

COMMISSION OF THE EUROPEAN COMMUNITIES

COM(94) 521 final

Brussels, 07.12.1994

94/0272 (COD)

Proposal for a
EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE
on energy efficiency requirements for household electric refrigerators,
freezers and their combinations

(presented by the Commission)

CONTENTS

	<u>Page</u>
<u>Explanatory Memorandum</u>	3
I. Energy Efficiency Background	3
II. Initiatives on Household Equipment and Refrigeration Appliances	4
III. Setting the Efficiency Standards	6
IV. Impact on the Industry	8
V. Administrative Arrangements Proposed	8
VI. The Need for Community Legislation and Consultations with Interested Parties	10
VII. Scope of the Proposed Directive	13
VIII. Results Expected from the Proposed Directive and Accompanying Measures	13
IX. Impact on Society as a Whole	14
<u>Proposal for a European Parliament and Council Directive</u>	16

EXPLANATORY MEMORANDUM

I. Energy Efficiency Background

Improving the efficiency with which energy is consumed has long been a central theme of energy policy within the European Community. Improved energy efficiency reduces energy consumption, thereby reducing the use of finite energy resources as well as the dependence on energy resources imported from outside the Community. There is also a corresponding reduction in the generation of pollutants associated with energy production and use, including emissions to the atmosphere of carbon dioxide (CO₂), the major cause of the greenhouse effect. As described below, the Member States agreed in October 1990 to stabilise carbon dioxide emissions in the Community by the end of the century and increased energy efficiency has a key role to play if this objective is to be achieved. Moreover, there is very considerable scope for energy efficiency improvements which are economic, that is the value of the energy saved repays the cost of the efficiency improvements within a few years or less. Such measures can therefore improve the competitive position of industry and commerce in the Community, since less energy is used for a given output and, by similarly reasoning, they can also improve the economic welfare of domestic energy users. A series of initiatives have therefore been agreed at Community level on improving energy efficiency.

There is also an internal market dimension to some energy efficiency initiatives, in that they can involve requirements for energy-using equipment which is traded within the Community, for example domestic appliances. In order to prevent potential barriers to trade, these requirements need to be harmonised at Community level. The internal market also requires industry and commerce to be operating under similar conditions across the Community as far as practicable, thus reinforcing the need for comparable efforts between Member States on energy and associated environmental initiatives. The precise framing of measures to improve energy efficiency however, will often need to take account of differing national circumstances and opportunities and, where there is no overriding need for action at Community level, may be left to national competence, in line with the principle of subsidiarity. These different considerations, of common energy and environmental objectives, of internal market considerations, and of the principle of subsidiarity, provide the background to the evolution of energy efficiency initiatives, as described in the following paragraphs.

On 15 January 1985⁽¹⁾ the Council adopted a Resolution inviting the Member States to pursue and increase their efforts to promote the rational use of energy. Vigorous efforts on energy saving were again called for in the Council's Resolution of 16 September 1986⁽²⁾ on energy policy objectives for 1995, which included the objective of improving the efficiency of energy use by at least 20% by that date. In the ensuing period of low energy prices, however, it became clear that the level of effort had in general declined and that the 1995 energy efficiency objective would not be reached, despite the continued underlying justifications for improving energy efficiencies and, in particular, the increasing concerns related to the greenhouse effect.

These concerns were addressed in the Single European Act, which entered into force in 1987, which added an Article⁽³⁾ to the Treaty requiring Community actions relating to the environment to have among their objectives the prudent and rational utilisation of natural resources and the protection of the environment.

(1) OJ No C 20, 22.1.1985, p. 1.

(2) OJ No C 241, 25.9.1986, p. 1.

(3) Article 130r of the Single European Act, 1987.

Because of the particular importance of electricity in the energy sector, with electricity generation accounting for about 35% of total primary energy use and about 30% of man-made CO₂ emissions to the atmosphere, the Council adopted a Decision on 5 June 1989 establishing a Community action programme for improving the efficiency of electricity use, (PACE)⁽⁴⁾. This Decision calls for the management of actions within the Member States, with the Commission playing a coordinating role and, where appropriate, leading its own actions.

On 29 October 1990 a combined Energy/Environment Council agreed the objective of stabilising CO₂ emissions in the Community by the year 2000 at 1990 levels. A Communication from the Commission to the Council⁽⁵⁾ setting out a strategy to help achieve this objective was subsequently prepared and presented to the Council.

In particular, a major role in achieving CO₂ emission reductions is foreseen through improved energy efficiency and on 29 October 1991 the Decision establishing the SAVE programme⁽⁶⁾, to give a new impetus to the promotion of energy efficiency in the Community, was adopted by the Council. This document sets out the kind of actions to be pursued under the programme, which include initiatives in all energy consuming areas of the economy, (homes, buildings, the transport sector, industry, etc.), and the methods to be adopted for their promotion, (information, voluntary agreements, legislation on standards, training, promotional campaigns, etc). A specific proposal for a Council Directive was subsequently made by the Commission in this framework requiring action, in line with the subsidiarity principle, by Member States to improve energy efficiency in a series of areas, including the energy certification of buildings, billing actual energy use in multioccupancy buildings, the regular inspection and boilers and promoting energy audits in businesses. The Directive⁽⁷⁾ was adopted on 13 September 1993.

II. Initiatives on Household Equipment and Refrigeration Appliances

As noted above however, certain energy efficiency measures, in particular those applying to tradeable goods, must be established on a common Community-wide basis, in order to prevent potential barriers to trade. In this respect, both the PACE and SAVE programmes foresee initiatives to improve the energy efficiencies of domestic energy using equipment. A Directive establishing energy efficiency performance standards for domestic boilers, the first such directive of its kind, was adopted on 21 May 1992⁽⁸⁾ and a Framework Directive on the labelling and other provision of standard information on the energy use of household appliances was adopted by the Council on 22 September 1992⁽⁹⁾. The Commission has adopted on 21 January 1994⁽¹⁰⁾ the Application Directive for labelling of household refrigeration appliances.

Household appliances account for about two thirds of electricity consumption in the domestic sector and offer significant potential for further improvements in their energy efficiencies. A workshop was therefore organised by the Commission in November 1990 to examine how best to try to realise the potential improvements in appliance efficiencies. All major actors in this area, including representatives of appliance manufacturers, national administrations, retailers, electricity supply companies, consumers, standard bodies, researchers and other

⁽⁴⁾ OJ No L 157, 9.6.1989, p. 32 - the acronym is from the name in French: Programme d'action communautaire visant à améliorer l'efficacité de l'utilisation de l'électricité.

⁽⁵⁾ SEC(91) 1744 of 14 October 1991.

⁽⁶⁾ OJ No L 307, 8.11.1991, p. 34 - Specific Actions for Vigorous Energy Efficiency, Council Decision of 29 October 1991 (91/565/EEC).

⁽⁷⁾ OJ No L 237, 22.9.1993, p. 28.

⁽⁸⁾ OJ No L 167, 22.6.1992, p. 17.

⁽⁹⁾ OJ No L 297, 13.10.1992, p. 16.

⁽¹⁰⁾ OJ No L 45, 17.2.1994, p. 1.

experts were invited, and over 120 participants attended. In the light of the discussions during this workshop, the Commission has been following a dual approach of firstly promoting greater awareness by consumers of the availability of more energy efficient models of appliances, and secondly by directly promoting the production of more efficient appliances by manufacturers. The labelling and standard product information Framework Directive mentioned above, together with Application Directives for the different appliances which will follow, correspond to the first approach. On the second approach, that is directly promoting energy efficiency improvements at the production stage, again two lines of action were pursued. The first concerned work on the setting of "floor level" mandatory energy efficiency performance standards for domestic appliances which must be met or exceeded by manufacturers and the second concerned investigating the possibilities for agreements by appliance manufacturers to improve appliance efficiencies on a voluntary basis. It is also possible that both lines could be adopted together; a mandatory requirement for a floor level of efficiencies and a voluntary agreement for further improving appliances above this floor level.

