal of the verification tests is to assess non-compliance; any product that is not found to be non-compliant is considered to be compliant. So, non-compliance has to be proven according to formal rules.

In addition to verification testing by governments, CECED, the European household appliance manufacturers organisation, has established a procedure to verify the accuracy of the data for products by one of its members (“CECED Voluntary Commitment on Operational Codes for test calibration of energy label declarations”).

Table 5.4 shows the main steps for the verification tests, that will be described in detail in the next sections.

Preparations	<ul style="list-style-type: none"> • laboratory selection • appliance selection • product selection
Carrying out the tests	<ul style="list-style-type: none"> • buy products • prepare test (e.g. loading plan) • carry out tests, including feedback to the suppliers
Follow-up	<ul style="list-style-type: none"> • assess the results and process them (in case of legal procedure) • store the results for the next product selection • report the results in an (anonymous) way

Table 5.4. Verification testing steps

Step 6.1. Preparation

In general, verification requires extensive cooperation between the authorities and the laboratory that carries out the tests. Thus, the selection of the laboratory is an important first step. In most cases a laboratory is contracted for several years to carry out tests on various appliances. It is inefficient for both authorities and the laboratory to change the laboratory after each series of tests, since managing the details of verification tests takes a considerable amount of time which will decrease with each test series. Furthermore, contracting a laboratory in most cases requires following the EU procurement procedure, which also takes considerable time. The laboratory should be independent and have considerable experience in testing the appliances according to the required standards.

Not all appliances (washing machines, cold appliances, ovens, etc.) will be tested at the same time or in the same year. Thus, a selection is required. Appliance selection can depend on several criteria, e.g.:

- average compliance with tests in the past,
- recently labelled appliances, or
- appliances for which a promotion or subsidy scheme is set up.

As mentioned before, in practice it is not feasible to test all products (models) that are on the market. Product selection can depend on:

- results of previous tests,
- market share of products,
- energy class of products,
- etc.

Step 6.2. Carrying out the tests

The tests must be performed according to the relevant European (EN) standards. The relevant standards are – except for cold appliances – not mentioned in the implementing directives but in the Official Journal. The rationale is that the test standards to be used can be changed by a notice in the Official Journal instead of changing the directive, which is a much more complicated procedure. The following table shows the relevant test standards (in October 2004). The Official Journal should be consulted to see which version of the standard is valid. In most cases this will be the most recent version. Furthermore, the listed standard may refer to other standards.

The standards are not 100 % without ambiguity, and in the past this resulted in heated debates between consumer organisations and manufacturers. By improving the test standards and adopting “Good laboratory

practices” these differences have considerably decreased. To prevent disputes, it is advisable that for specific products (e.g. refrigerators or freezers), the loading plan that will be used for a specific product (as described in the test standard), is sent to the supplier for approval before the test starts.

An important item for verification is that the standards prescribe how many tests need to be carried out and how the results are to be interpreted (see for example the sections ‘Tolerances and control procedures’ of several standards), i.e. in what situation it can be formally concluded that the product (model) is not complying.

For most appliances the control procedure in the standard is as follows:

- test 1 appliance; if the measured energy consumption ($E_{m,1}$) differs more than 15 % of the declared energy consumption ($E_{max,1} = E_{declared} \times 1.15$): test three further appliances
- if the average (arithmetic mean) of the three measured energy consumptions ($E_{m,3}$) differs more than 10 % of the declared energy consumption ($E_{max,3} = E_{declared} \times 1.10$): the product (model) does not comply

Appliance	Test standard	Reference number
General (Noise)	Council Directive 86/594/EEC	
Refrigerators, freezers and their combinations	Methods of measuring the energy consumption of electric mains operated household refrigerators, frozen food storage cabinets, food freezers and their combinations, together with associated characteristics	EN 153
Washing machines	Clothes washing machines for household use – methods for measuring the performance	EN 60456
Tumble driers	Tumble dryers for household use – Methods for measuring the performance	EN 60423 (IEC 61121)
Dishwashers	Electric dishwashers for household use – Test methods for measuring the performance	EN 50242
Household lamps	Energy efficiency of electric lamps for household use – Measurement methods	EN 50285
Air conditioners	Air-conditioners, liquid chilling packages and heat pumps with electricity driven compressors for space heating and cooling	EN 14511
Ovens	Electric ovens for household use – Methods for measuring the energy consumption	EN 50304

Table 5.5: Relevant test standards for verification testing

N.B.: this control procedure is different for some appliances (e.g. lamps).

Thus, to prove non-compliance, four tests have to be carried out (and in case of household lamps even 20 lamps have to be tested). It goes without saying that buying and testing 4 appliances, e.g. refrigerator/freezer combinations, involves a considerable amount of money. On the other hand, the consequences of non-compliance can have a large impact on the supplier.

For example, the verification procedure that is used in Denmark balances impact and costs by offering the supplier the opportunity to change the label based on limited evidence, but also with limited costs for the supplier.

The Danish procedure consists of three phases:

1. test of one appliance,
2. assessment of technical documentation, and
3. test of more appliances.

Step 6.3. Follow-up

During the procedure presented in the previous step, considerable attention is paid to communication with the supplier. In many cases, especially in smaller countries, this may be the importer of the appliance and not the manufacturer. In that case, however, it can be useful and more efficient to establish contacts with the manufacturer directly (of course with consent from both the importer and the manufacturer).

