ComeOn Labels

Common appliance policy – All for one, One for all – Energy Labels

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Instruments for the Replacement of Old Appliances

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Author: Ina Rüdenauer, Corinna Fischer
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NOTE: According to international standards dealing with quantities and units, the numbers in this study are written according to the following rules:

The comma "," is the separator between the integer and the decimal part of a number.
Numbers with more than three digits are divided by a blank in groups of three digits.
In case of monetary values the numbers are divided by a dot in groups of three digits.

This document was prepared within the Come On Labels project, supported by the Intelligent Energy Europe programme. The main aim of the project, active in 13 European countries, is to support appliance energy labelling in the field of appliance tests, proper presence of labels in shops, and consumer education.

1 Introduction

The "Come On Labels" project supports the implementation of the EU labelling directive for energy-related products in a number of member states. This includes the national legal implementation, enhancing retailer compliance, and monitoring and public relations activities. The EU energy label alone, however, is neither sufficient to persuade households to replace inefficient appliances nor to ensure the market penetration of highly efficient appliances. Rather, a comprehensive set of measures is needed:

> "Government-funded RD&D helps to develop and commercialize new technologies, product labelling educates consumers, efficiency standards eliminate inefficient products from the marketplace, and incentives (…) encourage consumers to purchase products significantly more efficient than the minimum standards." (Geller et. al. 2006, p. 571).

This report focuses on instruments intended to promote the replacement of less efficient appliances and the market penetration of more efficient ones. Its main objective is to create an overview of possible instruments, mention their respective advantages and drawbacks, and to present good practice examples.

Chapter 2 presents the monetary and environmental savings that can be achieved by replacing inefficient appliances. Chapter 3 delineates which instruments are addressed by the report. Chapter 4 presents an overview of possible instruments and their fields of application as well as their strengths and weaknesses. Chapter 5 briefly considers the general preconditions for the instruments' success while Chapter 6 looks at their funding and Chapter 7 at monitoring and evaluation. In Chapter 8, selected "good practice" examples will be presented. The annex contains a collection of further practice examples that can serve as a source of inspiration for the development of instruments.

2 Achievable Savings

By promoting highly efficient appliances, i.e. devices of the best energy efficiency classes, a variety of ecological and economic savings can be achieved. Rüdenauer et al. (2007) distinguish three mechanisms that are briefly explained in the following.

2.1 Better replacement

Better replacement means that consumers choose a more energy efficient appliance than they would have chosen without the corresponding policy instrument. The fundamental decision to buy new equipment, however, has already been made. (In the sense used here, this includes also the first purchase, e.g. by young people equipping their first household, and not only the replacement of broken household equipements.) The energy and consequent environmental advantage arises from the lower power consumption of the "better" appliance. An A++ refrigerator or freezer, for example, consumes about 45% less electricity than a class A model of the same size and with the same technical and functional performance characteristics. An A+++ model consumes about 60% less (EU 2010: Commission Delegated Regulation No. 1060/2010). Furthermore, highly energy efficient products can also be advantageous not only from an energy/environmental point of view. They can be also associated with lower operating costs, resulting in lower

overall life cycle costs (i.e. the sum of all product-related costs affecting the consumer including the purchasing price).

2.2 Early replacement

Early replacement means the replacement of an (old) installed appliance although it is still working. Whether early replacement is environmentally beneficial or not, essentially depends on two factors: first, on the potential savings due to the reduced energy consumption of the new appliance, and secondly, on the environmental impact of the manufacturing and the disposal of the equipment, since the old equipment's useful life is not fully exploited.

In many product types, there is a large difference between the energy consumption of the average equipments in use and that of the most efficient new appliances available on the market. For example, an average refrigerator-freezer combination bought in 2000 in Germany, usually still quite functional today (2011), consumes about 390 kWh of electricity per year. An A++ appliance with the same storage capacity and technical and functional performance characteristics, however, only needs 180 kWh per year.[1] Therefore, by replacing the old appliance with a highly efficient new one, around 210 kWh of electricity could be saved each year.

By contrast, the environmental impact (in terms of LCA) resulting from the production and disposal of household appliances is in general relatively small. Depending on the appliance and impact category, it accounts for 5-25% of the environmental impact throughout the equipment's entire life cycle (see Table 1).

Table 1: Global warming potential of selected household appliances in different life cycle phases

	Production	**Use**	**Disposal**	**Source**
Washing machines	314 kg CO_2e	988 kg CO_2e	-55 kg CO_2e[2]	Rüdenauer et al. 2005
Tumble dryer (condenser dryer of energy efficiency class B	149,5 kg CO_2e	2484,3 kg CO_2e	5,2 kg CO_2e	Rüdenauer et al. 2008
Refrigerator/freezer combination (200 l + 90 l)	13%	89%	-2%	Rüdenauer & Gensch 2007

From an environmental point of view, therefore, early replacement often pays off. The "environmental payback period" denotes the time after which the environmental impact of the cumulative energy savings outweigh the additional environmental impact from the premature disposal of the old appliance. For the replacement of an average refrigerator-freezer combination manufactured in 2000 by a corresponding A++ appliance, this period is only about 2 years in terms of cumulative energy demand (CED) and global warming potential.[3]

According to current information, valid for Germany, early replacement makes sense in particular for cold appliances, tumble dryers and circulators for central heating, as well as for electric and gas stoves.[4] There may be variations between EU Member States,

1 See Rüdenauer & Gensch 2007, Annex.
2 The negative sign means that the disposal even has an environmentally beneficial effect, since the gains from recycling the material outweigh the negative impacts of the disposal and recycling process itself.
3 Rüdenauer & Gensch 2007, p. 43.
4 Grießhammer et al. 2008, p. 30.

though, mainly due to differences in climate conditions, consumer behaviour, the efficiency of the installed appliance stock and purchasing power.

However, even if environmentally beneficial, early replacement usually doesn't pay off in monetary terms – at least not in the sense that the purchase price of the new appliance will be completely compensated by the cost savings during its use phase.[5] However, a noticeable reduction of electricity costs can usually be achieved.[6] When replacing an average refrigerator/freezer combination built in 2000 with a corresponding A++ device, and assuming an average European electricity price of about 17 ct/kWh, about 35 EUR can be saved annually. It is difficult to compare the actual costs of "early" and "later" replacement though, since it is unknown for how long the old appliance would still have been serviceable in the "late" replacement case.

2.3 Push effects

Beyond the direct energy savings by early and better replacement, there may also be a savings potential due to a *push effect*: even after a promotion has expired, sales of highly efficient appliances often permanently remain at an elevated level, as the supply of such products on the market will have increased and prices tend to fall with greater quantities. Hence, *better replacement* can often be achieved even in the longer term.

3 Choice of Instruments

3.1 Overview

Household appliances are generally being used for 10 to 20 years. Therefore, most private households still own a lot of old appliances with significantly lower energy efficiency than that of the best models on the market. And if they do purchase a new appliance, they often choose a product with a low upfront price (and higher follow-up costs), even if a highly efficient product would have the same or lower life cycle costs.
Highly efficient appliances are not purchased frequently enough to achieve ambitious energy saving goals, and sometimes not even in proportion to their share of the available product range. This discrepancy between the expectation based on their possible lower life cycle costs and the actual consumer behaviour is discussed in the literature as "energy efficiency gap", and a number of causes is listed for this gap.[7]

Therefore, policy tools must be used to remove these barriers if "*better replacement*" or "*early replacement*" is to be implemented.

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5 Except for the case of cold appliances, where in general, for an appliance of 10 years or older, the purchase price can be completely recovered within 15 years; and for an appliance 15 years or older, within 9 years. See Rüdenauer & Gensch 2007.

6 It is difficult to calculate the overall cost balance, given the fact that the old appliance will have to be replaced at the end of its useful life anyway, and it is impossible to say when this would be (and therefore, what would have been the remaining value of the old device at the time of early replacement and the effect of having to pay the purchase price earlier.). See Rüdenauer & Gensch 2007.

7 See e.g. Brown 2001, Bush et al. 2007, Deutsch 2007, Ellis et al. 2007, Jackson 2005, Jaffe & Stavins 1994.

There is a variety of policy tools to increase energy efficiency in private households.[8] De la Rue du Can et al. (2011) distinguish three basic categories of instruments:

- regulatory tools, such as limit values or minimum requirements for new appliances,
- informational tools (such as labels, information campaigns) and
- financial incentives (direct subsidies, subsidized loans, indirect subsidies).

Furthermore, there is the new category of cooperative tools such as voluntary agreements and network building.

The present review focuses on tools intended to promote a *better replacement* or an *early replacement* of products bearing the EU energy label. Hence, tools are compiled that:

- *specifically aim at the replacement of energy-using products*. We exclude cross-cutting tools that are oriented towards a general increase in energy efficiency (such as electricity taxes, white certificates or savings obligations),
- are intended to improve the *market penetration of efficient appliances which are already available*. Thus, innovation targets or R & D support are not considered.

Regulatory instruments such as limit values and minimum requirements are therefore not taken into account: as they are aimed at withdrawing the worst products from the market ("push instruments"), they are not suitable for promoting the best appliances on the market ("pull instruments").[9]

3.2 Differences between instruments for better and early replacement

Not all tools and designs are equally suitable for all purposes. While measures to promote *early replacement* will always result in a *better replacement*, as they are also available to those consumers who just want to replace their old appliance anyway, the reverse is not true. If *early replacement* is to be stimulated and the possible benefits that may be associated therewith are to be realized, certain criteria must be met:

- The measures must provide an *appropriate financial incentive* to consumers, otherwise there will be no reason to dispose of an old but still functioning appliance prematurely.
- The measures must be *limited in terms of time or budget*, otherwise consumers will just await the end of their appliance's technical life assuming that the incen-

[8] For an overview see e.g. Fawcett et al. 2000, Duscha et al. 2005, Geller et al. 2006, Ürge-Vorsatz et al. 2007b, MTP 2009.

[9] An exception to this rule is the so-called "top runner" approach according to which, at a certain date, the average of new appliance units has to achieve the efficiency of the best appliance on the market at the time of the standard-setting (Nordqvist 2007; Siderius & Nakagami, 2007). As a result, standards automatically gain momentum. Since this approach is not pursued in Europe, and national initiatives are not possible because of internal market rules, it is not considered any further here.

tive will still be in place by then. [10] On the other hand, they must be long enough to support market transformation.

– The *return and proper disposal of the old appliance* must be part of the measure, otherwise it may continue to be operated as a spare device or supplied to the second-hand market (see the Belgian example in the Annex, p.16).
– Also, the implementation of an *effective system for the take-back of old appliances supports early replacement.* In many EU countries, as a consequence of the WEEE directive, shops are obliged to accept any discarded appliances that customers bring back, independently of its brand or place of purchase

4 Overview of instruments

The following chapters list appropriate tools promoting particularly efficient household appliances. Labelling with the EU energy label is taken for granted. Therefore, with regard to information tools, only those going beyond the energy label are considered.