To date the Commission's efforts in this area have been concentrated on domestic refrigeration appliances⁽¹¹⁾ because they are the most important energy consuming domestic appliance with the greatest energy savings potential, and also because procedures for measuring the energy use of such appliances have been agreed⁽¹²⁾. Moreover, in January 1992, the Commission received a notification from the Netherlands administration of its intention to introduce mandatory efficiency standards for domestic refrigeration appliances sold in their country. As a potential barrier to free trade in the Community, the Commission suspended this initiative, with the intention of formulating a Community-wide proposal for standards for such appliances, as empowered under Directive 83/189/EEC⁽¹³⁾.

In the light of this development, the Commission organised a second workshop in April 1992 to discuss the methodologies for setting energy efficiency standards, in particular for refrigeration appliances, to which all interested parties were again invited. At the workshop, a number of representatives of the appliance manufacturing industry, and of some Member States, stressed the need to continue to fully investigate the possibilities for voluntary agreements by the industry to improve appliance efficiencies. Exploratory discussions on this topic were therefore held between representatives from the industry and in particular of CECED, the European association of appliance manufacturers, and Commission officials assisted by various experts.

A number of meetings were held and letters exchanged from May to October 1992, with the Member State administrations being kept continually informed. Throughout the discussions, the Commission maintained that a satisfactory voluntary agreement would have to include three main elements: i) commitments by manufacturers accounting for most of the appliances sold on the Community market (say 80% to 90% at least), ii) quantified commitments to significant improvements in the energy efficiencies of the appliances they produce over a reasonable timescale, and iii) an effective monitoring scheme with some degree of independence to monitor the energy efficiency improvements achieved.

The energy efficiencies of refrigeration appliances currently available on the market vary considerably for the same type and volume of appliance, some models indeed using one half or less electricity than other models. Nor are more efficient appliances necessarily more expensive, reflecting the fact that improvements in efficiencies can be achieved for relatively low costs. Furthermore, improving the energy efficiency of refrigerators is economically interesting, since the value of the electricity saved overshoots the little extra cost for the consumer. The payback time for such an improvement is in the order of one to two years

(11) Refrigerators, freezers, and combinations of these.

(12) European Committee for Standardisation Standard EN 153 of May 1990.

(13) OJ No L 109, 26.4.1983, p. 8 and OJ No L 81, 26.3.1988, p. 75.

and thus, given the average 12 years-lifetime of a refrigerator, this will result in a net economic advantage for the consumer.

The provision of information on the energy consumption of refrigeration appliances, as required under the relevant Directives described above, will make consumers more aware of this aspect in their purchasing decisions, but the increase in the sales of more energy efficient appliances resulting from this is likely to be somewhat limited. This is because other factors are in general more important for the consumer in arriving at the purchase decision, such as the size, appearance, and particular facilities offered by the appliance. A mandatory "floor level" efficiency requirement is therefore needed to prevent the continued sale of appliances on the market with low energy efficiencies. The labelling and product information scheme is nevertheless required to enhance competition and awareness on energy efficiency above the "floor level", and the two measures are therefore seen as both complementary and essential. The present proposal for a Directive indeed has been drafted so as to be compatible with the Application Directive on the energy labelling and provision of information for domestic refrigeration appliances.

The refrigeration appliance manufacturing industry are having to face another challenge motivated by environmental protection measures, namely the phasing out of the use of CFC's (chlorofluorocarbons), active in destroying the ozone layer in the atmosphere. Substitute materials for both the insulation and for the cooling circuit fluid in refrigeration equipment have been developed, which only reduce overall appliance efficiencies by a few percent and in some cases not at all. Some commentators have raised this issue as a complication in meeting energy efficiency standards but since the proposed efficiency standards can be relatively easily met using existing technology, the phasing out of CFC's does not present of itself a significant problem in this respect. It is perhaps true however that specialised design and product development staff in the industry are currently occupied with the problems of introducing CFC substitutes, giving less time for other new requirements, although it is also true that they should often be able to work on developing models with improved energy efficiencies at the same time.

III. Setting the Efficiency Standards

Because the electricity consumption of refrigeration appliances is a function of their volume, as well as their performance characteristics (eg. star rating or cooling power, automatic defrosting, etc.), efficiency standards in the proposed Directive are established as a function of volume, with a different equation for each defined category of appliance. In fact the "adjusted volume", which is a weighted sum of the volumes of the different temperature compartments in a given appliance, is used as the main independent variable. The different categories reflect the main types of appliance based on their performance features. For example, a distinction is made between a refrigerator with a one star frozen food compartment and one with a three star compartment. The first type of compartment is to keep food at -6°C or below, whilst the second has an upper temperature limit of -18°C . The appliances therefore have different performance specifications and can be expected to have different energy consumptions. Appliances within a category however can be compared and differences between their electricity consumptions will result mainly from their energy efficiencies, for example reflecting differences in the thickness of the insulation in the walls of the appliances.

Eight categories of appliance were adopted, (with a special allowance factor for no-frost facilities), as explained in Annex I to the proposed Directive. Some commentators have suggested further subdivision of categories, to reflect other energy consuming features which are available. The Commission does not feel further subdivisions appropriate however, since the combinations of possible features and therefore categories would then substantially increase and make the scheme unworkable. Moreover, manufacturers can relatively easily take measures to improve efficiencies further if necessary within a given category to compensate for any additional and relatively minor energy consuming features.

In order to give the appliance manufacturing industry time to adapt whilst ensuring progress to an achievable and economic level of efficiencies, two levels of minimum efficiency standard are envisaged; the first to take effect after three years from adoption of the Directive, and the second level of standards, about four years thereafter. The first level of efficiency standards, defined for each appliance category, are based on the so called "statistical approach". In this approach standards are set which eliminate the least energy efficient appliances comprising a certain proportion of all appliances currently available on the market. As has been described, the efficiencies of many of these models can be improved relatively easily and at only modest extra cost. This reflects the low level of attention currently given to energy efficiency for a significant share of appliances produced. The first standard has therefore been set to give an average improvement in efficiencies of about 10% - this relatively modest improvement affecting on average around half of the models available on the market in 1992. The average increase in purchase price resulting from the introduction of the first level of energy efficiency standard will be a little over 1%. The actual purchase price and electricity price are the values which determine the life cycle cost from the consumer's perspective. Both for electricity prices and other costs (change in the labour cost, cost of raw materials and other production cost) sensitivity analysis have been carried out and show that there are no significant changes and the overall conclusions are very robust. Although, it is technically feasible to design and produce refrigerators and freezers consuming significantly less energy than today's models, the first level of energy efficiency standards is far away from the life cycle cost minimum and has a very short pay-back time of a little over one year.

It is envisaged that the second level of standards would be defined using a technical/economic approach. Under this method, the efficiency requirements set for each category are based on the performance of a hypothetical appliance of that category incorporating all energy efficiency improvements which will then be technically feasible and economic, the economic criterion being that the extra cost of the particular measure has a pay-back in terms of the electricity saved of about 3 years or less. In current circumstances, the efficiency levels defined by this approach are on average about 30% more demanding than the levels defined by the statistical approach, indicating that the first level of standards is still a considerable way from the optimal economic efficiency level defined by the technical/economic approach. Moreover, whilst the economic optimum is effectively the optimum for the consumer, it would be even more demanding if the external costs of the electricity saved (e.g. reduced CO₂ emissions) were also taken into account, or if electricity prices were to increase in relative terms. In fact it is envisaged that this second level of standards, and the date for their entry into force, would be fixed definitively on the basis of a new study and consultation with interested parties to be carried out about one year after the entry into force of the first level of standards. In this way all the latest relevant data, such as the cost and feasibility of the various technical options, as well as the operation of the first level of standards, can be taken into account at that time.