In any case, the results of the tests should be fed back to the supplier to prevent a waste of time and money in legal procedures on “non existing” problems.

A second part of the follow-up is to keep the test results for the next product selection. It is suggested to share the results with the relevant authorities in other countries, to prevent duplication of tests (on the same product) and/or be able to select ‘suspicious’ products (which failed to comply when tested).

Finally, the results can be published, e.g. on a public website (which enhances the impact of the tests), and/or in a summary report. It is suggested that the summary report should al-

so be available in English to share results with other Member States.

Costs

The costs of verification tests are considerable. Estimating the average price of an appliance test around €500, the test of four appliances (usually needed to prove non-compliance) amounts, including laboratory costs, to several thousand Euros.

Co-operation between countries and with manufacturers can decrease costs or, with the same costs, increase the number of tested appliances. However, co-operation is not easy to establish because of different institutional practices, planning etc. in different countries.

5.3 Enforcements actions

5.3.1 Suppliers and/or retailer enforcement action

If verification action has resulted in product or retailer non-compliance (according to a proper procedure, as described in the previous section), enforcement action should follow. This can take many forms, although differently for supplier and retailer issues.

For a product not complying (incorrect information on the energy label or an energy efficiency index above the level set by the minimum energy performance standard, as for cold appliances), a government could sanction a supplier by the means allowed by national law. Typical options are:

- forcing the supplier to change the label,
- withdraw of the appliance from the market,
- imposing a fine, or
- other means, dependent on national law.

For a shop not complying (incorrect labelling of the appliances on display), a government could sanction the retailer by:

- forcing the retailer to apply the correct labels,
- imposing fines, or
- other means, dependent on national law.

5.3.2 Cancellation of non-EU energy labels and/or marks

If shop inspections (of retailer compliance) has shown that possibly confusing labels or marks (e.g. non-EU energy labels or marks) are present, a government is obliged to take action to have these removed. This may be a relevant issue in some new Member States, if there have been national energy labels for some time that may still be available to retailers. Further steps are similar to other retailer enforcement action.

5.4 Why and how to do this? Experiences, hurdles and best practice examples

5.4.1 Why would governments and agencies make an extra effort? or

The benefits at a glance!

The effect of well-designed and well-implemented energy efficiency labels and standards in principle is to reduce unnecessary electricity consumption by household and office equipment, e.g. refrigerators, air conditioners, water heaters, and electronic equipment. Cost-effective reduction in overall fuel combustion has several beneficial consequences. The six most significant of these benefits are:

- Reducing capital investment in energy supply infrastructure
- Enhancing national economic efficiency by reducing the energy bills
- Enhancing consumer welfare
- Strengthening competitive markets
- Meeting climate change goals
- Averting urban/regional pollution

An implemented labelling-scheme is an essential precondition for a significant increase of energy efficiency in the domestic sector. Ensuring this potential is tapped to a great extent, governments have to focus on some crucial key factors.

- **Awareness of energy concerns**

The Energy Label - as shown in several stu-

dies – has the greatest influence on purchases when the consumer is already concerned about the use of energy in appliances. Therefore Member States are well advised to carry out a campaign for household consumers aiming at awareness rising on energy topics.

- **Full adoption / compliance at the point of sale**

The effect will be strengthened, if most appliances in the shop are fully labelled. This emphasises the importance of enforcing the scheme by checking the compliance at the point of sale.

- **Acceptance and trust regarding the scheme**

Unfortunately suppliers are providing incorrect data – e.g. for efficiency classes, energy consumption, or volume (for cold appliances) in some cases. Thus measures have to be undertaken by the Member States, according to the directive, to verify the declarations on the labels. Monitoring the accuracy of manufacturers' claims is more difficult and expensive – compared to the monitoring to the dealers' compliance – requiring identification of labels that might be inaccurate and independent testing to verify the data. Inaccuracies in the label can only be identified by other manufacturers or by independent test laboratories – consumers have no way of verifying the information displayed.

So adequate efforts have to be made ensuring that the basis for the reliance and acceptance regarding the energy label is not endangered to be affected.

The following parts are intended to highlight both hurdles and best practice examples for an effective implementation and enforcement of the labelling scheme.

5.4.2 Adequate Information policy – Involvement of stakeholder is crucial

The implementation will be much more effective, as the activities aiming at a wider public perception will be supported by several stakeholders and intermediaries.

The most relevant intermediaries will be:

- customers' organisations
- (regional) energy agencies
- (new) networks

Main target groups for promotional activities are:

- Appliance purchasers
- Utilities
- Energy advisors
- General public
- Retailers
- School children
- Teachers
- Media

Recommendations regarding the involvement of intermediaries:

- In most, if not all, interventions, intermediaries are involved in some aspects of the implementation. It is vital to pay early attention to these, since they are vital to ensuring a full implementation and a successful outcome (see also section design).
- Identify and recruit/harness the most motivated people to act as intermediaries in implementing the intervention. Not only will these people be much more likely to act enthusiastically in implementation, but also they will serve as exemplars/role models for the target market. And weak motivation tends to lead to weak effort.
- Identify similar activities at European, national, regional and local levels. Having identified them, set up links between them to enable ongoing communication and support. This will require careful organisation and resources to sustain it; however, it can avoid duplication and it can lead to real synergies.
- Ensure that intermediaries have been convinced – truly convinced – of the benefits of the proposed intervention, before using them to convince the market.
- Work at developing trust with intermediaries. This can be achieved through early and genuine involvement (see section design).
- Similarly, intermediaries must have a high level of perceived credibility among the target.