4.1 Informational Instruments

In the domain of *voluntary* information measures, the credibility of the initiator or sponsor is relevant for their success. A high level of credibility increases the willingness of manufacturers to participate and the willingness of consumers to initially spend more money for highly efficient products or the early replacement of old appliances.

4.1.1 Communication of life cycle costs

This means consumers are given information on the financial savings they can achieve throughout the product life cycle by purchasing a highly efficient appliance. As we have seen, the argument is mainly valid for better replacement, and less so for early replacement. In contrast to a label only declaring energy efficiency, the communication of monetary information has the advantage that a general environmental benefit of a product is converted into an individual benefit for the consumer. This is particularly advantageous when broader customer segments beyond the niche are to be addressed.[11]

4.1.2 Market overviews and product databases

Market overviews and product databases such as www.topten.eu or www.ecotopten.de facilitate the purchase process by providing potential purchasers with an overview of efficient products, their features and prices, and eventually their life cycle costs under average conditions.[12] Hence, they are rather a tool for *better replacement*. They may be provided by different actors, such as national energy agencies, manufacturers' associations, NGOs or other independent bodies. An innovative element is the inclusion of a price competition, enabling potential customers to inform themselves not only about the

[10] One such example is the German "scrapping premium" for old cars in 2009. There was only a limited budget allocated to the premiums, therefore those who wanted to benefit had to act quickly (see IFEU 2009).

[11] See Schrader 2005, Wüstenhagen et al. 2001. Unfortunately, the monetary effect depends highly on local conditions (e.g. energy prices; therefore the measure may not be implemented EU-wide).

[12] Fawcett et al. 2000, p. 64; see also Nørgård et al. 2007.

average purchase price of the desired product but also about the cheapest supplier. With this method, the Danish site www.hvidevarepriser.dk achieved a major price reduction: Within three weeks, the recommended retail prices fell by 20%.[13]

4.1.3 Additional voluntary labelling

In addition to the mandatory EU energy label, there are voluntary ecolabels both on an EU level and in some nation states (such as the German Blue Angel, the British label "Energy Saving Recommended"[14] and the Danish Energy Saving Label.[15]) The goal is to particularly reemphasize highly efficient products or products that, beyond the energy savings, meet further environmental and quality criteria. This measure can especially promote *better replacement*.

Voluntary labels can generally be quite cost-effective. A harmonization with other tools and a regular update play a crucial role.[16] So far, however, it could not yet be demonstrated that one of these voluntary schemes had a market transformation effect reaching beyond that of the EU energy label.

4.1.4 Information campaigns

Information campaigns must accompany many other instruments in order to draw consumers' attention to the existence of that instrument. Especially when aiming at *early replacement*, a comprehensive information campaign aimed at the general public is important in order to reach those consumers who are not currently facing a purchase decision and actively searching for information.

Information campaigns are relatively inexpensive. Their effectiveness, however, is difficult to assess. Just like voluntary labelling, they are generally more effective in combination with other tools.[17]

4.1.5 Measuring energy consumption

The measurement of the energy consumption of appliances in a private household is an appropriate measure to promote *early replacement*. Firstly, it may raise the consumer's awareness to an associated cost. Secondly, it can form an integral part of a broader programme. For example, in-house measurement may be used to determine the eligibility of a household / appliance to participate in a subsidy program (see annex p. 39).

4.2 Financial incentives

Financial incentives can address the following dilemma:

13 Personal communication of Peter Karbo to Tina Fawcett, see Fawcett et al. 2000.
14 Lock & Galvanoni 2007.
15 Rasmussen & Kirkeby 2009.
16 Ürge-Vorsatz et al. 2007b, p. 466, 471.
17 Ürge-Vorsatz et al. 2007b, p. 467, 472; Geller et al. 2006, p. 571.

"In summary, while reduced energy costs could make a difference for low-income households and businesses, they often lack the finances or access to finances, whereas those with higher incomes and access to capital lack the motivation to invest in energy efficiency." (Ürge-Vorsatz et al. 2007a, p. 392).

These incentives may take different forms.

4.2.1 Direct subsidies to consumers

The basic idea is to provide consumers of particularly efficient appliances (which are at the same time disposing of an old appliance) with a financial reward. This is one of the most popular instruments. Examples of national programmes abound (see Annex, p. 2), and there are even more examples of programmes set up by trade, manufacturers or energy companies.[18]

If the measure is limited in terms of time or budget, rather *early replacement* will be stimulated. If it is planned on a long-term basis (i.e. over several years), *better replacement* is promoted more or less ad infinitum, thus bringing forward falling prices and a longer-term market transformation. *Early replacement*, however, is stimulated to a smaller extent, as there is no incentive to replace the old appliance unit as quickly as possible.

In the design of subsidies, a number of conceptual questions need to be answered, impacting on the success of the measure:[19]

- Target group (e.g. restriction to low-income households or households with particularly energy-intensive appliances?)
- Appliance groups to be promoted
- Criteria for subsidy / requirements to be met by the appliance
- Amount of subsidy (high enough to have visible effects; low enough to avoid free riders; differentiated according to appliance type and efficiency?; differentiated for household income?)
- Duration of measure
- Organizational implementation of premium payment (e.g. by retailers or national agency?) and take-back of the obsolete appliances.

Subsidies are often effective, but not always cost-effective, which is due to free riders. To be cost-effective, measures should focus on very innovative appliances currently still having high purchase prices, but a good potential for reducing them by economies of scale.[20]

A variant of the consumer subsidy is the “free giveaway”. For example, a popular measure in a number of countries has been the distribution of free energy saving lightbulbs. The effects are contested, however. First, free giveaways may destroy markets for

[18] E.g. for cooling appliances in the UK (Fawcett et al. 2000, p. 53ff) and for lighting in Austria, Denmark, the Netherlands, Italy, Sweden and Germany (Mills 1991) .

[19] See Fawcett et al. 2000, p. 63f, Grießhammer et al. 2008, Grether et al. 2009; MTP 2009, p. 81ff.

[20] Ürge-Vorsatz 2007b, p. 466; Geller et al. 2006, p. 571.

these appliances.[21] Secondly, free appliances are often not installed by consumers, limiting the effect (see Portugal example in the annex, p. 13). In the UK, this type if programme is therefore no more eligible as an energy saving measure under the Carbon Emissions Reduction Target (CERT) scheme.

A further variant is to just offer an incentive for disposal of the old appliance, without subsidizing the new one. This can take the form of a bonus for having an old appliance removed, such as in Canada (see the annex, p. 16).

4.2.2 Fiscal incentives for consumers

Tax incentives have been extremely successful for major household appliances in Italy. But in other countries, they are rarely applied for household appliances. This is probably due to the comparably low purchase price of these devices, and, as a result, of the high administrative costs.[22] Also, the lack of an immediate connection between appliance acquisition and financial benefit reduces the psychological effect. Tax benefits therefore are primarily applied in the building sector, relating to equipment such as boilers, water heaters or air-conditioning systems (which are or will be also covered by the EU label).[23] They can take the form of tax credits, deductions from income tax or enhanced capital allowances and may be financed by an energy tax which is "returned" to consumers in the form of appropriate incentives. Depending on operational features (limited in time or not), tax incentives can be appropriate means for both *better replacement* and *early replacement.*

Another variant is to reduce the VAT rate and thus the selling price for highly efficient appliances. However, due to EU VAT rules, reduced VAT rates may only apply to building-related measures, such as water heaters (Dir. 2006/112/EC, Art. 98 in combination with Annex III). Furthermore, appliance manufacturers are sceptical of this measure, as the subsidy is not transparent to the consumer. Seeing only the final price, consumers might believe that highly efficient appliances are cheaper to produce than ordinary equipment, and their willingness to pay will (further) decline. All in all, these reasons suggest that this tool is not recommendable.

Tax incentives can be both effective and cost-effective[24] but there are also other cases where they showed little effect and high windfall profits.[25] Therefore, design details are crucial. Among the criteria of success are: reliability, good timing, stakeholder participation and accompanying information measures, regular updates, appropriate level of requirements, selection of appropriate appliances (in most countries, products whose purchase price proves to be a major hurdle).[26]

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21 Boardman 2004.

22 In Italy, the benefits have proven higher than the administrative costs, becauste the measure requires beneficiaries to present the tax declaration and thus helps to decrease tax evasion.

23 For examples see Quinlan et al. 2001, Prindle & Nadel 2002, Gold & Nadel 2011.

24 Gold & Nadel, 2011; Ürge-Vorsatz et al. 2007a, p. 393; 2007b, p. 466 and 471; Markandya et al. 2009, p. 5668 ff.

25 Quinlan et al. 2001, p. 3

26 Quinlan et al. 2001; Gold & Nadel 2011

4.2.3 Indirect subsidies

In the case of indirect subsidies, as practised in the "Eco-point" system in Japan or the Korean "Carbon Cashbag", consumers obtain credit "points" instead of money upon the purchase of a highly efficient product. Then, these points can be traded for certain products or services (e.g. for discounts in public transport, for other environmentally friendly products, cultural events, etc.).[27] Another variant is that consumers can acquire vouchers or bonus points when they buy other products, or as a bonus on their salary, which can then be used to purchase highly efficient appliances.

The advantage of such indirect subsidies as compared to the disbursement of money is that the type of products or services that can be bought to receive the subsidies can be influenced. This can at least reduce direct rebound effects (when subsidies / refunds are used to purchase flights or other products with high CO_2 intensity).

4.2.4 Bonus/malus programmes

Bonus / malus programmes aim at adjusting the price of energy-using products according to their efficiency. When buying a highly efficient appliance, an allowance (bonus) is granted to the consumer, while he or she must pay an additional amount (malus) on purchase of a particularly inefficient product. When buying an average appliance, neither a bonus nor a malus does accrue.

The advantage of this tool is that it can be set so that it will either generate net revenues, that it will be revenue-neutral, or that subsidies will be needed. In designing the instrument, it is important that the threshold value between bonus and malus (i.e. the average efficiency) will be regularly adjusted to the market development.[28]

Due to the malus element, this is a tool to promote *better* rather than *early* replacement, as consumers buying less efficient appliances will actually be penalized.