The first level of standards proposed in this Directive are based on the results of a comprehensive study carried out for the Commission by a grouping of national, independent energy and environmental agencies⁽¹⁴⁾ and on which the appliance manufacturing industry, the Member State administrations, and other interested parties were consulted at all stages. As part of this study, the impact of the proposed standards on the models of appliances currently being produced by the different manufacturers were estimated.

⁽¹⁴⁾ Study for the Commission of the European Communities on energy efficiency standards for domestic electrical refrigeration appliances, carried out jointly by the three national energy/environmental agencies; NOVEM (NL), ADEME (FR) and DEA (DK), (Interim Report July 1992, Final Report March 1993).

IV. Impacts on the Industry

The impact of introducing the first level of minimum efficiency standards on the European manufacturing industry depends on a large number of factors: the proportion of each manufacturer's model range which already exceeds the minimum efficiency standard level; the normal model update cycle, and the number of models which would have been launched or updated without minimum efficiency standards; the available options for making design changes which will meet the relevant minimum efficiency standard level; the extent to which the cost of compliance to minimum efficiency standards, if any, can and will be passed on to purchasers.

About 50% of the 1992 model range would have been eliminated if the first level of minimum efficiency standards was introduced overnight. This is very much an hypothetical "worst case" scenario, based on the unlikely assumption that suppliers could not introduce new models or modify existing models to meet the minimum efficiency standard, and that the model range will consist only of 1992 models or additional models with the same energy efficiency. However, it is considered highly likely that new models will be introduced, for the following reasons: a period of three year notice is foreseen between the adoption of minimum efficiency standards and their implementation. During this period most suppliers would have replaced a third of their model range in any case, so there will be considerable opportunity to make minimum efficiency standard-compliance one of the design criteria for the new models; most refrigerator and freezer models which fail to comply with the minimum efficiency standard levels are relatively close to the minimum efficiency standard cutoff, fairly minor design changes would enable them to comply, and the materials and components involved are non-proprietary and available from a range of suppliers.

Many of the models which will be eliminated are the less efficient variants of otherwise complying models. In these cases, the manufacturers concerned already have a model variant that can comply with the proposed minimum efficient standard level. Their only cost of compliance with minimum efficiency standards will be to change their component sourcing practices to ensure that minimum efficiency standard levels are consistently achieved.

Given the improvement in energy-efficiency which would be expected even in the normal course of events (in the last twenty years an average efficiency improvement of about 2% per year has been achieved by manufacturers), the proportion of appliance models failing to meet the first level of minimum efficiency standards would be significantly less in 1998 than in 1992 even without special effort to meet them. Because of the high saturation of the Community market, sales are mainly due to replacement of faulty appliances and to new households; therefore sales are not very sensitive to price fluctuation and so the very small price increase will not hinder sales nor will it distort the market. Manufacturers will be able to pass the production cost increase to consumers and the introduction of a minimum efficiency standard will increase manufacturers turnover. At the same time competitiveness of the Community manufacturing industry will be increased in almost every refrigerator category. Because the least efficient models are imported from countries with a less advanced manufacturing infrastructure, typically from Central and Eastern Europe, import of inefficient refrigerators will decrease and at the same time export to countries outside, where minimum efficiency standard have already or will be soon adopted, will increase. Therefore, it can be concluded that the level of minimum efficiency standard and the adoption time proposed are not expected to create major difficulty for European refrigerator and freezer manufacturers, on the contrary increase their competitiveness on the world scene.

V. Administrative Arrangements Proposed

As to the administrative arrangements proposed, well defined systems have been developed at Community level on technical harmonisation and standards, as a central part of completing the internal market. The present proposal is based on what are called harmonised European standards, (as opposed to the older alternative of mutually recognising national standards

where these existed) and therefore conforms to the "new approach" to standardisation⁽¹⁵⁾. Under the "new approach", the essential requirements of legislative harmonised standards are defined by Directives.

Methods of assessing the conformity of products with such standards, based on the so called "global approach", have also been adopted at Community level⁽¹⁶⁾⁽¹⁷⁾, and have been incorporated in this proposal. This approach allows use of one or more of a set of "modules" which outline different procedures for assessing the conformity of a product with the imposed standards. The different modules are designed to meet different possible circumstances and are selected as appropriate to meet the requirements of the directive in question.

The domestic refrigeration appliance manufacturing industry in Europe comprises about half a dozen very large companies, another dozen or so large to medium companies, and perhaps around twenty smaller companies. Most production supplying the Community is located in the Community itself, though with substantial production also in certain EFTA countries, and a significant quantity of imports from Central and Eastern European countries. Refrigeration appliances are also offered in a very wide range of models, with difference functions, features and dimensions. It is estimated that there are currently around 4000 models of refrigeration appliances on the Community market, with manufacturers continually developing and introducing new models to respond to market needs.

These considerations indicate that a mandatory "type-conformity" testing procedure to be carried out by appropriate bodies designated by Member State governments, (so called "notified bodies"), would be extremely onerous and would require very considerable expenditure and time commitments by both manufacturers and the notified bodies themselves. A conformity assessment procedure based on self assessment is therefore proposed. This procedure is also that required for conformity assessments for other Directives which cover refrigeration appliances, namely the "Low Voltage Directive"⁽¹⁸⁾ and the "Electromagnetic Compatibility Directive"⁽¹⁹⁾.

Under the self assessment module, manufacturers are required to draw up technical documentation and accompanying test reports in support of the declaration of conformity they are also required to make. All these documents must be kept available for inspection by the public authorities at any time, and in particular if doubts arise about the conformity of a particular model of appliance. These are formal procedures which must be followed before the CE marking can legitimately be affixed by the manufacturer, allowing the product to be placed, and to circulate freely, on the Community market. Some commentators have expressed doubts on the effectiveness of a self assessment procedure, but in the circumstances as described above it is felt to be sufficient, all the more so when account is taken of the threat of prosecution under the appropriate trades description legislation in a country and the very negative publicity which could accompany a false claim on energy efficiency. In any event, it is proposed that in the report to be drawn up on the operation of the Directive, in line with the guidelines developed for Community conformity assessment procedures, the effectiveness and efficiency of the conformity procedures shall be given particular attention.

⁽¹⁵⁾ Council Resolution on a new approach to technical harmonisation and standards, OJ No C 136, 4.6.1985, p. 1.

⁽¹⁶⁾ Council Resolutions on a global approach to conformity assessment, OJ No C 10, 16.1.1990, p. 1.

⁽¹⁷⁾ Council Decision 90/683/EEC concerning the modules for the various phases of the conformity assessment procedures which are intended to be used in technical harmonisation directives, OJ No L 380, 31.12.1990, p. 13.

⁽¹⁸⁾ OJ No L 77, 26.3.1993, p. 29.

⁽¹⁹⁾ OJ No L 139, 23.5.1989, p. 19, as amended by OJ No L 126, 12.5.1992, p. 11.

VI. The Need for Community Legislation and Consultations with Interested Parties

(a) What are the objectives of the proposed action in relation to the Community's obligations?

The present proposal is in full agreement with the Community policy of harmonisation of standards. It is based on Article 100a of the treaty, which calls for Community measure to harmonise regulations across the Community to ensure the establishment of the internal market and to prevent barriers to trade. Failing to define Community-wide standards will lead to the introduction in some Member States of national minimum efficiency standards, which will create unacceptable barriers to trade; it is the Community's duty to introduce initiatives to prevent these barriers.