Credibility is a function of trust, and perceived impartiality.

- Identify and address any conflicts or differences in objectives between the proposed intervention and the intermediaries involved in implementation. For example, a utility may be more concerned about load smoothing than about absolute reduction in consumption; an organisation concerned with fuel poverty may have as its priority increased financial support for paying energy bills than in reducing the size of those bills.
- It is essential to make it easy for intermediaries to act. This means (a) not requiring too much time or effort; (b) providing them with the tools and the knowledge that are required; (c) treating them, also, as targets for behaviour change, which means addressing their concerns, barriers, priorities, etc; (d) providing them with feedback and reinforcement during the implementation phase, to reward positive effort and to allow them to monitor progress.
- Try to combine traditional methods with a network approach – that is, try to set up structures which enable people involved in the project to communicate with and support one another. This applies as much to intermediaries as to the real target(s): intermediaries require support just as much as any other target, and networks can provide mutual support.

5.4.3 Compliance – experiences and figures

The issue of real interest is the proportion of consumers who actually change their buying behaviour as a result of the Labels; it is only by changing their purchase patterns that consumers demonstrate that the Energy Label policy is working and that energy is being saved. The link between the Label and actual purchasing behaviour depends upon a complex interaction between:

- The proportion of appliance fully labelled in the shop;
- Consumer understanding of the Label;
- Consumer concern about appliance energy use;
- Consumer concern about the environment;

- Trust in the information on the Energy Label.

Where Labels are present on appliances in the shops, they are both noticed and recalled by consumers and the majority of consumers appear to have no difficulty in understanding and interpreting the main message of the Label. The level of compliance in the shops is a highly significant factor. A close match was found between the proportion of appliances in the shops that were correctly labelled in an individual country and the level of recall of the Label by consumers in that country. The simple presence of the Labels appears to be a stronger determinant of recall than personal interest in the energy use of appliances.

The level of compliance correlates strongly with the ability of consumers to recall the Label: the more appliances are labelled, the more people remember the Label. Whether the Label actually influences the choice of appliances depends largely on attitudes to energy consumption; these vary from country to country. Overall, there is a correlation between the proportion of appliances that are labelled in the shops and the proportion of consumers who say their purchase was influenced by the Label. This emphasises the importance of enforcing the scheme.

Shop tests in Denmark in 2004

In this survey, checks were made in 83 shops, where energy labels were registered on a total of 4863 appliances. The energy label was registered as correct if the appliance had a clearly visible energy label. If, for example, the energy label was inside an appliance or an appliance just had a strip stuck to it, the label was registered as incorrect.

Of the appliances checked, 3255 were correctly labelled, equivalent to 67 %. For purposes of comparison, the result of the 18th test series, at which 3631 appliances were checked, was that 2325 were correctly labelled, equivalent to 64 %.

In 20 of the shops, the labelling was more than 90 % correct, while the labelling was

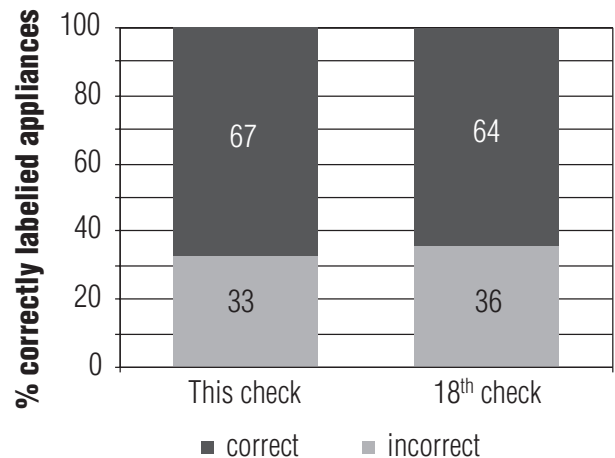


Figure: 5.1: Share of correct or incorrect labelled appliances in the check in 2004 and in some years before (18th check)

Source: Danish Energy Authority (2005)

less than 90 % correct in a total of 63 shops. Energy Labelling Denmark follows up on shops at which the labelling is less than 90 % correct.

The survey covered 41 shops that were visited for the first time, while 42 shops had been visited previously. The chart shows the overall check results divided into shops that were visited for the first time and shops that had been visited previously.