So far, there is only one example, namely for automobiles in France. Here, the tool was linked to the CO_2 emissions, which has proven to be very effective. The market share of cars of emission class B has risen from 20 to 33% while the share of class G cars has been halved. An extension of the scheme to other products is being discussed.[29]

4.2.5 Micro-credit models

Micro-credit models aim at eliminating the hurdle of high upfront costs by granting advantageous loans for the total purchase price or a part thereof. They are currently mainly used in the building sector and less for household appliances. The advantage may either reside in subsidized loans (low / no interest rates) and/or in a specific repayment mode, i.e. the loan will be repaid through the savings resulting from the lower energy consumption during the use phase. The latter is also known as "contracting". Credits/loans

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27 See De la Rue du Can 2011, p. 589, and appendix
28 See MTP 2009.
29 Callonec & Sannié 2009.

may be offered by different actors, such as governments, independent agencies, energy providers or third parties (e.g. ESCOs, Energy Service Companies).[30]

- *Government loans* are generally only relevant in the building sector. Due to high transaction cost, they are not yet granted for household appliances.[31]
- Due to various barriers, *loans by third parties* are only granted to a small extent, so far. Government subsidies could, however, stimulate the granting of loans by third parties (for examples see the annex, p. 20 and 22).
- When loans are granted by *energy providers*, the latter installs energy-efficient appliances, which are paid with the monthly energy bill. The savings in energy consumption costs at least partly offset the costs for the installation of the device. There are both the credit and the rate variant: While the credit is tied directly to the customer, who has to pay it back even if he moves house, the rate is bound to the consumption meter and thus to the real estate. The rate option has the advantage that even tenants can participate without taking a greater risk. (for a well-documented example from the USA see the annex, p. 21).

This measure is mainly suitable for *better replacement*. It can be used for *early replacement*, too, if it would be temporary limited so as to provide an incentive to immediately replace the old appliance, and connected with a return of the obsolete appliance. One problem that is encountered with this tool is that it often fails to reach the neediest households as well as tenant households. Further issues are high costs associated with the programme, the low participation rate, and the difficulty to make realistic estimates of the savings in advance.[32]

4.2.6 Financial incentives for producers (upstream incentives) or retailers and installers (midstream incentives)

Producers may receive financial incentives to produce and sell more highly efficient appliances or to reduce their prices. Lower consumer prices improve the conditions both for *better* and *early replacement*. Such incentives may, for example, take the form of tax credits per produced unit[33] or of a grant if certain criteria are met.[34] Such incentives are particularly effective when the market is dominated by a few large producers that are present in all countries.[35]

Furthermore, as a tool for better replacement, sales personnel or installers receive (financial) incentives to sell particularly efficient appliances. Hence, they will preferentially offer these appliances highlighting them in their sales discussions.[36]

As compared to incentives offered directly to consumers, benefits of upstream or midstream incentives may be:[37]

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30 See Fuller 2009, De la Rue du Can, 2011, p. 589f.
31 See Zabot et al. 2011, De la Rue du Can 2011.
32 Fuller 2009.
33 For the USA, see Gold & Nadel, 2011, p. 7; Markandya et al. 2009, p. 5663. For a Polish example see chapter 8.2 and the annex, p. 24.
34 Singh 2011.
35 De la Rue du Can 2011.
36 Fawcett et al. 2000, p.64.

– *lower transaction costs*, because the number of manufacturers or retail companies is significantly lower than the number of consumers. Also, instead of many different criteria influencing the private consumer's buying decision, profit is basically the only decision criterion in companies;
– *lower incentive needed*, as trade margins and taxes are avoided;
– *lower total costs for the state*, as losses in the electricity tax and costs of the tax relief are compensated by increased VAT revenues and increased corporate income taxes.

On the other hand, these instruments contribute less to consumer awareness and sensitization. Also, compared to end user rebates, it is mostly retailers and manufacturers who profit financially. Distributional effects therefore have to be considered.

4.3 Procurement

If energy efficiency is defined as a criterion of procurement, markets can be created as a result of buying power. On the one hand, this can be used for the first market introduction of highly efficient appliances (so-called "technology procurement"), on the other for the expansion of market shares and reduction of prices (so-called "market procurement"), thus providing a sound basis both for *better* and for *early replacement* .
One possible buyer might be the public authorities. In the U.S., for example, the Energy Star has become a key criterion of procurement for many public institutions. In Europe, there are similar examples for individual cities.[38] In many countries, however, there are still several obstacles to overcome before the public sector will take on a pioneering role. These obstacles are, for instance, legal barriers, split incentives, organizational barriers and a lack of resources.[39]

When exercising "cooperative procurement", potential buyers group together and set product quality requirements or negotiate with retailers or manufacturers to obtain favourable prices for the purchase of a great number of highly efficient appliances.[40] This can be especially effective when large institutional buyers (such as retail chains or housing associations) are involved (see examples in ch. 8.4 and the annex, p.32).

There is broad consensus in the literature that procurement programmes prove to be very effective and cost effective, both for the introduction and the distribution of highly efficient products.[41]

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37 See for a thorough discussion of advantages and disadvantages Singh 2011, Fawcett et al. 2000, p. 64; Mebane & Piccinno 2006, and the PELP example in ch. 8.2 and the Annex, p. 24.
38 Harris et al. 2004; Borg et al. 2006, p. 241.
39 Borg et al. 2006.
40 Fawcett et al. 2000, p. 64
41 Neij 2001, Attali & Engleryd 2001, Harris et al. 2004,. Wuppertal Institute 2005, Borg et al. 2006, Ürge-Vorsatz et al. 2007b, p. 467 and 472.

4.4 Cooperative instruments

4.4.1 Voluntary agreements

The market penetration of highly efficient devices can be supported by voluntary agreements (VAs) between manufacturers and governments which aim at increasing the market share of highly efficient appliances and improving the fleet performance (see for examples on the EU level the annex, p. 33).

The effectiveness of voluntary agreements, however, is a very controversial issue. They may quickly bring about energy savings in a flexible and cost-efficient way, but often prove to be undemanding and / or unenforceable.[42] The crucial factor is the suitable institutional framework. The European commission deems five requirements to be essential for a VA to succeed: (1) quantified targets, (2) significant market share of the manufacturers involved (at least 80%), (3) effective monitoring scheme, (4) transparency of the process, (5) sanctions in case of non-compliance. Voluntary agreements are usually most effective in combination with other policy tools, or "in the shadow of hierarchy", i.e. based on the threat of implementing regulatory measures. [43]

4.4.2 Actor networks

Another form of cooperative approach is the formation of actor networks. For example, in the western part of the United States, a loose alliance of energy and water suppliers and manufacturers under the coordination of the "Consortium for Energy Efficiency (CEE)" conducted a collection of activities in order to promote highly efficient washing machines. The coherence was ensured by product specifications, product lists and commonly authored information materials set by the CEE, whereas the participating partners implemented individual marketing and subsidy measures (see annex, p. 42).[44]

4.5 Integrated strategies

Integrated strategies combine several of these tools. In Denmark, for example, there have been three campaigns aimed at promoting highly efficient refrigerating appliances, combining a subsidy with an aggressive marketing campaign and a website launched to enable consumers to search for products and to compare prices. Another Danish campaign, targeting highly efficient circulators, linked voluntary agreements with manufacturers, retailers and installers with a voluntary labelling and a proactive marketing. A programme to replace old refrigerators in Oregon combined information measures, measurement of the household's energy consumption, personal contact, financial incentives and comprehensive services for households. (see for details ch. 8.1 and the annex, pp. 35, 37 and 39). In addressing different phases of the market launch process as well as different barriers, sophisticated combinations have proven to be more powerful than individual measures.[45]

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42 Ürge-Vorsatz et al. 2007b, p. 466; 471.
43 Bertoldi et al. 2001 , Bertoldi & Rezessy 2007, especially pp. 63 and 69.
44 Shel Feldman 2001.
45 Heimdal & Bjørnstad 2009.

5 Conditions for success

Apart from the conditions for individual tools sketched above, some general conditions for the success of tools aiming at the replacement of inefficient appliances and improved market penetration of efficient ones have been identified in the literature[46]:

- Programmes should be part of a long-term strategy and be underpinned by reliable mandates and budgets.
- Criteria for support schemes must be clear and demanding; upon the achievement of a certain market share, the schemes should be revised.
- Careful planning:
  - definition of the exact objective of the measure (*early replacement* or continuous market transformation resulting from *better replacement*)
  - proper timing (in terms of marketability of technologies, i.e. not too early)
  - involvement of relevant stakeholders (manufacturers, retailers, where appropriate energy providers, ...)
    duration of the measure should not be too short and the overall budget not too small.

6 Funding the measures

Since the financing of the instruments is not the focus of this work package, the following list only gives a brief overview of several possibilities[47]:

- public budget (i.e., financing through general taxes)
- surcharges on the electricity tariff
- levy on particularly inefficient appliances ("inefficiency fee")
- fees levied from power suppliers (e.g. a fixed amount per customer)
- financing through an energy efficiency fund (which in turn can be fuelled by levies on electricity tariffs or contributions from energy suppliers)
- funding by the key player in charge of the measure (trading company, manufacturer, energy utility)
- self-supporting funding (e.g. micro-credit models, bonus/malus schemes).

In general, a specific instrument is not necessarily linked to a specific funding option. Where this is nevertheless the case or suggests itself, it has been mentioned in the tool description.

7 Monitoring and Evaluation

A monitoring or an evaluation of the tools is necessary, among other reasons, because tools have to be readjusted or optimized if they are to be extended to other sectors or member states. The following criteria may be relevant in this context:[48]

- programme design: appropriate…
  - choice of the technologies to be promoted
  - combination of the tools put in place
  - definition of objectives and expected costs

[46] See, for example, MTP 2009 (especially pp.83/84) and De la Rue du Can 2011, p.6.
[47] See for details De la Rue du Can 2011, Singh 2011, Duscha et al. 2005, p. 180 ff.
[48] See also Neij 2001; Ürge-Vorsatz et al. 2007b, p. 460f.

- achievement of objectives
- environmental effectiveness, e.g.:
  - how have the sales of highly efficient appliances as well as their prices developed as compared to a baseline scenario?
  - how many and which obsolete appliances have been replaced?
  - how much energy or CO_2 has been saved?
- Secondary effects (such as awareness-raising; appearance of new entrants into the sector; development of technologies)
- cost effectiveness
- distributional effects.

8 Examples

In the following, five of the abundant examples set out in the annex have been selected according to the following criteria:

- proven success or highly innovative approach;
- availability of a meaningful documentation and, if possible, of an evaluation;
- coverage of different tools
- coverage of *better replacement* as well as of *early replacement*
- coverage of different countries (if possible, European countries have been chosen. But non-European countries have been included if they present innovative approaches not covered in Europe.