The internal market requires industry and commerce to operate under similar conditions across the Community as far as practicable, thus reinforcing the need for harmonisation of environmental and energy efficiency actions including minimum efficiency standards. So far no Member State has introduced legislation for minimum efficiency standards for domestic refrigerators because the Commission has announced Community legislation.

However, it should be noted that the proposed Directive is not only to achieve harmonisation of standards relating to tradeable goods, but also to contribute to other Community objectives. In particular the setting of energy efficiency standards for refrigeration appliances is to reduce the use of energy and, inter-alia, to contribute to the reduction of CO₂ emissions to the atmosphere. The Community has adopted the objective of stabilising such emissions by the end of the century and this objective will not be achieved under current trends without further significant improvements to energy efficiency. The nature of actions at Community level relating to the environment is stipulated by Article 130r of the treaty which calls for, inter-alia: the prudent and rational utilisation of natural resources; that the costs and benefits of actions should be taken into account; and that action should be taken at Community level to the extent that this is more effective than action at Member State level. In addition, Article 100a calls for proposals concerned with environmental protection to take as a base "a high level of protection". The proposed Directive meets all of these requirements.

The adoption of minimum efficiency standards for domestic refrigeration appliances is specifically mentioned in the SAVE action programme adopted by the Commission⁽²⁰⁾ as a priority sector to achieve energy savings.

(b) Does competence for the planned activity lie solely with the Community or is it shared with the Member States?

The Council Resolution defining the "new approach" calls for the "essential requirements" of such legislative harmonisation to be established by Community Directive. Community Legislation imposing harmonised standards is thus clearly an area of exclusive Community competence. As far as energy efficiency is concerned (and the associated reductions of CO₂ emissions), the competence is shared with Member States. All Member States have to contribute to achieve the CO₂ emission target by the year 2000. Nevertheless, environmental actions must be coordinated and harmonised at Community level where they relate to tradeable goods.

(c) What is the Community dimension of the problem?

Further to the internal market dimension already described in point (a) and (b), the proposal has also a very important environmental dimension. The greenhouse effect is a global problem and actions to reduce CO₂ emissions must be taken at least at Community level to

⁽²⁰⁾ OJ No C 23, 31.1.1992, p. 8.

have a real environmental impact. The introduction of minimum efficiency standards for domestic refrigeration appliances by some Member States, will have a limited environmental impact and will not contribute substantially to the reduction of CO₂ emissions. Minimum efficiency standards to make a significant contribution must affect the largest number possible of appliances. Therefore they should be adopted at least at Community level. The adoption of minimum efficiency standards will have large repercussions also outside the Community. In almost every appliance category the least efficient model is imported into the Community from a country with a less advanced manufacturing infrastructure; many of these countries will adopt similar standards to avoid their market being flooded by low efficiency refrigerators banned from Community markets and also to force their manufacturing industry to produce more efficient ones to compete in the Community; some non-Community countries have already enquired about the Community proposed standards with a view to adopting them. The adoption of minimum efficiency standards in the Community will stimulate the diffusion of more efficient technology and minimum efficiency standards in several non-Community countries thus contributing significantly to the reduction of CO₂.

(d) What is the most effective solution taking into account the means available to the Community and those of the Member States?

Although the adoption of more efficient refrigeration appliances will result in net savings for consumers and for society as a whole, market forces have failed to incorporate these potential savings into existing models and therefore two complementary and essential initiatives have been proposed at Community level: the energy labelling Directive, now adopted, and the present efficiency standards proposal.

In a perfect market, good consumer information on savings achieved with more efficient appliances should be enough to lead to the desirable efficiency improvement: by stimulating the demand for more efficient appliances it would continually improve the quality of the products on the market, obviating the need for minimum efficiency standards. But the effect of consumer information and energy labels is somehow limited and its effectiveness depends on many factors, including the degree of promotion and advertising support which the information programme receives. This is because not all consumers will be reached or influenced in their purchasing decisions by energy labels. Despite several efforts to conduct consumer information campaigns on energy consumption of household appliances, at local or Member State level, recent surveys indicate that energy efficiency is not among the first five purchase criteria; other factors such as size, appearance, performance and purchase price are in general more important in arriving at the purchase decision, which often is taken in very short time, without much information, to replace a faulty appliance.

Consumers can readily compare purchase price and visible features, but information about energy consumption is much more difficult to understand. Consumers must rely on the advice of sales people or advertising (sources which are not likely to be disinterested), on personal knowledge (energy consumption requires complicated measurement, beyond the reach of many individuals), brand loyalty (a poor guide to likely energy efficiency), or the tests of consumer organisations (which are usually available to limited number of persons). Moreover, there are markets, such as large purchases for housing estate, for which purchase price is the most important factor because the purchaser will not pay the electricity bill.

The Labelling Directive will contribute to consumer information and stimulate the demand for more efficient appliances but, given the reasons above, its impact on overall efficiency will be somehow limited. In several Member States different types of labelling have been introduced but always the results have been very poor in terms of overall energy efficiency improvements.

This confirms that consumer information on its own is not able to achieve the target efficiency improvements and that, on the contrary, minimum efficiency standards or an equivalent voluntary agreement with manufacturers are essential and complementary measures to achieve the target.

Voluntary agreements may seem for several reasons, preferable to mandatory minimum efficiency standards, because they allow more flexibility and can be implemented more rapidly but would be highly undesirable from a competition point of view.

Therefore, the voluntary agreement having failed (a last offer of voluntary agreement was made to CECED in November 1993), the only option left to the Community to achieve the targeted efficiency improvement is to adopt Community-wide minimum efficiency standards:

(e) What real added value will the activity proposed by the Community provide and what would be the cost of inaction?

Minimum efficiency standards for domestic refrigeration appliances have to be introduced in several Member States to have a significant impact on the reduction of CO₂, but such initiatives may lead to barriers to trade, if requirements vary. The added value provided by the introduction of minimum efficiency standards at Community level consists in affecting the largest number of refrigerators and freezers (all new appliances sold in the Community), and at the same time ensuring the establishment of the internal market. The United States' experience shows the same pattern: the introduction of standards at state level created undesired barriers to trade between States and high administrative costs for industry to comply with different regulations; therefore, the federal administration was requested by manufacturers to introduce federal standards.

The consequences of not adopting minimum efficiency standards at Community level will be very onerous: the Community will miss the opportunity to meet its commitments to curb CO₂ emissions and achieve savings worth around two billion ecu. Adopting minimum efficiency standards will also minimize the cost of efficiency improvements to manufacturers, because the same models will be sold in all the Community market, instead of developing models to conform to single Member States standards.

(f) Which methods of action are available to the Community (recommendation, financial support, regulation, mutual recognition)?

The main actions, recommended by several experts as the most efficient to increase energy efficiency in domestic refrigeration appliances, are consumer information, product standards and incentives.

- consumer information makes consumers aware of running costs and so persuading them to make rational economic choices;
- product standards will remove the least efficient appliances from the market;
- incentives, which can be targeted at consumers (grants towards the purchase of more efficient appliances) or at manufacturers (financial awards towards the development, production and marketing of new more efficient appliances) accelerate the introduction on the market of more efficient appliances.

Over ten years (1980-1990) national initiatives in Member States (mainly consumer information campaigns) and in other countries such as United States and Canada (product standards, labelling and incentives) show that only a combination of these measures will achieve anything like the potential savings. Moreover, action like the labelling scheme and minimum efficiency standards are more appropriate and achieve the best results at Community level, as demonstrated in previous pages, while incentive actions are perhaps equally well achieved at national or indeed local level.