As the chart shows, the results were best in shops that had been visited previously. The

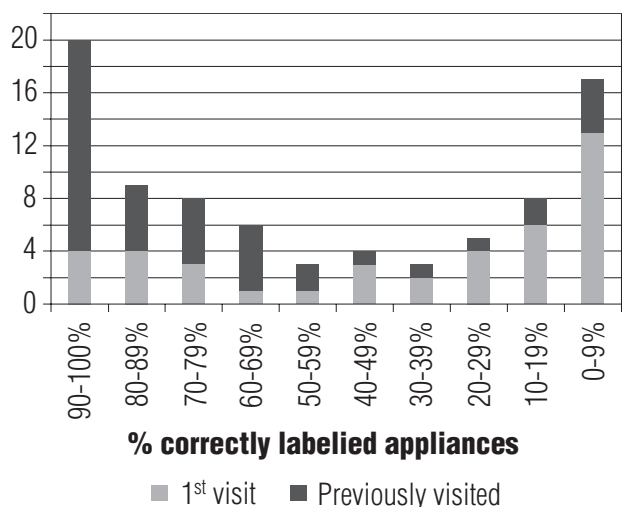


Figure: 5.2: Share of correct or incorrect labelled appliances depending on the shop being visited first time or previously visited

Source: Danish Energy Authority (2005)

labelling for such shops was more than 90 % correct in 16 shops, equivalent to 38 %. Of the shops visited for the first time, the labelling was more than 90 % correct in 4 shops, equivalent to 10 %. The result corroborates the results from previous checks, which also showed that shops that have been visited previously have more products, on average, that have correct energy labelling.

A total of 63 shops were followed up, of which 37 were shops that had not previously been visited. Of the 37 shops, 6 were household appliance shops, while the other 31 were kitchen shops, DIY centres, timber merchants or other types of shop that do not have household appliances as their primary sales area.

5.4.4 Appliance testing – Experiences regarding deviation

Since the idea of the labelling scheme was first suggested, it was necessary to confirm the accuracy of the laboratory data produced by manufacturers with the actual performing characteristics of household appliances. Consumer organisations regularly check and test if the energy use measured in their tests diverges to some degree from the ones reported by manufacturers.

In order to try to confirm and quantify the problem, the EU SAVE Project Cool Label commissioned a systematic re-analysis of data

generated in tests carried out for a group of consumer organisations. The laboratory data collected between 1994 and 1997 provided a consistent source of independent product test information, the conclusions of which have already appeared in the public domain. The data came from research reports held at the Consumers' Association Research and Testing Centre (CARTC) in the UK.

In total, the tests collected data on 397 models. The models submitted for testing by consumer organisations are normally selected on a random basis from shops, as the aim is to test examples of the actual models that consumers buy. In some cases, however, second samples of particular models were also tested. These second samples included models that were tested because the first sample tested had exceeded the manufacturer's stated energy consumption by more than 15%.

Results

The results of this research conducted in the 1990s were striking in some ways. In only 21% of cases were the CARTC figures within 5% of those declared by manufacturers. In 41% of cases, the CARTC figures differed by more than 15% from those reported by manufacturers.

In addition, in only 15% of cases did CARTC's results produce energy efficiency figures that