8.1 Campaigns for efficient refrigerators in Denmark[49]

In 1999, 2004 and 2005, the Danish Energy Saving Trust conducted campaigns to promote highly efficient refrigerators and freezers. In 1999, promotional measures adressed class A appliances; in 2004, class A+ and A++ appliances, and in 2005 only class A++ devices. The campaigns were supported by a broad stakeholder coalition (energy saving funds, manufacturers, retailers and power utilities), each of them combining several elements, such as a broad-based national and local media campaign, a subsidy granted by the retailer, which was differentiated according to the type of appliance and limited to a few months, and finally a website enabling consumers to search for products and points of sale, and allowing them to compare prices (and later life-cycle costs). The innovative feature was mainly the price competition initiated by the website, which led sales prices of listed appliances to decrease by 20 % within just three weeks. Participating retailers had to commit themselves not to raise prices of subsidized appliance units within the period of subsidization. A return of obsolete equipment was not compulsory.

As a result of the campaigns, market shares for A or better appliances increased from 7% (in 1998) to 15% (in 1999) and to 29% (in 2000). Market shares for A+ appliances rose from 27% (in 2005) to 39% (in 2006), whereas the A++ share slightly decreased (probably due to anticipatory effects) (see also the annex, p. 35).

[49] See Nørgård et al. 2007.

8.2 Manufacturer grants for energy saving lamps in Poland[50]

The "Poland Efficient Lighting Project" (PELP) was carried out from November 1995 to May 1998 by the UN Global Environmental Facility (GEF). It combined lamp and lighting subsidies with a large-scale information campaign for end consumers and opinion leaders. Five manufacturers of energy saving lamps with production facilities in Poland received a total of 2.6 million U.S. dollars in subsidies for 1.2 million lamps on the condition that they would fully pass on the cost savings and that they would participate in the monitoring of market prices.

The programme was a tremendous success. With an average subsidy of 2.14 U.S. dollars per lamp, retail prices could be reduced by 5.91 U.S. dollars. The market penetration of energy saving lamps in households increased from 11.5% to 33.2%. While sales grew twice the rate as in other Central and Eastern European countries, prices of energy saving lamps fell by 34% and remained at this level even after the expiry of the programme. In 1999, GHG savings were estimated at 2,79 million tonnes of CO_2e. A 2006 estimate even suggested 3,62 million tonnes, as the market penetration of efficient lamps was still increasing substantially over time (see also the annex, p. 28)

8.3 "Eco-Points" in Japan[51]

The Eco-Points Programme began in May 2009 and was originally intended to run until March 2010. It has since been extended twice, most recently up to March 2011. In July 2011, after the nuclear accident of Fukushima and in the course of the energy crisis, there were considerations to re-launch the programme. The programme pursues several objectives, i.e. reducing CO_2 emissions, promotion of the economy and preparing the switch to digital television. It was initially designed for refrigerators, air conditioners, and digital TVs. Later, it was expanded to include lighting. Devices were classified into five energy efficiency classes; points could be acquired for units of classes four and five. After having filled in a form and handed in the purchase receipt at a governmental office, consumers received 5% of the purchase price of refrigerators and air conditioners and 10% of the price of a TV set, issued in the form of "ecopoints". Points were also granted for the return of an old device. They could be redeemed for a range of products and services (gift vouchers, train and flight tickets, regional specialities or energy-efficient products), or donated to an environmental organization.

The response to this programme, which had a great business-promotional effect, was very positive: by the end of July 2010, the government had spent 268 billion yen (2.4 billion EUR) on points, the sales of the relevant products had risen by 30% and remained consistently high. Criticism was related to the bureaucratic handling and to the lack of environmental impact, which, among other reasons, resulted from the conflict of goals (for example, the larger and thus more expensive a television was, the more points could be collected; many of the products that could be acquired through exchange were not environmentally friendly.) (see annex, p. 20).

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50 See Granda et al. 1999, Navigant 1999, and GEF 2006.

51 Sources: http://whatjapanthinks.com/2009/05/15/eco-point-economic-stimulus-plan-evaluated/; http://search.japantimes.co.jp/cgi-bin/nb20090620a1.html; http://www.japanfs.org/en/mailmagazine/newsletter/pages/029766.html; http://online.wsj.com/article/SB10001424052748704421104575463183518640958.html

8.4 Cooperative Procurement in Europe[52]

The EU-funded projects "Energy+" and "2E+", in total running from 2000 to 2004, were geared towards the market introduction of highly efficient refrigerators and freezers through coordinated cross-border technology procurement. In total, 13 member states were involved. Technical specifications were elaborated for appliances to be promoted (they corresponded to the current energy class A+, which, among other things, was introduced as a consequence of the projects). Besides, a list of appliances meeting the specifications was compiled. A group comprising more than 100 potential buyers was formed, including retail chains with more than 15 000 stores and institutional purchasers with more than one million buildings. This was accompanied by a technology competitions as well as national subsidy and information tools.

As a consequence, the number of "Energy+" (now A+) models offered rose from only 2 in February 2000 to 188 in November 2002 and to over 900 in 2004. Although this does not actually mean a replacement of inefficient appliances through efficient ones in households, an essential precondition was created because highly efficient appliances have been made available at all. (see annex p. 32).

8.5 "Early Retirement for Refrigerators" in Oregon, USA[53]

The project "Refrigerator Early Retirement, Replacement and Recycling" was carried out by the Oregon Energy Trust and the charity CAPECO in 2007. Households with very inefficient refrigerators more than 10 years old should be given the opportunity to exchange their unit, low-income households being the main target group. Participants were recruited by means of direct mail (apart from that there was no accompanying marketing). In the participating households, the consumption of the refrigerating unit was measured, and an energy counselling service was offered to the household. If the appliance consumed more than 1 000 kWh annually, the household could exchange it at the appointed dealer for a new, more efficient unit to be selected from a list, at a reduced rate. The trader, for his part, was reimbursed by the Energy Trust for the discount.

As a result, 184 refrigerators requiring 1 500 kWh annually on average were replaced with new appliances each consuming 400 kWh per year (which, by European standards, is still high). Only 22% of these exchanges, however, were carried out in low-income households. For a total cost of 78.700 US dollars, nearly 190 000 kWh were saved annually, corresponding to almost 1.9 million kWh in ten years. Thus, the costs amounted to about 0,04 USD/kWh; further opportunities for cost savings were identified (see annex, p. 39).

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[52] Attali & Engleryd 2001, Wijshoff & Attali 2003, 2E+ 2005.

[53] Ferington & Scott 2008.

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Annex: Instruments for early and better replacement

The annex collects examples for instruments that encourage early and / or better replacement from various European and non-European countries. Preference has been given to European examples. Non-European ones have been included if they are especially successful or instructive, or if European examples do not exist for the respective instrument. The examples have been sorted by type of instrument. Wherever sufficient information was available, a detailed description of the example has been provided in form of a factsheet. Where information was scarce, the example has been summarized in a few sentences under the heading of “Further activities”. Sources have been provided.

Contents

1 Direct subsidies

1.1 Grants, rebates etc.

Country	UK
Name of the instrument / programme	**Refrigerator rebate scheme**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Four manufacturers
Participating actors and their roles	Manufacturers, retailers (collaborative organisation and marketing of the scheme)
Running period	Summer 1999
Total budget	
Geographical coverage (nat., regional…?)	
Type of appliance covered	A defined range of refrigerating appliances
Type of instrument (financ. information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Rebate either in the form of a price discount or on a cash-back basis
Criteria of eligibility	A-C appliances
Amount of allowance per appliance; if applicable: upper limit	£30 - £85 (45 – 127.5 Euros); often lowering the price below the price of the less efficient model
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	Old appliance had to be handed in
Accompanying measures? (e.g. information campaign)	Little promotion and communication
Evaluation available?	Yes ; see Fawcett et al. 2000, based on interviews with staff and customers in 3 stores and a survey questionnaire (n=700)
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	45,000 units sold, exceeding the target; scheme was extended to cover 6000 units more than planned. But effect in increasing market shares unclear; value of promoting B and C appliances dubious; little educational effect
Other comments	
Link / source for further information	Tina Fawcett, Kevin Lane, Brenda Boardman (2000): Lower carbon futures for European households. Oxford: Environmental Change Institute, p.53

Country	Malta
Name of the instrument / programme	**"Grant on the Purchase of Household Appliances for Domestic Use Certified as Being Efficient in the Use of Energy" aka "Rebate scheme for energy efficient domestic appliances"**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Malta Resources Authority (MRA) – Government body
Participating actors and their roles	Retailers and Importers - had to register with MRA in order to be eligible to participate as points of sale for eligible energy efficient appliances.
Running period	01/11/2006 – 06/07/2008 (see: Government Notice No. 1026 of 2006 and Government Notice No. 341 of 2008 as subsequently amended by Government Notice No. 406 of 2008
Total budget	Information not available. Estimated max. budget according to approved applications and max. subsidy ceilings: EUR 2.4 million
Geographical coverage (national, regional…?)	National
Type of appliance covered	Dishwashers, Refrigerators, Freezers or Combinations, Washing Machines, Tumble Dryers, Air Conditioning Units
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	National budget
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers. Applications under this scheme were submitted by the consumer to MRA. The registered seller had to support the application with an information slip providing details about the appliance and its energy rating.
Type of allowance (e.g. rebate at point of sale, direct payment, tax reduction, indirect subsidy (points, vouchers); bonus / malus system, micro credi / on-bill financing…)	Subsidy - Direct payment of subsidy to consumer from MRA against fiscal receipt after purchase and depending on fulfilment of eligibility criteria.

<table>
<tr><td>Amount of allowance per appliance; if applicable: upper limit</td><td>The following maximum ceilings applied per appliance category, efficiency class, etc.

<table>
<tr><th>Appliances</th><th>Category</th><th>20% of selling price with a maximum grant of</th></tr>
<tr><td>Dishwashers</td><td>A</td><td>€ 58.23</td></tr>
<tr><td rowspan="3">Refrigerators, Freezers or Combinations</td><td>A Tropical</td><td>€ 116.47</td></tr>
<tr><td>A+ Subtropical</td><td>€ 116.47</td></tr>
<tr><td>A Subtropical (til 31st March 2007)</td><td>€ 58.23</td></tr>
<tr><td>Washing Machines</td><td>A</td><td>€ 58.23</td></tr>
<tr><td>Tumble Dryers</td><td>A</td><td>€ 58.23</td></tr>
<tr><td>Air Conditioning Units</td><td>A</td><td>€ 58.23</td></tr>
</table></td></tr>
<tr><td>Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)</td><td>List of appliances eligible for the rebate as of April 2009: http://www.mra.org.mt/Downloads/Energy%20efficiency/Appliance%20list%20_April09.pdf
No information available about restrictions other than stipulated in Government Notice No. 1026 of 2006 (no indication of max. number of subsidies per household or disposal requirement of old appliance)</td></tr>
<tr><td>Accompanying measures? (e.g. information campaign)</td><td>N/A</td></tr>
<tr><td>Evaluation available?</td><td>Although data is very limited, the National Audit Office has conducted a review based on the information provided by MRA on this rebate programme and other energy efficiency and RES schemes. http://www.nao.gov.mt/page.aspx?id=85</td></tr>
<tr><td>Desired impact achieved?</td><td>According to data collected by MRA and the National Audit Office (NAO), the rebate scheme has generated significant public uptake. The below table shows that as of mid-March 2009, with the exception of applications related to tumble driers, applications to all other eligible appliances ranged from 79 to 90 percent of their predetermined target.