This will justify the adoption of a labelling scheme and of the proposed minimum efficiency standards. To promote "incentive" measures the Commission is currently reviewing the need for proposals on a more systematic promotion of demand side management in the Community.

(g) Is it necessary to have a directive fixing detailed standards or is a directive limited to setting out the general objectives sufficient, leaving implementation at the level of the Member States?

Given the difference in the average energy efficiency of refrigeration appliances between Member States, setting out general objectives to improve efficiency, such as average efficiency improvements to be achieved by each Member States, will impose different obligations to Member State (for example, in Germany where good results have already been achieved a further 10% efficiency improvement will be more expensive to achieve than in other Member States). Moreover, leaving the choice and implementation of the measure to Member States leads to adoption of different regulations and standards, with all the disadvantages above described.

Whilst efficiency standards are proposed which will lead over time to significant energy efficiency improvements, sufficient time is given to allow manufacturers to adjust to the standards required, in particular through a two phase approach. The proposed conformity assessment procedures have also been designed to cause the least burden to industry compatible with ensuring achievement of the objectives of the Directive. This is again in line with the requirements of Article 3b of the Treaty which states that Community legislation should not be unduly onerous or intrusive.

With respect to consultations and as described above, discussions on the subject of energy efficiency standards have been held at two major workshops organised by the Commission specifically for this purpose and to which all interested parties were invited. In addition, copies of an initial study report prepared for the Commission on the subject, and of the interim and final report of a similar but more comprehensive study, were sent to all interested parties, including all known refrigeration appliance manufacturers, and comments invited. Discussions were also held with representatives of the appliance manufacturing industry and in particular their European federation CECED, which represents the vast majority of appliance production in the Community and other western European appliance producing countries. Representatives of the Member State administrations were closely involved in the consultation process and were also consulted on a restricted basis in appropriate advisory committee meetings with the Commission (under the SAVE and PACE programmes). There has thus been a very full consultation process with all interested parties over the past couple of years.

VII. Scope of the Proposed Directive

The proposed Directive covers newly produced mains electrical domestic refrigeration appliances, which comprise the vast majority of those sold for household use with the exclusion of absorption cooled appliances. Commercial refrigeration equipment is far more varied and would not conform to the appliance categories which have been developed. In any event a decision to purchase equipment for commercial use can be expected to give much more attention to the energy use implications.

VIII. Results Expected from the Proposed Directive and Accompanying Measures

Only new refrigeration appliances sold on the Community market are affected under this proposal. Since only about 8% to 10% of domestic refrigeration appliances are replaced each year on average, the impact of standards on electricity consumption will be relatively slow, though continually increasing over time. It has been estimated that the standards envisaged under this Directive could give the following electricity and consequent CO₂⁽²¹⁾ emission reductions:

⁽²¹⁾ Based on the Community electricity generation mix forecast for the period in question.

Estimated Reductions in Electricity Use and
Consequent CO₂ Reductions from Electricity Generation
for the Community from Refrigeration Appliance
Standards-entry into force on 1 January 2000.

	1995	2002	2010	2020
<u>Electricity consumption for total Community domestic refrigeration (TWh/yr)</u>				
- without standards	108	107	104	100
- with standards	108	93	73	60
<u>savings through standards</u>	-	14	31	40
<u>CO₂ emissions avoided through standards (10⁶ tonnes/yr)</u>		6	14	17

The absolute savings become very substantial in time, equaling the total current electricity consumption of Portugal and Ireland combined by the year 2020. Moreover, it is in the nature of measures to improve energy efficiency that they must be applied to the very many and diverse uses of energy in our modern economies. Domestic refrigeration appliances represent the largest single area for electricity savings and the right area to start with, but such action will need to be complemented by similar initiatives in other areas too.

Some commentators, in the light of the relatively slow though steady impact of standards on the stock of refrigeration appliances, have stressed the need for measures to enhance and accelerate the appliance renewal process. It is the Commission's intention to help encourage greater awareness of the energy efficiency aspects of refrigeration appliances through the energy labelling requirements and by, for example, using the various European consumer associations to publicise the labelling and standards activities through their publications. Energy advisory bodies and in some cases electricity supply undertakings in Member States also promote awareness of this subject through various publications including lists giving energy consumption figures for refrigeration appliances available on the market. More recently a couple of electricity supply companies in the Community have started to give grants towards the purchase of energy efficient appliances, as a partial alternative to having to build new generation capacity. Given the very considerable scope for improved energy efficiency as a pollution free and often very economic complement to supply side options, such measures can only be applauded and encouraged. Indeed the Commission is currently reviewing the need for proposals on a more systematic promotion of demand side management in the Community.

IX. Impact on Society as a Whole

It is estimated that the implementation of the recommended first level of minimum efficiency standards for refrigerators and freezers would have the following impacts on the Community economy assuming total sales of refrigerators and freezer of 14 million per year:

- the annual electricity consumption for refrigeration appliances would be 14 TWh/yr (13%) lower in year 2002, than it would be without minimum efficiency standards.
- the annual carbon dioxide emission associated would be 6 million tonnes (10%) lower in year 2002, than it would be without minimum efficiency standards;

- the implementation of the first level of minimum efficiency standards could lead to increase in average retail price a little over 1%, a 10% reduction in lifetime electricity cost and a reduction of 5.5% in aggregate life cycle cost to consumers;
- total purchase cost increase after the first level of standards is introduced will be around ECU 140 million per year. This will be greatly outweighed by discount energy saving of ECU 1 400 million on each year's purchase of more efficient refrigerators and freezers.

This is interpreted as a favourable cost/benefit impact, i.e. the estimated energy and CO₂ emission reduction and the economic saving satisfy the "no-regret" criteria.

Proposal for a
EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE
on energy efficiency requirements for household electric refrigerators,
freezers and their combinations

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community and in particular Article 100a thereof,

Having regard to the proposal from the Commission⁽¹⁾,

Having regard to the opinion of the Economic and Social Committee⁽²⁾,

Whereas it is important to promote measures aimed at the progressive establishment of the internal market; whereas the internal market comprises an area without internal frontiers, in which the free circulation of goods, persons, services and capital is ensured;

Whereas the Council Resolution of 15 January 1985 on the improvement of energy-saving programmes in the Member States⁽³⁾ invited Member States to pursue and, where necessary, increase their efforts to promote the more rational use of energy by the further development of integrated energy-saving policies;

Whereas the Council Resolution of 16 September 1986⁽⁴⁾ called for new Community energy policy objectives for 1995 and convergence of the policies of the Member States, and in particular the objective of improving the efficiency of final energy demand (the ratio of final energy demand to gross national product) by at least 20% by 1995;

Whereas domestic refrigeration appliances account for a significant share of domestic electricity consumption by households in the Community and thus of total electricity consumption; whereas the electricity consumption of different models of refrigeration appliances available for purchase in the Community with the same volume and features, that is to say their energy efficiencies, vary very considerably;

Whereas several Member States are on the point of adopting provisions relating to the efficiency performance of domestic refrigerators and freezers, which will create barriers to trade of these products in the Community;

Whereas it is appropriate to take as a base a high level of protection in measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States and concerning health, safety, environmental protection and consumer protection; whereas this Directive ensures a high level of protection both for the environment and the consumer, in aiming at a significant improvement of the energy efficiency of these appliances;

Whereas the adoption of such measures falls within Community competence and whereas the requirements of this Directive do not exceed those necessary to achieve its objectives, thus conforming to the requirements of Article 3b of the Treaty;

(1) OJ No C

(2) OJ No C

(3) OJ No C 20, 22.1.1985, p. 1.

(4) OJ No C 241, 25.9.1986, p. 1.