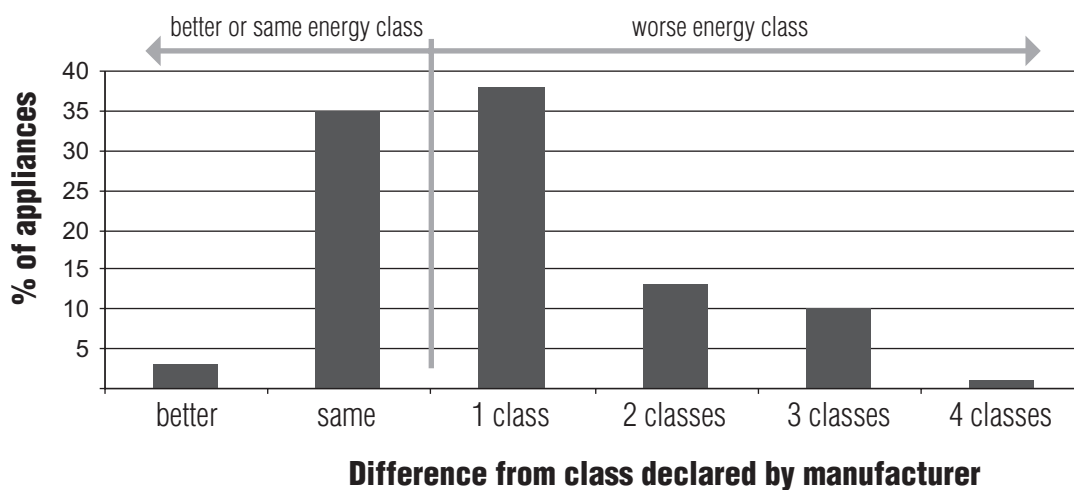


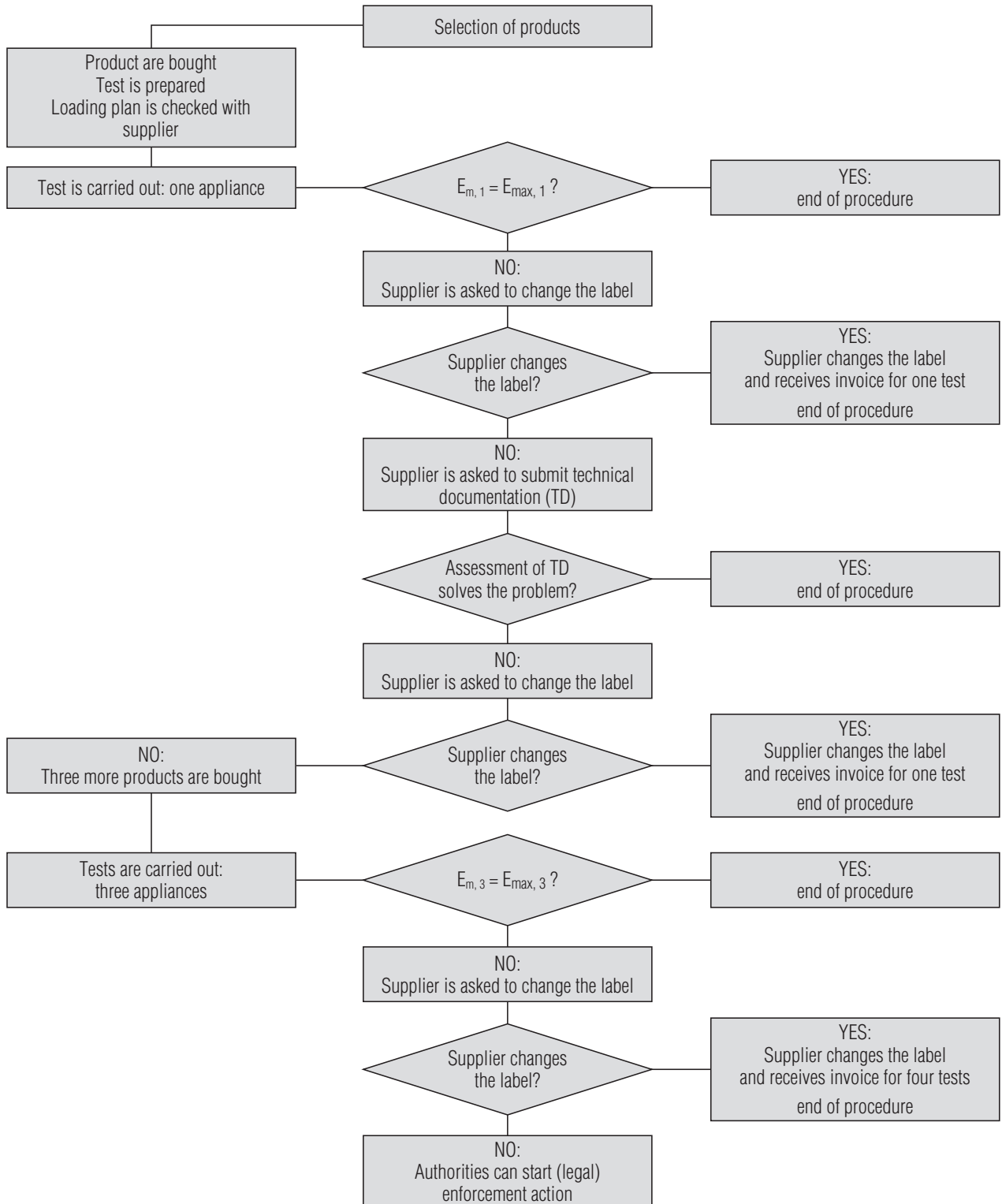
Figure 5.3: Changes in label class with CARTC data

Source: J. Winward, P. Schiellerup, B. Boardman; University of Oxford (1998)

were better than those declared by manufacturers, while 85% showed worse performance.

In the relatively small number of cases where CARTC's results showed better performance than the manufacturer has declared,

the differences were small, rarely large enough to cause the appliance to change to a better energy efficiency class. Differences on the other side were much more wide, and it was notable how many cases showed a very large



Verification test procedure

difference: 22% of all appliances in the sample had a recorded energy consumption more than 25% greater than that published by their manufacturer.

When analysed using CARTC energy data and manufacturers' declared volumes, a very small proportion (approximately 3%) of appliances could move into a higher class than they previously occupied; a further 36% remained in the same class – though this included Class 'G' appliances, which could not change to a lower class. A relatively large proportion (61%) of appliances changed class, and almost a quarter of the appliances dropped (about 11% of the total population).

Note: It has to be stressed that the research data refers to the years 1994 to 1997, when energy label legislation was new also in the old EU member states. The reason to include it into this publication was to indicate potential problems with declared and measured energy efficiency parameters of household appliances. However, further research shows that in general and in a well-surveyed market, product's energy performance declarations are in line with the measured values, although manufacturers do seem to make use of the allowed tolerance (usually 15%) between declared and measured values.

In contrast, appliance tests completed by the Danish Energy Authority in 2004 show a distinctly more positive result. Only one appliance out of 12 A+ and A++ fridge and freezers yielded a result diverging from the supplier's information. For instance tests on

washing machines resulted in a validation of the energy data in general but with a difference regarding washing performance in more than a half.

5.4.5 Verification test procedure

The Danish verification test procedure shall be presented as an example. The chart Verification test procedure shows the necessary steps undertaken in a formal appliance test procedure. Similar structure of steps can be undertaken in any other European country applying to the label legislation.

5.4.6 The "A, A+ and Super A"-Theme

As many manufacturers tend to promote their upper-level products, characteristics like premium labels will be highly appreciated. It occurs as quite common phenomenon – despite the lack of empirical data – that suppliers use identifiers like "Super A" or "A super Plus", or even "A+" for non cold appliances. In order to safeguard consumers against confusion and misleading, governments are recommended to inhibit such attempts at an early stage.