<table>
<tr><th>Appliance</th><th>Percentage of selling price with maximum grant of (€)</th><th>Period</th><th>Est. number of applications 2010</th><th>No. of approved application as at mid-March 2009</th><th>progress for approved applications against targets (in %)</th></tr>
<tr><td>Dishwashers</td><td>58.23</td><td>Nov-06 – Jul-08</td><td>2,000</td><td>1,578</td><td>79</td></tr>
<tr><td rowspan="3">Refrigerators, Freezers or Combinations</td><td>116.47</td><td>Nov-06 – Jul-08</td><td>12,000</td><td>10,372</td><td>86</td></tr>
<tr><td>116.47</td><td>Nov-06 – Jul-08</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>58.23</td><td>Nov-06 – Jul-08</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Washing Machines</td><td>58.23</td><td>Nov-06 – Jul-08</td><td>22,000</td><td>19,834</td><td>90</td></tr>
<tr><td>Tumble Dryers</td><td>58.23</td><td>Nov-06 – Jul-08</td><td>50</td><td>25</td><td>50</td></tr>
<tr><td>Air Conditioning Units</td><td>58.23</td><td>Nov-06 – Jul-08</td><td>7,000</td><td>6,087</td><td>87</td></tr>
</table>
Source: NAO 2009</td></tr>
<tr><td>Other comments</td><td>Note: There are currently no internal documented procedures or standards regarding energy efficiency monitoring procedures to be adopted by the MRA in accordance with EU Directive 2006/32/EC.</td></tr>
<tr><td>Link / source for further information</td><td>http://www.mra.org.mt/energy_efficieny_archive-V1.shtml</td></tr>
</table>

Country	Greece
Name of the instrument / programme	**"Αλλάζω ΚΛΙΜΑτιστικό" (Replacement of Household Air Conditioning Systems)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Ministry of Environment, Energy and Climate Change
Participating actors and their roles	- Ministry of Environment, Energy and Climate Change: responsible for the implementation of the programme. - Retail shops: (a) responsible for selling the household appliances according to the official procedure of the programme and (b) responsible for transferring the old appliances from consumers homes to their storage area. - Recycling company: responsible for collecting the old appliances from retail shops.
Running period	June 2009 - August 2009
Total budget	47.000.000 €
Geographical coverage (national, regional…?)	National
Type of appliance covered	Household air conditioning systems
Type of instrument (financial, information?)	financial
If information instrument	
Media used	-
Target group	-
Main message	-
Life cycle costs communicated? (y/n)	-
Other comments	-
If financial instrument	
Financing sources	Co-funded by the European Regional Development Fund
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Direct subsidy: consumers at the point of sale paid only their share of the appliance purchasing cost. The rest was subsidized (the subsidy did not include uninstallation costs for the old appliance, installation costs for the new appliance or delivery costs).
Amount of allowance per appliance; if applicable: upper limit	35% of the retail price; upper limit: 500 €
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	The replacement of maximum two air conditioning systems, which should had been operating until the day of withdrawal, per household was allowed. The disposal of old appliances was demonstrated. The new air conditioning systems were replaced by DC inverter air conditioning systems of energy efficiency class A for appliances <16000 Btu or B for appliances >16000 Btu, either wall mounted or floor based.
Accompanying measures? (e.g. information campaign)	Yes: advertisements on the national television and radio network, articles, leaflets, web.
Evaluation available?	An evaluation report is expected to be published.
Desired impact achieved?	(this will be mentioned in the evaluation report)
Other comments	-
Link / source for further information	http://www.allazoklima.gr

Country	Netherlands
Name of the instrument / programme	**Energy Premium Scheme (EPR)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Novem (Energy Agency)
Participating actors and their roles	Energy distribution companies (payment of the rebates) Stakeholders including industry organisations and ministries (discussing eligible appliances, criteria, and size of rebate)
Running period	2000-2002 ; revision in 2002
Total budget	2000: 15 mio. EUR operating costs, 50 mio. rebate, 65 mio. total 2001: 26,6 mio. operating cost, 108,6 mio. rebate; 135 mio. total.
Geographical coverage (national, regional…?)	national
Type of appliance covered	• household appliances, including lighting and monitors (since 2001) • installed appliances; • architectural facilities; • sustainable energy. The evaluation focuses on household appliances.
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	Energy tax (partly repaid as a fixed sum to all energy end users, partly used for the rebate)
Receiver of allowance (consumers, retailers, manufacturers?)	
Criteria of eligibility	2000: Class A for white goods 2001 und 2002: additionally; A+ for cold appliances, AAA for washing machines, dedicated CFL for lighting, LCD technology for monitors
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Direct payment (to be paid by the energy distributing company upon submission of a form and proof of the purchase)
Amount of allowance per appliance; if applicable: upper limit	2000: 45 EUR for cold appliances, dishwashers and washing machines, 160 EUR for driers, 205 EUR for washer-driers Changes in 2001: higher subsidy of 90 EUR for A+ cold appliances and AAA washing machines, new subsidy of 45 EUR for efficient lighting and monitors Changes in 2002: 45 EUR subsidy raised to 50 (except for dishwashers), 90 EUR subsidy raised to 100
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	Extensive communication campaign (TV shows, ads in national papers and magazines, local media, website listing the eligible products

Evaluation available?	yes
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	Sales of A-Labelled cold appliances and dishwashers went up from under 30% in 1999 to 55% in 2000 and about 70% in 2001. Sales of washing mashies went up from 40% to 71% and 88% respectively. No such effect for tumble driers; figures for lighting and monitors not given. Sales of A labelled products per 1000 households rose from 6,5 in 1999 to 19,6 in the third quarter of 2000, as compared to a rise from 6 to 11,9 in Germany during the same period. 210.000 tons of CO2 saved by the end of 2002[55] In November 2001, 82% of consumers knew the EPR
Other comments	List of products, criteria, and rebates is revised yearly according to criteria of cost effectiveness, height of necessary rebate, energy efficiency of product, guaranteed savings to the consumer, and simplicity of verification
Link / source for further information	Siderius, Hans Paul & Loozen Annemie (2003): Energy Premium scheme (EPR) for domestic appliances in the Netherlands. eceee 2003 summer study proceedings. http://www.eceee.org/conference_proceedings/eceee/2003c/Panel_4/4106siderius/Paper/ Stöckle, Friedemann (2006) Trends of Major Domestic Appliances Sales in the Various Phases of Energy Efficiency Legislation in Europe. Presentation given at the EEDAL 2006.

[55] This figure in the abstract does not correspond with the results of table 4 in the text, which add up to about 56.800 tons, calculated offer the lifetime of the appliances.

Country	Italy
Name of the instrument / programme	**Special Fund**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	National Government. Special Fund for energy efficiency, environmental protection and workplace safety established by Decree-Law of 25 March 2010, No 40. Eligible appliances specified by Decree of 26 March 2010.
Participating actors and their roles	
Running period	
Total budget	35 million EUR for individual kitchen appliances, as specified below 54 million EUR for complete kitchens
Geographical coverage (national, regional…?)	National
Type of appliance covered	- gas ranges, electric stoves, dishwashers, hobs, hot water equipment - Complete kitchen renovations
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	National budget
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Criteria of eligibility	Class A appliances
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	
Amount of allowance per appliance; if applicable: upper limit	- 20% of the cost to replace dishwashers (up to EUR 130), electric furnaces (up to EUR 80) and hot water equipment (up to EUR 400) - kitchen renovations: 10% of the cost, maximum EUR 1000
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	The public support allowed the purchase of - 50.000 gas ranges, 90.000 electric ovens, 176.000 dishwashers and more than 105.000 hobs - more than 78.200 complete kitchens
Other comments	
Link / source for further information	http://www.iea.org/textbase/pm/?mode=pm&id=4520&action=detail http://www.governo.it/governoinforma/dossier/incentivi/

Country	Spain
Name of the instrument / programme	**"Rebate programme for replacement of domestic appliances", "Renove Plan of Domestic Appliances"**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	National Energy Agency, IDAE and Regional Governments
Participating actors and their roles	Ministry of Industry, Tourism and Commerce; National Energy Agency; Regional Governments; Association of Manufacturers; Association of Distributors and Shops
Running period	2006- on going
Total budget	The total budget is different yearly
Geographical coverage (national, regional…?)	National
Type of appliance covered	White appliances - cookers and air conditioning equipment are also included in some Regions-.
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	Citizens
Main message	Replace old domestic appliances
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	National budget.
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Rebate at the point of sale. Discount at the purchasing price for efficient appliances.
Amount of allowance per appliance; if applicable: upper limit	The allowance is different and it depends on the energy efficiency class and appliance type (50-125 €)
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	Replacement of one appliance by another appliance. The retailer collects the old appliance and recovers the parts that can be recycled.
Accompanying measures? (e.g. information campaign)	Information is available in IDAE website and some websites of Regional Governments. Some shops do info campaigns of the Plan with material s(info leaflets, stickers, posters..) provided by some Regional Governments.
Evaluation available?	N.A. Estimations 2010: 58.950 toe energy savings and 552.000 t CO_2 avoided emissions
Desired impact achieved?	It is one of the measures of National Action Plan 2005-2008 of the Spanish Strategy of Energy Efficiency E4.
Other comments	
Link / source for further information	http://www.idae.es/index.php/mod.pags/mem.detalle/relcategoria.1043/id.58/relmenu.68

Country	Greece
Name of the instrument / programme	**Various limited scope rebate programmes run by retailers (recycling of old appliances was a prerequisite for the rebate allowance) under different names**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Retailers
Participating actors and their roles	-
Running period	Different retail shops selected different running periods for their rebate programmes. Roughly, the total running period was: 2008 – 2009.
Total budget	-
Geographical coverage (national, regional…?)	National
Type of appliance covered	Household washing machines, electric ovens, refrigerating appliances, televisions, air conditioning systems.
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	-
Target group	-
Main message	-
Life cycle costs communicated? (y/n)	-
Other comments	-
If financial instrument	
Financing sources	Funded by the responsible body (no financial support by the government)
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Rebate at the point of sale.
Amount of allowance per appliance; if applicable: upper limit	this varied according to the rebate programme; in most cases 300 €
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	Recycling of old appliances must be demonstrated.
Accompanying measures? (e.g. information campaign)	Yes: advertisements on the national television and radio network, articles, leaflets, web.
Evaluation available?	No
Desired impact achieved?	-
Other comments	-
Link / source for further information	-