Whereas, moreover, Article 130r of the Treaty calls for the protection and improvement of the environment and prudent and rational utilisation of natural resources; whereas electricity generation and use accounts for about 30% of man-made carbon dioxides (CO₂) emissions and about 35% of primary energy use in the Community, and whereas these percentages are increasing;

Whereas, furthermore, Council Decision 89/364/EEC⁽⁵⁾ which establishes a Community action programme for improving the efficiency of electricity use has as its twin objectives encouraging consumers to favour appliances and equipment with high electrical efficiency, as well as improving the efficiency of appliances and equipment;

Whereas on 29 October 1990 the Council set an objective of stabilising carbon dioxide (CO₂) emissions in the Community at 1990 levels by the year 2000;

Whereas Council Decision 91/565/EEC⁽⁶⁾ established a programme (the SAVE programme) to support and further promote energy efficiency in the Community;

Whereas the energy efficiency measures incorporated in the more efficient models of refrigeration appliances available do not excessively increase their production costs and such measures can repay their initial cost in terms of electricity savings within a few years or less; whereas this calculation does not take into account the added benefit of the avoided external costs of electricity generation, such as the emission of carbon dioxide (CO₂) and other pollutants;

Whereas Council Directive 92/75/EEC⁽⁷⁾ (the framework directive) and Commission Directive 94/2/EC⁽⁸⁾ (applying Directive 92/75/EEC) which require the compulsory labelling of appliances and the provision in other forms of energy consumption information will increase consumers' awareness of the energy efficiency of domestic refrigeration appliances; whereas this measure will therefore also heighten competition on the energy efficiency of appliances above the standards required by this Directive; whereas however the provision of information to consumers without standards would have only a partial effect in terms of improving the average overall efficiency of appliances sold;

Whereas this Directive, which is aimed at eliminating technical barriers with regard to the energy efficiency of domestic refrigeration appliances, must follow the "new approach" established by the Council Resolution of 7 May 1985⁽⁹⁾ which specifically lays down that legislative harmonisation is limited to the adoption, by means of directives, of the essential requirements with which products put on the market must conform;

Whereas regard should be had to Council Decision 93/465/EEC⁽¹⁰⁾ which concerns the procedures for conformity assessment intended to be used in the technical harmonisation directives;

Whereas in the interest of international trade, international standards should be used wherever appropriate; whereas the electricity consumption of a refrigeration appliance is defined by the European Committee for Standardisation Standard EN 153 of May 1990 which is based on an international standard;

⁽⁵⁾ OJ No L 157, 9.6.1989, p. 32.

⁽⁶⁾ OJ No L 307, 8.11.1991, p. 34.

⁽⁷⁾ OJ No L 297, 13.10.1992, p. 16.

⁽⁸⁾ OJ No L 45, 17.2.1994, p. 1.

⁽⁹⁾ OJ No C 136, 4.6.1985, p. 1.

⁽¹⁰⁾ OJ No L 220, 30.8.1993, p. 23.

Whereas domestic refrigeration appliances complying with the energy efficiency requirements of this Directive should bear the CE marking and associated information, in order to enable them to move freely, and to be put into service in accordance with their intended purpose within the Community;

Whereas this Directive is confined to domestic refrigeration appliances for foodstuffs, excluding those with an insignificant use of energy in total, that is, domestic refrigeration appliances supplied by mains electricity, whereas commercially used refrigeration equipment is much more varied and not appropriate for inclusion in this Directive;

HAVE ADOPTED THIS DIRECTIVE:

Article 1

This Directive shall apply to electric mains operated household refrigerators, frozen food storage cabinets, food freezers, and combinations of these as defined in Annex I and referred to hereafter as "refrigeration appliances". However refrigeration appliances working on the absorption principle shall be excluded.

Article 2

Member States shall take all appropriate measures to ensure that refrigeration appliances can be placed on the market and put into service only if the electricity consumption of the appliance type to which that appliance belongs is less than or equal to the maximum allowable electricity consumption value as calculated according to the procedures defined in Annex I. Refrigeration appliances shall be considered to belong to the same type, referred to in this Directive as "appliance type", if they are produced by the same manufacturer or under licence by a different manufacturer and differ only in aspects which do not significantly affect their energy consumption in use in any way.

Article 3

1. Member States may not prohibit, restrict or impede the placing on the market or putting into service on their territory of refrigeration appliances which bear the CE marking attesting to their conformity with all the provisions of this Directive.
2. Member States shall presume that refrigeration appliances bearing the CE marking required under Article 5 comply with all the provisions of this Directive.
3. At trade fairs, exhibitions, demonstrations, etc., Member States shall not prevent the showing of a refrigeration appliance which does not conform with the provisions of this Directive, provided that a visible sign clearly indicates that such an appliance does not so conform and that it is not for sale until it has been brought into conformity by the manufacturer or his authorized representative established in the Community.

Article 4

The conformity assessment procedures to be applied to a given type of refrigeration appliance in order to affix the CE marking are indicated in Annex II.

Article 5

The CE marking shall consist of the initials "CE". The form of the marking to be used is shown in Annex III. The CE marking shall be affixed to the refrigeration appliance distinctly and visibly.

Article 6

1. Where a Member State establishes that the CE marking has been affixed unduly, the manufacturer or his authorized representative established within the Community shall be obliged to make the product comply and to end the infringement under the conditions imposed by the Member State;
2. Where non-conformity continues, the Member State must take all appropriate measures to restrict or prohibit the placing on the market of the product in question or to ensure that it is withdrawn from the market.

Article 7

Any decision taken pursuant to this Directive which includes any restriction on the placing on the market and/or putting into service of refrigeration appliances shall state the precise grounds on which it is based. It shall be notified without delay to the party concerned, which shall at the same time be informed of the legal remedies available to it under the laws in force in the Member State in question and of the time limits to which such remedies are subject.

Article 8

Before the expiry of a period of four years from the adoption of this Directive, the Commission in consultation with interested parties shall make an assessment of the results obtained and expected. Following this assessment, the Commission shall consider the need for a new proposal for Community legislation to establish a second set of energy efficiency standards for household refrigeration appliances. If such a proposal is made, its energy efficiency standards and their timing for entry into force will be based on energy efficiency levels which can be economically and technically justified in the light of the circumstances at the time of the proposal. The proposal may also contain any other provisions judged necessary to improve the effectiveness of this Directive.

Article 9

[assumes European Parliament and Council final adoption early 1995]

1. Before 1 January 1996, Member States shall adopt and publish the laws, regulations and administrative provisions necessary to comply with this Directive. They shall immediately inform the Commission thereof.

Member States shall apply such provisions as from 1 January 2000.

When Member States adopt these provisions, these shall contain a reference to this Directive or shall be accompanied by such reference at the time of their official publication. The procedure for such reference shall be adopted by Member States.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field covered by this Directive.
3. Member States shall, during the period up to 1 January 2000, permit the placing on the market and/or the putting into service of refrigeration appliances which comply with the regulations in force in the Member States at the date of adoption of this Directive.

Article 10

This Directive shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Communities.

Article 11

This Directive is addressed to the Member States.

Done at Brussels,

**For the European Parliament
The President**

**For the Council
The President**

Annex I

Procedures for Calculating the Maximum Allowable Electricity Consumption for a Given Refrigeration Appliance Type and for the Verification of Conformity therewith

The electricity consumption of a refrigeration appliance (which may be expressed as kWh per 24 hours) is a function of the category of appliance to which it belongs, (e.g. 1 star refrigerator, chest freezer, etc.), its volume, and the energy efficiency of its construction, (e.g. thickness of insulation, compressor efficiency, etc.). In setting energy efficiency standards therefore, allowances must be made for the main exogenous factors which influence energy consumption (i.e. the category of the appliance and its volume). For this reason, the maximum allowable electricity consumptions of a given refrigeration appliance type⁽¹⁾ are defined by a linear equation which is a function of the volume of the appliance, with different equations defined for each category of appliance.