In 2002, European manufacturers also requested the introduction of a new A+ category for clothes washers, but this was ultimately rejected by the EU Energy Labelling Regulatory Committee and the European Commission, largely because the A+ approach adopted for refrigerators was seen as a temporary measure in advance of a more holistic revision of the existing labelling scheme.

6 EU Decision making process

6.1 An overview

Regarding the viewpoint of the Central and Eastern European countries, the priority focus area within the EU policy is the EU Acquis. The core part of this chapter concentrates therefore on the policy making process in terms of the development and approval of new legislation in the area of appliance energy efficiency. Main actors in this field are the European Commission (the Commission), the European Parliament (EP) and the Council of the EU (the Council).

The starting point of a legislative proposal is when the European institutions decide that EU action is required in a particular area. The key institution at this early stage is the Commission because it has the right to initiate legislation and is responsible for drafting legislative proposals. There are no formal rules for the development of draft legislation. Nevertheless, in case of appliance energy efficiency Acquis, there exists a proved common practice for this drafting process. The time required for policy development (drafting to adoption) can vary widely. In general, three to six years were required for the development of the policies currently in place, with a further two to three years before national implementation of the legislation was completed.

The first step usually presents an analysis of the market situation in the European Union regarding a specific appliance, technical possibilities to improve energy efficiency and other relevant items. Such analyses are mostly prepared by consortia of agencies and consulting companies, and used to be funded under the SAVE programme (now Intelligent Energy for Europe). Stakeholders (mostly industry stakeholders) may be involved in this analysis. This step may take one to three years, and more when a (new or updated) test standard is required.

The second step are the initial consultations: The preparation of a first legislation draft is conducted by the Commission,

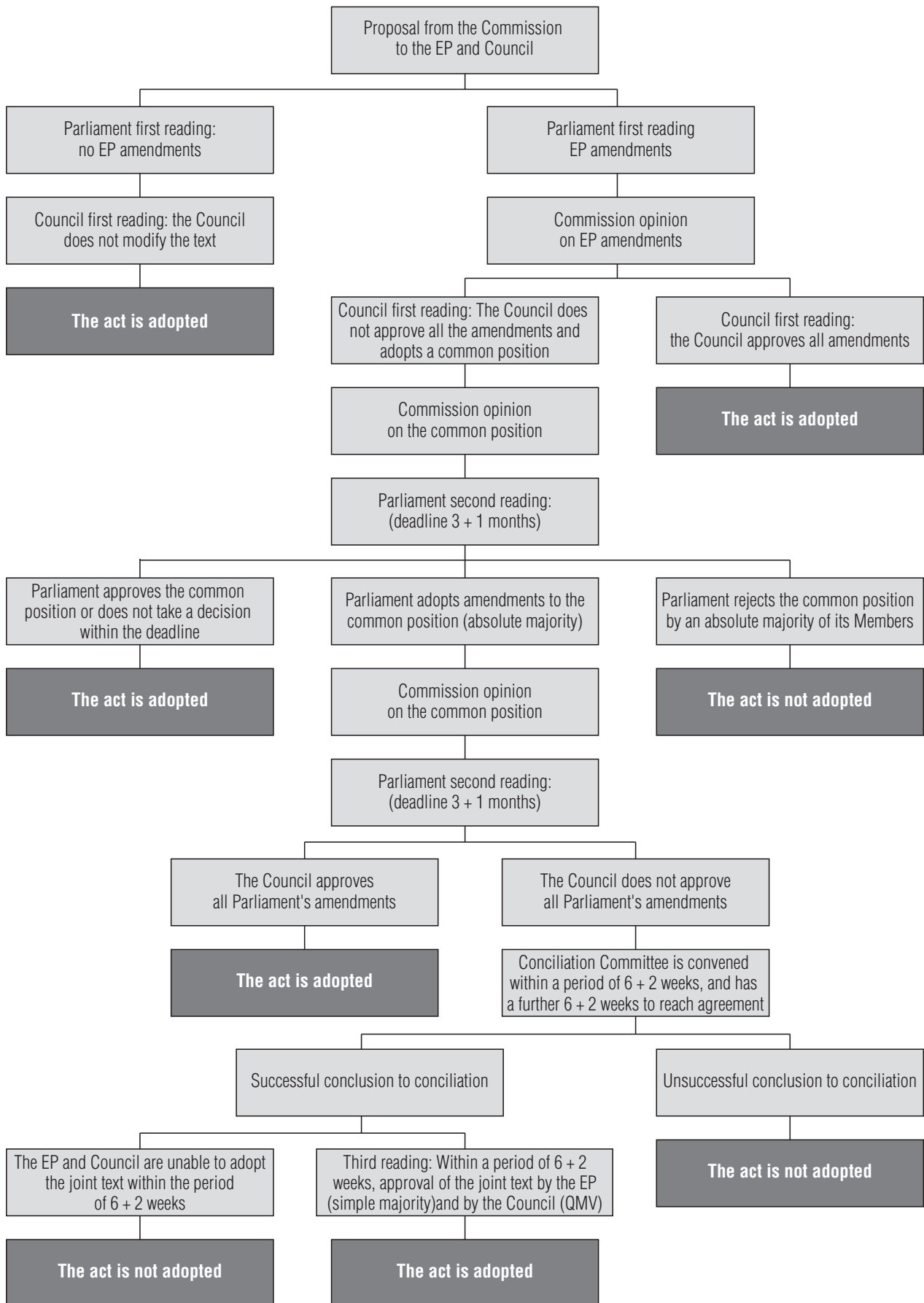
which, prior to producing a first proposal, consults with relevant interested bodies, and invites comments from EU member states as well as industry, and sometimes also other groups like consumer organisations and test standard organisations. These consultations typically require up to one year. If required, the Commission can give a mandate to CEN and/or CENELEC to develop a new test standard or to adapt an existing one.