Country	Portugal
Name of the instrument / programme	**1. Efficient halogen bulbs** **2. LED bulbs** **3. Incandescent phase-out IPSS (Private Social Solidarity Institute)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	1. and 2. ADENE (national energy agency) and Iberdrola (energy supplier) 3. ADENE (national energy agency)
Participating actors and their roles	ADENE (light bulbs distribution and candidates selection)
Running period	2009-2010
Total budget	-
Geographical coverage (national, regional… ?)	National
Type of appliance covered	1. Halogen bulbs 2. LED bulbs 3. CFL
Type of instrument (financial, information ?)	Other
If financial instrument	
Financing sources	Measure financed as part of the Plan for Promoting Efficiency in Electricity Consumption and approved by the Energy Services Regulatory Authority (ERSE)
Receiver of allowance (consumers, retailers, manufacturers?)	Service sector
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Subsidy
Amount of allowance per appliance; if applicable: upper limit	1. Up to 60% subsidy; 2. Up to 50% subsidy; 3. 100%
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	1. After selection among all applications; 2. After selection among all applications; 3. After selection among all applications (maximum 300 light bulbs per IPSS);
Accompanying measures? (e.g. information campaign)	-
Evaluation available?	-
Desired impact achieved?	-
Other comments	-
Link / source for further information	http://gere.adene.pt/Pages/MedidaHalogeneoEficiente.aspx http://gere.adene.pt/Pages/MedidaLEDsHalogeneo.aspx http://gere.adene.pt/Pages/MedidaPhaseOut.aspx

Country	USA, state of Wisconsin
Name of the instrument / programme	**Electric Appliance Turn-In Program (APTI)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Wisconsin electric utility
Participating actors and their roles	The utility provided the appliance removal service and gave participating customers a choice of a cheque or a savings bond for a new appliance
Running period	1987-1991
Total budget	$10 million in incentives (total budget unknown)
Geographical coverage (national, regional…?)	State of Wisconsin
Type of appliance covered	Refrigerators, freezers, room air conditioners
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	Utility
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Cheque or savings bond
Amount of allowance per appliance; if applicable: upper limit	$25 cheque or 50 savings bonds for a room air-conditioner $50 cheque or 100 bonds for a refrigerator or freezer
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	Old appliance was collected
Accompanying measures? (e.g. information campaign)	
Evaluation available?	yes
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	The goal was to get under-utilised but operable second refrigerators, freezers and room air-conditioners out of service and properly dismantled. Over 240,000 residential appliances were picked up and recycled (60% refrigerators, 30% room air-conditioners, 10% freezers). Metal components are recycled, refrigerants are drained and stored for re-use, capacitors are destroyed. Over 30 tons of CFCs have been recovered. Through 1991, the APTI has resulted in demand savings of 20,8 MW and energy savings of 62.9 GWh. In 1991, it produced demand savings of 5,2 MW and 8.2 GWh of energy savings. Over 452 tons of sulphur dioxide emissions were avoided.
Other comments	
Link / source for further information	http://www.iiec.org/index.php?option=com_content&view=article&id=362&Itemid=176

1.2 Free giveaways

Country	Portugal
Name of the instrument / programme	**1. Efficient lighting programme (Iluminação Eficiente)** **2. Efficient light bulbs (Lâmpadas Economizadoras)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Responsible: EDP (Energy supplier). Both measures were financed as part of the Plan for Promoting Efficiency in Electricity Consumption and approved by the Energy Services Regulatory Authority (ERSE)
Participating actors and their roles	1. EDP (light bulbs distribution) 2. EDP (light bulbs distribution), super/hypermarkets (campaign promotion)
Running period	1. October 2008 until the end of 2009 ; 2. 2007 and 2008
Total budget	-
Geographical coverage (national, regional…?)	National
Type of appliance covered	Light bulbs
Type of instrument (financial, information?)	Other (Compact fluorescent lamps were offered)
If information instrument	
Media used	TV, Radio, Newspaper, Internet
Target group	1. Historical neighbourhoods and Council Housing; 2. Consumers
Main message	1. Reduction of energy consumption and promote energy efficiency in communities with less purchasing power and less access to information; 2. Transform the market in terms of the most energy efficient option for light bulbs.
Life cycle costs communicated? (y/n)	No
Other comments	
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Criteria of eligibility	none
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Free light bulb
Amount of allowance per appliance; if applicable: upper limit	
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	1. For each household 4 light bulbs were given 2. One light bulb for each household.
Accompanying measures? (e.g. information campaign)	1. Lamps were given along with tips for energy efficiency upon filling out a small consumer questionnaire
Evaluation available?	No. The environmental organisation Quercus assumes that the effect was much lower than expected: Because the lamps were all the same shapes and power, many were probably not installed by households.
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	1. 400 000 CFL were given ; 2. 980 000 CFL were distributed
Other comments	2. The bulbs were distributed door-to-door, in supermar-

	kets and hypermarkets
Link / source for further information	http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/projectos-anteriores/efficient-lighting http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/projectos-anteriores/efficient-light-bulbs

Country	Portugal
Name of the instrument / programme	**1. Light bulbs replacement EDP Van (Carrinha de Troca de Lâmpadas);** **2. EDP Stores (Lojas EDP);** **3. Light bulbs replacement in super and hyper-markets (Troca de lâmpadas em hiper e super)** **4. Tour of Portugal 2010 (Volta a Portugal em 2010)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	EDP (Energy supplier) All measures were financed as part of the Plan for Promoting Efficiency in Electricity Consumption and approved by the Energy Services Regulatory Authority (ERSE)
Participating actors and their roles	1. EDP (light bulbs replacement) 2. EDP (light bulbs replacement); 3. EDP (light bulbs distribution), super/hypermarkets (campaign promotion) 4. EDP collaborators (light bulbs replacement)
Running period	1. September 2010 until February 2011; 2. October 2010 until December 2010; 3. September 2010 until October 2010 ; 4. August 2010
Total budget	-
Geographical coverage (national, regional… ?)	1. National 2. Regional (six northern municipalities) 3. National 4. Some municipalities (not mencioned)
Type of appliance covered	Light bulbs
Type of instrument (financial, information ?)	Other (Incandescent lamps were replaced for compact fluorescent lamps)
If information instrument	
Media used	TV, Radio, Newspaper, Internet
Target group	1. Consumers; 2. Six municipalities households; 3. Consumers; 4. Some municipalities households
Main message	1. Households energy consumption reduction and also energy costs; 2. Light bulbs replacement ; 3. Households energy consumption reduction; 4. Households energy consumption reduction
Life cycle costs communicated ? (y/n)	N
Other comments	1. Four CFL in exchange for four incandescent lamps and upon filling out a small consumer questionnaire. 800 000 CFL were given; 2. Four CFL in exchange for four incandescent lamps and upon filling out a small consumer questionnaire; 3. Two CFL in exchange for one incandescent lamp; 4. 50 000 CFL were given
Link / source for further information	http://www.eco.edp.pt/en/homepage/carry-out/the-

	eco-projects/distribuicao-de-lampadas/carrinha-troca-de-lampadas http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/distribuicao-de-lampadas/lojas-edp http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/distribuicao-de-lampadas/troca-de-lampadas-em-hiper-e-supermercados http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/distribuicao-de-lampadas/volta-a-portugal-2010

1.3 Further activities

Belgium (ongoing): In Belgium, grants for energy efficient appliances are managed by the electricity and gas providers, and change every year.
In 2011, a person in the *Flemish region* can receive up to 150 € if he purchases an energy efficient fridge (A+/A++ or A+++) or an energy efficient washing machine (AAA/A+AA/A+AB/A++AA/A++AB/A++AC/A+++AA/A+++AB/A+++AC, which are labels of the previous energy label). These grants are managed by the utility EANDIS.
In the *Brussels region*, a person can receive between 50 to 200 € if he purchases a energy efficient fridge (A++ or A+++) or an energy efficient electric tumble dryer (A). If the tumble dryer runs on gas, the grant is between 200 and 600 €. The amount depends on the number of persons in the family and on their income. The grants are managed by the utility SIBELGA.
In the Walloon region, the grants were discontinued for two reasons:
a) too successful and the budget was quickly emptied
b) recipients did not get rid of their old fridge but placed it in the basement for further use.

Source:
http://www.bruxellesenvironnement.be/uploadedFiles/Contenu_du_site/News/Annexe%20programme%20triennal%202011%20-%20VF.pdf?langtype=2060

Spain (ongoing): The rebate programme for replacement of domestic appliances, ”Renove Plan” is run by government and retailers every year since 2006. It features a bonus for the replacement of fridges, freezers, washing machines and dishwashers, electric ovens, gas hobs and induction hobs with a class A or better appliance. The amount is to be decided by the regional government, minimum 80 EUR. From 2006 to 2011, 3,1 mio. appliances have been replaced.
In addition, there are some promotion campaigns of manufacturers (i.e. special discount to buy two efficient appliances). A programme called “Time to change” was run by the national association of manufacturers.

Source for “RENOVE”:
http://www.idae.es/index.php/mod.pags/mem.detalle/relcategoria.1043/id.58/relmenu.68

Canada (1990-1991): During 1990-91, British Columbia Hydro implemented a pilot buy-back programme, which offered a C$50 bounty for customers who would allow the utility to come and take their “second” refrigerators away. The programme complemented the utility’s efforts to influence consumers' buying behaviour in favour of efficient new refrigerators (The Results Center Profile #10). The pilot programme operated for two years, picking up more than 16,000 refrigerators and saving an estimated 119 GWh over the calculated remaining life of the second refrigerators. For a total cost of $2.8 million (1990 $) the programme has also resulted in peak capacity savings of 1.36 MW.

Source: IEA 2003, p. 78-79

2 Tax incentives

Examples for tax incentives in the appliance sector are scarce. Therefore a number of examples from the building sector have been included in a cursory manner in order to inspire ideas.