To calculate the maximum allowable electricity consumption of a given appliance type, it must therefore first be allocated to the appropriate category from the following list:

<u>Category</u>	<u>Description</u>
1	Refrigerator without Frozen Food Compartment ⁽²⁾
2	Refrigerator with 1 Star Frozen Food Compartment
3	Refrigerator with 2 Star Frozen Food Compartment
4	Refrigerator with 3 Star Frozen Food Compartment
5	Refrigerator with 4 Star Freezer
6	Refrigerator-Cellar
7	Chest Freezer
8	Upright Freezer

Because refrigeration appliances contain different compartments with different maintained temperatures, (which will clearly influence their electricity consumption), the maximum allowable electricity consumption is defined in fact as a function of the adjusted volume, which is a weighted sum of the volumes of the different compartments.

Thus, for the purposes of this Directive, the adjusted volume (V_{adj}) of a refrigeration appliance is defined as:

$$V_{adj} = \sum V_c \times W_c \times F_c$$

where V_c is the net volume of a given type of compartment in the appliance, W_c is the weighting co-efficient for that type of compartment and F_c is a factor which equals 1.2 for no frost compartments and 1 for other compartments. Both the adjusted volume and the net volumes are in litres. The weighting co-efficients for the different types of compartment are:

⁽¹⁾ The definition of refrigeration appliances belonging to the same type is given in Article 2.

⁽²⁾ Any compartment with a temperature below - 6°C.

W_c (weighting co-efficient)

Cellar compartment	0.75
Fresh food compartment	1.00
0°C compartment	1.25
0 Star compartment	1.25
1 star compartment	1.55
2 star compartment	1.85
3 and 4 star compartment	2.15

The maximum allowable electricity consumption E_{max} (in kWh per 24 hours expressed to two decimal places), for an appliance type with adjusted volume V_{adj} , for each appliance category is defined by the following equations:

<u>Category</u>	<u>Description</u>	<u>E_{max} (kWh/24 hours)</u>
1	Refrigerator w/o FFC ⁽³⁾	$(0.225 \times V_{adj} + 237) / 365$
2	Refrigerator with 1 Star FFC	$(0.599 \times V_{adj} + 178) / 365$
3	Refrigerator with 2 Star FFC	$(0.437 \times V_{adj} + 238) / 365$
4	Refrigerator with 3 Star FFC	$(0.616 \times V_{adj} + 221) / 365$
5	Refrigerator with 4 Star Freezer	$(0.778 \times V_{adj} + 303) / 365$
6	Refrigerator-Cellar	$(0.225 \times V_{adj} + 237) / 365$
7	Chest Freezer	$(0.480 \times V_{adj} + 195) / 365$
8	Upright Freezer	$(0.478 \times V_{adj} + 289) / 365$

Test Procedures for verifying whether an appliance type conforms to the electricity consumption requirements of this Directive.

If the electricity consumption of a refrigeration appliance representative of the production of the appliance type subject to verification is less than or equal to the maximum allowable electricity consumption value E_{max} as defined above plus 15%, the appliance type to which it belongs is confirmed as conforming to the electricity consumption requirements of this Directive. If the electricity consumption of the appliance is greater than the maximum allowable electricity consumption value plus 15%, the electricity consumption of a further three appliances of the same type shall be measured. If the arithmetic mean of the electricity consumptions of these three appliances is less than or equal to the maximum allowable electricity consumption value plus 10%, the appliance type to which they belong is confirmed as conforming to the electricity consumption requirements of this Directive. If the arithmetic mean exceeds the maximum allowable electricity consumption value plus 10%, the appliance type to which they belong shall be judged not to conform to the electricity consumption requirements of this Directive.

Definitions

The terms used in this annex are defined as in European Standard of the European Committee for Standardisation EN 153 of May 1990.

⁽³⁾ Frozen Food Compartment.

Annex II

Conformity Assessment Procedures (Module A)

1. This module describes the procedure whereby the manufacturer or his authorized representative established within the Community, who carries out the obligations laid down in point 2, ensures and declares that the refrigeration appliance type⁽¹⁾ satisfies the relevant requirements of this Directive. The manufacturer shall affix the CE mark to all refrigeration appliances of this type he manufactures and draw up a written declaration of their conformity.
2. The manufacturer shall establish the technical documentation described in paragraph 3 and he or his authorized representative established within the Community shall keep it, for a period ending not less than 3 years after the last of the refrigeration appliance type has been manufactured, at the disposal of the relevant national authorities for inspection purposes.

Where neither the manufacturer nor his authorized representative is established within the Community, the obligation to keep the technical documentation available shall be the responsibility of the person who places the refrigeration appliance type on the Community market.

3. Technical documentation shall enable an assessment to be made of the conformity of the refrigeration appliance type with the relevant requirements of this Directive. It shall cover the design, manufacture and operation of the refrigeration appliance type and shall contain as far as is relevant for assessment:
 - (i) the name and the address of the manufacturer;
 - (ii) a general description of the model sufficient for it to be uniquely identified;
 - (iii) information, including drawings as relevant, on the main design features of the model and in particular on items which appreciably affect its electricity consumption, such as dimensions, volume(s), compressor characteristics, special features, etc.;
 - (iv) the operating instructions, if any;
 - (v) reports of electricity consumption measurement tests carried out as required by paragraph 5;
 - (vi) details of the conformity of these measurement tests as compared to the energy consumption requirements as set out in Annex I.
4. Where differences between models are such that they have no significant effect on their energy consumption, that is they belong to the same appliance type as defined in Article 2, manufacturers may use the data from a "base model". In this case the technical documentation shall consist of the information listed above for the base model,

⁽¹⁾ The definition of a refrigeration appliance type is given in Article 2.

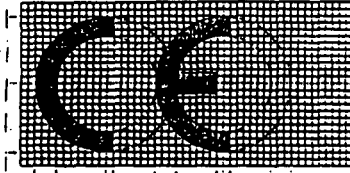
supplemented for each other model produced by the manufacturer by a description of the differences between that model and the base model. Technical documentation established for other Community legislation may be used in so far as it meets the requirements of this paragraph.

5. Manufacturers of refrigeration appliances shall be responsible for establishing the electricity consumption of each refrigeration appliance type covered by this Directive according to the procedures specified in European Standard EN 153, as well as the appliance type's conformity with the requirements of Article 2.
6. The manufacturer or his authorized representative shall keep a copy of the declaration of conformity with the technical documentation.
7. The manufacturer shall take all measures necessary in order that the manufacturing process shall ensure that the manufactured refrigeration appliances comply with the technical documentation referred to in point 2 and with the relevant requirements of the Directive.

Annex III

1. CE conformity marking

The CE conformity marking shall consist of the initials "CE" taking the following form:



If the marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.

IMPACT ASSESSMENT FORM

The Impact of the Proposal on Business with Special Reference to Small and Medium Sized Enterprises (SMES)

Title of proposal: Directive on Energy Efficiency Standards for Domestic Refrigeration Appliance

Document Reference Number:

The proposal

1. Taking account of the principle of subsidiarity, why is Community legislation necessary in this area and what are its main aims?

The present proposal is based on Article 100a of the Treaty, which specifically calls for Community measures to harmonise regulations across the Community so as to ensure the establishment of the internal market and to prevent barriers to the free movement of, inter alia, goods. The proposal by the Netherlands government for energy efficiency standards for refrigeration appliances, suspended by the Commission, provides the basis for this harmonisation. Moreover, the Council Resolution defining the "new approach" calls for the "essential requirements" of such legislative harmonisation to be established by a Community Directive. Community legislation imposing harmonised standards is thus clearly an area of exclusive Community competence.