Market analyses and consultations are to be considered as an opportunity to provide input into draft European legislation at the very early policy initiation stage. They can eventually lead to an invitation to industry associations to discuss a negotiated agreement to supplement legislation or to be agreed instead of legislation. Hence, it is of key importance to know if and when the European Commission is considering launching an open consultation with interested bodies.

Last step of the Acquis development stage presents the preparation of a final legislation draft: The officials in the DG TREN are responsible for drafting the legislation and steering it through the policy-making process. These officials are useful sources of information for finding out about the legislation itself. Early contact with the officials responsible provides an opportunity to raise particular national interests and concerns before a proposal has emerged in a draft form.

During the procedure presented in the previous step, considerable attention is paid to communication with the supplier. In many cases, especially in smaller countries, this may be the importer of the appliance and not the manufacturer. In that case, however, it can be useful and more efficient to establish contacts with the manufacturer directly (of course with consent from both the importer and the manufacturer). During the drafting stage, the Commission officials are assisted by advisory committees, of which there are two main types:

(1) *Expert Committees*: Expert Committees consist of national officials and experts and



are nominated by national governments. In the case of appliance energy efficiency, the relevant committee presents the Energy Labelling Regulatory Committee (ELRC), which is well established and usually meets every 3-6 months. Commission consultation with the national experts assembled in the ELRC is compulsory. This expert committee can alert the Commission to probable national government reactions to a proposal and, therefore, to any possible problems that could arise at a later stage in the policy process if certain views are not incorporated.

(2) *Consultative Committees*: These committees consist of representatives of sectional interests and are organised and funded by the Commission directly, without any reference to the national governments. Responsible officials of DG TREN control the drafting process. Drafts are then sent to the lead Commissioner's office and require their approval before its formal adoption by all the Commissioners during their weekly meetings on a Wednesday. The texts of Commission proposals are published as COM documents. These can be found on the EU's legislative database, EUR-Lex (www.europa.eu.int/eur-lex).

In practice, all the important decisions regarding the design of the legislation are taken during the Acquis preparation stage. Member states and industry stakeholders are frequently consulted and the European Commission secures their support before preparing a final legislation draft. Discussions about draft proposals in the relevant expert committee (usually ELRC) often take more than one year; the formal adoption by the Commission then often requires two to three months time.

6.1.1 Decision Making on New Policy

Once the Commission submits a finalised legislation proposal to the responsible decision making bodies, it is a subject of formal approval. The core legislative procedure presents the codecision, which is the most widely used decision-making process within the EU.

In principle, after the draft legislation is presented by the European Commission to the Council and the European parliament, it is a

subject of discussion and formal voting in both decision making bodies. The approval of new legislation depends upon consensus, hence it is adopted only if both fora agree; otherwise, the process is repeated with an amended directive.

Implementing directives on energy efficiency labelling of concrete appliances present a special case. These are approved via a simplified procedure instead of codecision:

- The Commission presents the draft directive to the Energy Labelling Regulatory Committee, which consists of Member States representatives (usually officials from the relevant ministry or agency);
- Discussion and formal voting on the draft directive, each state has one representative
 - If a qualified majority is achieved, the Commission decides to adopt the directive.
 - If the draft does not obtain a majority support, the Commission decides either to withdraw the proposal, or to submit for discussion and formal voting in the Council

The legal basis for the implementing directives is, however, provided by a framework directive (92/75/EC), the amendments of which would subject to the codecision procedure.

6.2 Participation of New Member States and Accession countries in the EU Appliance Energy Efficiency Policy

In view of the complexity of EU policy making process and its impact on the national level, it became necessary for Central and Eastern European countries (CEECs) to adopt appropriate measures enabling their efficient communication with the EU decision making bodies and thus participation in the EU policy. These measures are reflecting the different position of the CEECs with respect to the date of entry into the European Union, i.e. the EU Accession Countries, distinguishing between those which belong to the new EU 10 and those ones, the entry of which is expected in the next years; and the future candidates for EU accession*.

Historically, the priority area for CEECs presented the implementation of the EU Acquis. According to the survey carried out under the CTI/IEA Appliance Efficiency Early Adoption Programme in 2002, all participating countries had framework strategies or programmes in place for the transposition of EU Acquis into national law.

However, the reported experience in the area of EU policy development was rather limited. This situation is going to be changed. The recent growing involvement in EU policy making process, especially across CEECs that have accessed the EU in 2004, has resulted in the need for the adoption of new strategies that should be based on a pro-active approach in influencing the EU policy development.