<table>
<tr><th>Country</th><th>Italy</th></tr>
<tr><th>Name of the instrument / programme</th><th>(Tax deduction for highly efficient appliances)</th></tr>
<tr><td>Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)</td><td>National government
(1) Tax deduction for cold appliances 2007-2010 laid down in: Financial law 2007 (Law n. 296 of 2006).
(2) Extension in 2009 laid down in: Decree Law No. 5 of 2009.</td></tr>
<tr><td>Participating actors and their roles</td><td></td></tr>
<tr><td>Running period</td><td>2007-2010</td></tr>
<tr><td>Total budget</td><td></td></tr>
<tr><td>Geographical coverage (national, regional…?)</td><td>National</td></tr>
<tr><td>Type of appliance covered</td><td>(1) Cold appliances
(2) Extension to other appliances, including TV & computers</td></tr>
<tr><td>Type of instrument (financial, information?)</td><td>Financial</td></tr>
<tr><td colspan="2">If information instrument</td></tr>
<tr><td>Media used</td><td></td></tr>
<tr><td>Target group</td><td></td></tr>
<tr><td>Main message</td><td></td></tr>
<tr><td>Life cycle costs communicated? (y/n)</td><td></td></tr>
<tr><td>Other comments</td><td></td></tr>
<tr><td colspan="2">If financial instrument</td></tr>
<tr><td>Financing sources</td><td>National budget</td></tr>
<tr><td>Receiver of allowance (consumers, retailers, manufacturers?)</td><td>Consumers</td></tr>
<tr><td>Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)</td><td>tax deduction</td></tr>
<tr><td>Criteria of eligibility</td><td>Only replacement (no new appliances)
Cold appliances: A+ or A++ class (not communicated for TVs and computers)</td></tr>
<tr><td>Amount of allowance per appliance; if applicable: upper limit</td><td>20% of purchase price, maximum 200 EUR</td></tr>
<tr><td>Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)</td><td></td></tr>
<tr><td>Accompanying measures? (e.g. information campaign)</td><td></td></tr>
<tr><td>Evaluation available?</td><td>Yes (by ENEA)</td></tr>
<tr><td>Success (desired impact achieved; environmental effectiveness; cost effectiveness)?</td><td>Market share increases:
<table>
<tr><td></td><td colspan="2">Refrigerators</td><td colspan="2">Freezers</td></tr>
<tr><td></td><td>A+</td><td>A++</td><td>A+</td><td>A++</td></tr>
<tr><td>2006 (baseline)</td><td>11,4%</td><td>0,5%</td><td>34,2%</td><td>0,7%</td></tr>
<tr><td>2009</td><td>57,1%</td><td>1,4%</td><td>64,5%</td><td>1,7%</td></tr>
</table>
Source: ENEA elaboration of manufacturer’s data</td></tr>
<tr><td>Other comments</td><td></td></tr>
<tr><td>Link / source for further information</td><td>Personal communication ENEA;
http://www.iea.org/textbase/pm/?mode=pm&id=4377&action=detail; MTP 2009, p. 80 ff.</td></tr>
</table>

2.1 Building sector

France (2005-2006): Tax incentive scheme for existing buildings (older than 2 years) in 2005 and 2006, addressing all those responsible for paying energy bills, from owner-occupiers to tenants and boarders. The incentives, ranging from 15% for low temperature boilers to 50% for heat pumps, applied to energy efficiency materials or systems, but not to installation or labour costs. Fixed upper limit of EUR 16.000 per dwelling

Source: ADEME (press information of 25 January 2006), www.cohesionsociale.gouv.fr.

France (1999-at least 2008): The tax incentive scheme was combined with a reduced VAT scheme in order to account for labour costs. Since 1999 through 2008, the tax for building works was reduced from normally 19,6 % to 5.5 %. Between 1999 and 2005, the scheme was not specific to EE or renewable energy, but rather encouraged general maintenance and improvement work. Since 2006, the reduced rate applies to a range of energy efficient and renewable heating and hot water equipment as well as insulation measures. It was planned to last at least up to 2010.

Source: IEA 2008, p. 163 ff

UK (1998): The Government introduced a reduced VAT rate of 5% (down from 17.5%) for the use of certain energy-saving materials (ESMs). Table 1 shows the development of the eligibility criteria. All later criteria were additional to the already existing ones.

Table 1: Reduced VAT scheme in the UK

Year	Eligible measures
1998	insulation, draught stripping, hot water, central heating controls as grant-funded installation in the homes of elderly, less well off and vulnerable households.
2000	insulation, draught stripping, hot water, central heating controls in all households
2000 and 2002	central heating systems, heating appliances, and factory-insulated hot water tanks as grant-funded installation in vulnerable households
2004	ground source heat pumps
2005	air source heat pumps
2005 and 2006	microgeneration such as small wind turbines, solar panels and micro combined heat and power (CHP) units.
2007	Recommendation to European Finance Ministers and the European Commission to introduce reduced VAT for the sale of energy-efficient products and ESMs

Source: IEA 2008, p. 238 f

3 Indirect subsidies

Country	**Japan**
Name of the instrument / programme	**Eco-Points Scheme**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Ministry of Environment, Ministry of Economy, Trade and Industry, Ministry of Internal Affairs and Communications
Participating actors and their roles	Consumers filled in an application form, Government office received applications granted bonus, participating stores and organisations cashed in ecopoints.
Running period	2009 – March 2011 ; relaunch under consideration
Total budget	By the end of July 2010, the government had spent 268 billion yen (2.4 billion EUR) on points. Total programme cost unknown.
Geographical coverage (national, regional…?)	National
Type of appliance covered	air-conditioners, refrigerators, terrestrial digital broadcasting TVs, later also lighting (may be extended)
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	consumers
Criteria of eligibility	Purchase of an appliance that has a 4-star rating in the national energy labelling scheme (0f maximum 5 stars). In January 2010 energy conservation standards for TV sets qualifying for the programme were increased by 37%.”
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	“Ecopoints” that could be exchanged for a range of goods and services, such as gift vouchers, train and flight tickets, regional specialities, energy-efficient products or donations to environmental organizations
Amount of allowance per appliance; if applicable: upper limit	5% of the purchase price of refrigerators and air conditioners, 10% of the price of a TV set
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	Points were also granted for the return of an old device.
Evaluation available?	No

Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	Various, partly conflicting objectives: tackle global warming, revitalizing the national economy and promoting terrestrial digital broadcasting TVs. By the end of July 2010, the sales of the relevant products had risen by 30%. Criticism was related to the bureaucratic handling and to the lack of environmental impact, which, among other reasons, resulted from the conflict of goals. (The larger and thus more expensive a television was, the more points could be collected; many of the products that could be acquired through exchange were not environmentally friendly).
Other comments	
Link / source for further information	http://www.iea.org/textbase/pm/?mode=pm&id=4475&action=detail http://whatjapanthinks.com/2009/05/15/eco-point-economic-stimulus-plan-evaluated/ (15.5.09) http://search.japantimes.co.jp/cgi-bin/nb20090516a2.html (16.5.09) http://search.japantimes.co.jp/cgi-bin/nb20090620a1.html (20.6.09) http://www.ft.com/cms/s/0/b497c4d2-e411-11de-bed0-00144feab49a.html#axzz1SeKNRpuQ (8.12.09) http://www.japanfs.org/en/mailmagazine/newsletter/pages/029766.html (16.3.10) http://online.wsj.com/article/SB10001424052748704421104575463183518640958.html (31.8.10) http://www.reuters.com/article/2011/07/14/japanecopoint-idUSL3E7IE3K420110714 (14.7.11)

3.1 Further activities

Belgium (ongoing): At the end of each year, many employees in Belgium receive a number of "eco-chèques" to spend on ecological material or appliances, including low-energy electric appliances. It is a financial reward given to the workers, there are no taxes asked on this amount. The "éco-chèques" are valid for 2 years. Their value is between 215 and 250 €. All products with the European eco-label can be bought with these "éco-chèques". It is however unclear whether this initiative encourages replacement, as there is no need to trade in an old appliance.

Sources:
"Eco-chèque": a new Belgian initiative to encourage ecological consumption."
http://ec.europa.eu/environment/ecolabel/news/archives/2009/july/ecolabel_events_03.pdf
Website of the National Work Council: http://www.cnt-nar.be/F1I.htm (in French)

Korea (2009-ongoing): Carbon Cashbag programme. Carbon points will be awarded to customers upon the purchase of low-carbon products. 1 point is equivalent to KRW 1 and the points can be used to buy low-carbon products. This programme is now at the pilot stage and a limited number of products can be purchased with the points. The government is planning to expand the scope of this programme.

Sources:
http://www.iea.org/textbase/pm/?mode=pm&id=4174&action=detail
http://www.apec-vc.or.kr/?p_name=database&gotopage=7&query=view&unique_num=ED2008060119

4 Bonus / malus

Portugal (2008): Tax on inefficient lighting equipment (Incandescent light bulbs: EUR 0.41 / unit; high pressure mercury vapour lamps: EUR 6.77 / unit). The tax is applied to manufacturers, traders and other economical agents that introduce such equipment onto the Portuguese market.

Source: http://www.iea.org/textbase/pm/?mode=pm&id=4387&action=detail

5 Credit schemes / On-bill financing

Country	**Greece**
Name of the instrument / programme	**Limited number of loan programmes from different banks, for buying energy efficient electric household appliances, under different names**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Banks
Participating actors and their roles	-
Running period	2009 (this varies) - present
Total budget	-
Geographical coverage (national, regional…?)	National
Type of appliance covered	Electric household appliances
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	-
Target group	-
Main message	-
Life cycle costs communicated? (y/n)	-
Other comments	-
If financial instrument	
Financing sources	Funded by the responsible body
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Bank loans under privileged terms
Amount of allowance per appliance; if applicable: upper limit	n.a.
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	The new electric household appliances should be of efficiency class A or A+ (depending on the bank) and above.
Accompanying measures? (e.g. information campaign)	Yes, but limited: articles, web.
Evaluation available?	No
Desired impact achieved?	-
Other comments	-
Link / source for further information	-

Country	Italy, Province of Milan
Name of the instrument / programme	**A-profitto green loans**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Province of Milan
Participating actors and their roles	Provincial government co-financed the credit and issued a tender for banks who should offer credits at reduced interest rates. Banks who had won the tender offered advantageous credits.
Running period	2007-2009
Total budget	1.350.000 EUR public budget; same amount by banks
Geographical coverage (national, regional…?)	Regional
Type of appliance covered	Various building-related measures. Those possibly relevant for promoting the energy label are the replacement of the heat generator, installation of heat pumps and solar water heaters.
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	50:50 Public budget and banks (banks accepted the arrangement because it was a safe investment due to the government participation who also paid their share in advance)
Receiver of allowance (consumers, retailers, manufacturers?)	Home owners or co-owners (residential sector)
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Zero-interest loan
Amount of allowance per appliance; if applicable: upper limit	5% interest rate , half of which 2,5% was paid by the province and the other half by the bank
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	Craftsmen had to prepare a declaration of estimated savings in advance; energy savings through the measure had to be able to at least re-finance the investment.
Accompanying measures? (e.g. information campaign)	Establishment of an Infoenergia information desk that aided homeowners in preparing their application
Evaluation available?	yes
Desired impact achieved?	16 million Euro investments triggered. 1 EUR invested by the Province generated 11,8 EUR of private investments. Economic savings: 3 mio. EUR/year Energy savings: 7 000 MWh/yr (1 500 tons/yr of CO_2e). More than 1.000 families involved.
Other comments	Discontinued because of conflict with national legislation (no regional support schemes allowed any more)
Link / source for further information	Zabot et al. 2011