The impact on business

2. Who will be affected by the proposal?

- Which sectors of business

- (i) The manufacturers of electrical domestic appliances, in particular the manufacturers of refrigerators, freezers and their combinations. The manufacturers of compressors, which are often manufactured separately.

- Which sizes of business (what is the concentration of small and medium sized firms)

- (ii) The domestic refrigerator appliance market in Europe is very competitive. The intense competition has resulted in significant reorganization among the principal firms and has had impacts in the areas of product innovation and manufacturers willingness to respond to consumers preferences.

The European domestic refrigeration market remains relatively fragmented with over a hundred brands and about 40 independent manufacturers. The industry comprises about half a dozen very large companies, which through a series of mergers and takeovers, in anticipation of a European single market, have emerged to dominate the market. The three market leaders account for about 40% of the refrigeration appliances market. This consolidation process has produced a very complicated picture as many of the manufacturing groups produce their product in different countries and sell them throughout the Community under several different brand names. There are another dozen or so large to medium companies and perhaps around twenty smaller companies. Most production supplying the Community is located in the Community itself, though there is a substantial production in certain EFTA countries and a significant quantity of imports from Central and Eastern European Countries. A further complication is the existence of large retail chains which produce no appliances but sell under their own

name appliances built by other producers, a large portion of this units are now produced in Central and Eastern Europe.

- Are there particular geographical areas of the Community where these businesses are found

(iii) The very large companies have their production plants located in the following European countries: Germany, Italy, France, Spain. The medium and smaller companies are located in: Germany, Spain, Portugal, Italy, France, Denmark, United Kingdom and Netherlands.

3. What will business have to do to comply with the proposal?

In order to comply with the proposal manufacturers have to improve the energy efficiency of the less efficient models currently on the market. In order to give the appliance manufacturing industry time to adapt whilst ensuring progress to an achievable and economic level of efficiencies, two levels of minimum efficiency standards are envisaged; the first to take effect three years after the adoption of the Directive, and following a new study and consultation with interested parties to be carried out about the time of the entry into force of the first level, a second, more demanding level of standards, may be proposed. The first standard has therefore been set to give an average improvement in efficiencies of about 10% - this relatively modest improvement affecting on average around half of the models available on the market in 1992. (This figure is very much hypothetical "worst case" scenario based on the unlikely assumption that suppliers cannot or will not introduce new models or modify existing appliances to improve energy efficiency and at the time of entry into force of the standard the model range will consist only of 1992 models or additional models with the same efficiency).

However, it is considered highly likely that new models will be introduced because, during the period 1992 to 1998 (envisaged date of entry into force of standard), most manufacturers would have replaced a third of their model range in any case, and energy efficiency improvement can be one of the design criteria for new models.

Most refrigerators which fail to comply with the standard levels are relatively close to the standard cutoff and fairly minor design changes would enable them to comply. The efficiency of many of these models can be improved relatively easily and only at modest extra cost. The study carried out for the European Commission⁽¹⁾ suggest that there is no direct correlation between efficiency and price, in many cases more efficient refrigerators are less expensive and for a given price and size of the appliance its energy efficiency varies up to 50%.

The following technical options result with the shortest pay-back periods:

Replacement of standard compressors with a more efficient version, this will result in about 12% lower electricity consumption at an average cost to manufacturers of about ECU 6 and an average simple pay-back of 1.5 years.

Increase cabinet insulation: option cost around ECU 12, average efficiency improvement 12%, simple pay-back time 2.5 years.

⁽¹⁾ Study for the Commission of the European Communities on energy efficiency standards for domestic electrical refrigeration appliances, carried out jointly by the three national energy/environmental agencies; NOVEM (NL), ADEME (FR) and DEA (DK), (Interim Report July 1992, Final Report March 1993).

Increase door insulation: option cost around ECU 6 average efficiency improvement 8%, simple pay-back time 1.5 years.

Combining the 3 options, considerable energy savings are achieved. The levels of energy consumption reached at the life cycle cost minimum shows that large savings are possible with technical solutions that are feasible for mass production today. This by no means represents an upper limit as to how efficient refrigerators and freezers can be made in the future. Currently, vacuum panels are being developed for mass production and even more efficient compressors are being developed. It is likely that in ten years time technical solutions will exist that can save around two thirds of the energy consumption of the base case refrigerator. Although, it is technically feasible to design and produce refrigerators and freezers consuming significantly less energy than today's models, the first level of energy efficiency standards is far away from the life cycle cost minimum of the technical analysis and has a very short pay-back time of a little over 1 year.

4. What economic effects is the proposal likely to have?

- On employment

(i) Because the cost increase of new refrigeration appliances under the first phase is relatively small (around 1% to 2%) indeed in many cases, more efficient refrigerators present today on the market are no more expensive than less efficient refrigerators of equivalent size - sales will only be slightly affected, if at all.

- On investment and the creation of new businesses

(ii) The present proposal and other Community and Member States initiatives to promote consumer awareness for energy saving in domestic appliances may stimulate demands for more efficient refrigerators, thus stimulating purchases. The component manufacturers anyhow will have a bigger demand for more efficient compressors. Moreover, a large number of inefficient refrigerators are being imported from outside the Community and in particular, from Central and East Europe. The Directive would prevent the importation of cheap and inefficient refrigerators as well as improving the export of Community refrigerators to countries outside. Employment is therefore unlikely to be affected.

- On the competitive position of businesses

(iii) The modest average improvements in efficiency are relatively easy to achieve and a lengthy adaptation period of 3 years has been given, in order that no manufacturer would be unduly disadvantaged by the standards proposed.

5. Does the proposal contain measures to take account of the specific situation of small and medium sized firms (reduced or different requirements etc.)?

- The adaptation period of 3 years has been foreseen especially for the small and medium sized firms, which may otherwise been penalized by the introduction of standards, given the necessary investment involved in changing or modifying the refrigerator models.

Consultation

6. List of the organisations which have been consulted about the proposal and outline of their main views

The Commission has worked for several years on the improvement of energy efficiency in domestic appliances in consultation with relevant organisations. A workshop was

organised by the Commission in November 1990 and all the major actors in this area were invited. Representatives of appliance manufacturers, national administrators, retailers, electricity supply companies, consumers, standard bodies, researchers and other experts, and over 120 participants attended. Positive reactions were expressed by the majority of representatives. A second workshop was organised by the Commission in April 1992 to discuss the methodologies for setting energy efficiency standards for domestic refrigerators, to which all interested parties were again invited. At the workshop, a number of representatives of the appliance manufacturing industry, stressed the need to fully investigate the possibilities for voluntary agreements by the industry to improve appliance efficiencies. Several discussions on this topic were held between representatives from the industry and in particular CECED, the European Association of Electrical Appliance Manufacturers and Commission officials assisted by various experts. Progress was also discussed in a number of meetings held with the Member State administrations. Due to the highly competitive structure of the sector any significant Community wide voluntary agreement was extremely hard to agree and the possibilities of a voluntary agreement was abandoned by manufacturers. A last offer of voluntary agreement was made recently (November 1993) to CECED, but the idea of a voluntary agreement has been definitively turned down by CECED. After several meetings between Commission officials and manufacturers, the General Secretary of CECED, Mr. Collins, implicitly accepted the envisaged legislation with his letter to DG XVII of 7 May 1993.

COM(94) 521 final

DOCUMENTS

EN

06 08

Catalogue number : CB-CO-94-558-EN-C

ISBN 92-77-82745-9

Office for Official Publications of the European Communities
L-2985 Luxembourg