6.3 Possibilities for Involvement of CEECs in EU Appliance Efficiency Policy Making

In general, all CEECs are eligible to be involved in the drafting of new policy by taking part in the preparation of initial analyses and by having the opportunity to comment on the initial legislation drafts. Further, the Commission may invite experts from all CEECs to the Consultative Committees, which are responsible for preparing a final draft. Hence, the CEECs can take the opportunity to have their opinions reflected in the most decisive phase of the EU policy making.

As for the formal part of the appliance efficiency policy making process, the New Member States fully participate in all aspects of the policy making process, including voting. Accession countries can take part as observers, who are not eligible to a formal vote (yet) but who can express their opinions and comments; and, once becoming an EU member state, they also are expected to fully participate in all stages of the formal decision making process.

The full participation entails both the involvement of the member state administration, i.e. the mandatory consultations with the ELRC – the expert committee consisting of national government officials or delegated representatives and the participation in Council discussions and voting, as well as the involvement on the political level, i.e. the discussion and voting in the Parliament.

The strategies adopted by CEECs generally focus on the efficient involvement of the state administration, since this is responsible for implementing the Acquis on national level. In this respect, it proves particularly useful for the national administrations to coordinate their effort and to exchange experience with their counterparts in other countries that either face or have faced the same challenges. This service can be effectively provided by the national energy agencies, who can use their existing informal networks, such as the CEECAP or the EnR Working Groups on Labelling and on Central and Eastern Europe.

*) This section partially applies to non-EU Member States that are member of the European Economic Area. These countries have no voting rights on EU legislation, but they can be consulted and express their opinion before a Commission decision is taken.

7 ANNEX

Important internet links:

- CEECAP project homepage: <http://www.ceecap.org>
- EU energy efficiency legislation for labelling and minimum standards:
http://europa.eu.int/comm/energy/demand/legislation/domestic_en.htm
<http://europa.eu.int/scadplus/leg/en/lvb/l32004.htm>
- Ecodesign of Energy Using products:
http://europa.eu.int/comm/energy/demand/legislation/eco_design_en.htm
- Overview of Energy Intelligent Europe projects focused on energy savings:
http://europa.eu.int/comm/energy/intelligent/projects/save_en.htm
- Collaborative Labelling and Standards Program: <http://www.clasponline.org>
- International Energy Agency, Energy Efficiency page:
<http://www.iea.org/Textbase/subjectqueries/index.asp> → Energy Efficiency
- European Energy Network Labelling and Ecodesign Working Group:
<http://www.enr-network.org/labelling.htm>

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For the production of this publication, two main sources were used:

- **CEECAP Guidelines: *Policy Design Verification & Enforcement and Market Introduction***, Klinckenberg Consultants, 2004. Authors and Co-authors: Frank Klinckenberg, Klinckenberg Consultants, the Netherlands, Martin Bella, Slovak Energy Agency, Slovakia, Hans Paul Siderius and Antoinet Smits Siderius, SenterNovem, the Netherlands, and Emmanuel Bergasse, International Energy Agency. The publication was produced with the financial support from the Ministry of Economic Affairs of the Netherlands and the International Energy Agency.
- **CLASP: *Energy-Efficiency Labels and Standards: A guidebook for Appliances, Equipment, and Lighting***, Wiel S., McMahon J.E., et.al., CLASP, Wahsington DC, February 2005. The publication was produced with the support of the U.S. Agency for International Development and the United Nations Foundation. Further supporters include the United Nations Development Programme's Global Environment Facility, the U.S. Environmental Protection Agency, the International Copper Association, the Australian Greenhouse Office, Natural Resources Canada, and the U.S. Department of Energy.

Further references:

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- S.M. van der Sluis, 2001, Cold Appliance European Ring Test; in: Energy Efficiency in Household Appliances and Lighting, Springer, 2001

Energy

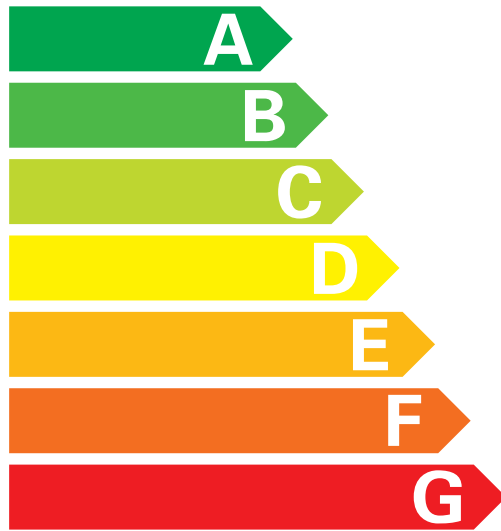
Dishwasher

Manufacturer

Model

LOGO
ABC
123

More efficient



Less efficient

Energy Consumption kWh/cycle
(based on the test result for manufacturer's standard cycle using cold fill)

X.YZ

Actual consumption will depend on how the appliance is used

Cleaning Performance
A: higher G: lower

A B **C** D E F G

Drying Performance
A: higher G: lower

A B C **D** E F G

Standard Place Settings

Water Consumption l/cycle

YZ

YX

Noise
(dB(A) re 1 pW)

XY

Further information is contained in product brochures

Norm EN 50242
Dishwasher label Directive 97/17/CE



Project partners



SEVEn,
The Energy
Efficiency Center
Czech Republic
www.svn.cz



KAPE,
The Polish National Energy
Conservation Agency
Poland
www.kape.gov.pl



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