Country	USA
Name of the instrument / programme	**How$mart programme**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Midwest Energy Utility
Participating actors and their roles	Energy Utility informs customers about the programme, pays the contractors, and re-collects payments via the energy bill. Contractors and social service agencies refer customers to the programme. Accredited contractors conduct energy audits, bid for improvements and implement the improvement measures. Building owners and tenants sign off the completed work.
Running period	2007 – 2010 (at least)
Total budget	Pilot program: $250,000.Until 2010: $464,000 of company investment (not including program fees). Total cost of the projects including customer contribution (but not including program fees) is more than $595,000**.** In 2010, $1 million investments, not including program costs, are planned.
Geographical coverage (national, regional…?)	Regional
Type of appliance covered	Efficiency measures that are permanently attached to the foundation meaning all the improvements are related to heating, cooling and water heating.
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	Energy tariffs
Receiver of allowance (consumers, retailers, manufacturers?)	Homeowners and tenants
Criteria of eligibility	Completed energy audit showing profitable measures.
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Credit to be repaid via the energy bill
Amount of allowance per appliance; if applicable: upper limit	
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	yes
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	2007-2009: 185 projects were completed, 350 customers reached, Estimated electricity savings were 637,000 kWh, estimated Gas savings 8,806 Mmbtu. Customer and contractor satisfaction was high.

	Measures were generally cost-effective (a customer contribution was required if they were not).
Other comments	
Link / source for further information	Johnson et al. 2011

6 Information activities / informational instruments

A lot of information activities, dealing with energy efficiency of products and energy labels, could be listed as examples in this section (see also http://www.come-on-labels.eu/promoting-energy-labels/good-practice-case-studies and chapter 4.1). One Portuguese example differs from other information activities by making individual and concrete calculations of the payback period and individual savings. Based on this individual calculations recommendations for replacements were made to individual families.

Country	**Portugal**
Name of the instrument / programme	**1. EcoFamilies 225 (EcoFamílias 225)** **2. EcoFamiliesII (EcoFamílias II);** **3. EcoIPSS (Private Social Solidarity Institute)** **All measures we financed as part of the Plan for Promoting Efficiency in Electricity Consumption and approved by the Energy Services Regulatory Authority (ERSE)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Quercus (NGO) and EDP (energy supplier)
Participating actors and their roles	Quercus: household visits, information and recommendations EDP & Quercus: results dissemination
Running period	1. 2007; 2. 2009-2010; 3. 2009-2010
Total budget	-
Geographical coverage (national, regional… ?)	National
Type of appliance covered	Cold appliances, washing machines and dishwashers
Type of instrument (financial, information ?)	Information
If information instrument	
Media used	TV, Radio, Internet, Newspaper
Target group	Consumers
Main message	Choose energy efficient appliances and learn how to use them efficiently
Life cycle costs communicated? (y/n)	Y
Other comments	Whenever economically feasible families/institutions where adviced to replace their old appliances with more efficient ones. Results and graphs from analysis were presented in these cases.
Link / source for further information	http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/projectos-anteriores/ecofamilies http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/ecofamilias-ii http://www.eco.edp.pt/en/homepage/carry-out/the-eco-projects/ecoipss

7 Manufacturer and retailer incentives

Country	Poland
Name of the instrument / programme	**Poland Efficient Lighting Project (PELP)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	UN Global Environmental Facility (GEF).
Participating actors and their roles	GEF provided subsidies. Participating manufacturers of lamps and luminaires received subsidies, guaranteeing that they would pass on the price advantage to the customers and they would participate in market price monitoring. Information and DSM measures were conducted with retailers, municipalities, energy agency. Advisory committee including NGOs and research institutes. Market research firm did preliminary market research. Consultants carried out measurement and evaluation.
Running period	November 1995 to May 1998
Total budget	2.6 million U.S. dollars CFL subsidies, 82.000 USD luminaire subsidies (not including programme costs)
Geographical coverage (national, regional…?)	National
Type of appliance covered	CFLs, compatible luminaires
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	UN GEF
Receiver of allowance (consumers, retailers, manufacturers?)	CFL manufacturers, luminaire manufacturers
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Direct subsidy to manufacturers
Amount of allowance per appliance; if applicable: upper limit	average subsidy of 2.14 U.S. dollars per lamp, and 1,4 USD per luminaire
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	Manufacturers had to bid for subsidies; providing defined sales goals in their bids
Accompanying measures? (e.g. information campaign)	Large-scale information campaign for end consumers and opinion leaders, retailer training, DSM pilot with municipalities, measurement and evaluation component
Evaluation available?	yes
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	1.2 million lamps and 57.000 luminaires were subsidized. Retail prices of lamps could be reduced by $ 5.91 U.S. dollars. The prices of energy saving lamps fell by 34%. The market penetration of energy saving lamps in households increased from 11.5% to 33.2%. GHG sav-

	ings were estimated at 2.79 million tonnes of CO2e at least (maybe as high as 3.62 million tonnes)
Other comments	
Link / source for further information	Granda et al. 1999, Navigant 1999, GEF 2006 http://www.efficientlighting.net/formerdoc/pubdoc/ELI349.pdf http://www.efficientlighting.net/formerdoc/pubdoc/ELI345.doc http://www.efficientlighting.net/formerdoc/pubdoc/ELI350.pdf http://siteresources.worldbank.org/GLOBALENVIRONMENTFACILITYGEFOPERATIONS/Resources/Publications-Presentations/Poland.pdf http://eec.ucdavis.edu/ACEEE/2000/PDFS/PANEL02/102.pdf

Country	USA
Name of the instrument / programme	**California Upstream Lighting Program (ULP), and prior programmes**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Three investor-owned energy utilities: Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas and Electric Company (SDG&E)
Participating actors and their roles	Utilities, manufactures, a variety of different types of retail stores (Discounter, Drugstores, Grocery Stores, Hardware, Home Improvement, Lighting & Electronics, Mass Merchandise, own Club membership). Manufacturers received rebates while they had to agree to hand them down to the customers. In prior programmes before 2002, also retailers received rebates and incentives for sales personnel; in exchange, they had to track sales.
Running period	1998-2008 (ULP 2006-2008)
Total budget	1998-99: $30 million, 2000: $33 million, 2001: $36 million, 2002-2003: $10 million per year, 2004-2005: $18 million per year, 2006-2008: $50 million per year
Geographical coverage (national, regional…?)	Regional (territory of the utilities)
Type of appliance covered	Several Types of CFLs, CFL-compatible lighting fixtures, and LED products
Type of instrument (financial, information?)	Financial
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	Utilities (due to legal requirement to save energy)
Receiver of allowance (consumers, retailers, manufacturers?)	Manufacturers; prior to 2002 also retailers
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	
Amount of allowance per appliance; if applicable: upper limit	ULP: Average of $1.60 per bulb resulted in a consumer price reduction of $2.70 per bulb.
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	Yes, see Cadmus 2009, Kema 2010, Miller 2011
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	ULP: 90 million subsidizes appliances sold. According to KEMA, net annual energy savings amounted to more than 1,325 GWh, net peak demand reductions to nearly 134 MW. However, this was only 25% of the utilities' ex-ante claims for net energy and 20% of their peak demand reduction claim. This was partly due to lower-than-expected installation

	rates of the sold CFLs, and mainly due to adjusted per-unit savings, due to corrections regarding operating hours and other parameters. Still, the programme was cost-effective According to Miller (2011), this evaluation strongly underestimated the success, both with regard to savings and to cost effectiveness, due to various methodological errors. The Authors don't give estimates on energy savings though, only on cost savings.
Other comments	
Link / source for further information	Cadmus 2009 (esp. p.17), KEMA 2010, Miller 2011

7.1 Further activities

USA (2008, ongoing): Tax credit for manufacturers. They can claim a certain credit for each energy efficient appliance (dishwashers, clothes washers, and refrigerators) they produce in excess to their average production of such appliances during the last two years. The "Energy Improvement and Extension Act" of 2008 extends the credit for appliances manufactured after 2007 through 2010. Estimated cost is USD 322 million over 10 years.

Source: www.irs.gov/businesses/corporations/article/0,,id=208024,00.html

Canada (2003): A BC Hydro project provided incentives to retail staff for sales of Energy Star qualified refrigerators and washing machines. Over 7,500 units were marketed for the BC Hydro service area.

Source: IEA 2003, 87-88

8 Procurement

The presented initiatives are not purely procurement initiatives: They do not rely solely on bulk buying, but on a combination of measures, including, e.g., the development of specifications, award competitions, and promotional activities. Some aren't even based on actual purchasing acts but rather on declarations by potential buyers. However, they have been included here as an important element is the organised involvement of potential bulk buyers. Furthermore, some initiatives combine elements of technology and market procurement; they have been grouped according to their main goal as it presented itself from the character of the initiative (not necessarily from their self-description).

8.1 Technology procurement

(goal: developing new technology)

Country	EU
Name of the instrument / programme	**(1) Energy+, (2) 2E+**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	European projects within SAVE; carried out by European consortia (energy agencies, consultants etc.)
Participating actors and their roles	(1) Group of 100 actors, comprising (a) retailers with over 15 000 retail outlets, (b) institutional buyers with over 1 million dwellings, (c) supporters. (2) Number of actors increased to 50 retail groups, 17 institutional buyers and 46 supporting organisations. The actors specified efficiency criteria for appliances they wished to buy, signed a document declaring their intention to buy, organised bulk-buys and rebate schemes in the respective countries, compiled lists of eligible appliances and launched promotion / information activities (see below)
Running period	(1) 2000-2001, (2) 2002-2004 (follow-up project)
Total budget	(2) 750.000 EUR
Geographical coverage (national, regional…?)	(1) 10 European countries in the pilot, (2) 13 countries
Type of appliance covered	(1) domestic refrigerator-freezers, (2) all types of cold appliances defined in Dir. 94/2/EC, having an EEI of 42 or better and a maximum annual consumption of 280 kWh
Type of instrument (financial, information?)	Informational, networking
If information instrument	
Media used	Award competition, energy-plus logo, list of eligible appliances, bulletins, newsletters, website, events at fairs
Target group	Manufacturers
Main message	There is a market demand for highly efficient appliances
Life cycle costs communicated? (y/n)	No
Other comments	Accompanying national promotion and subsidy schemes
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	
Amount of allowance per appliance; if applicable: upper limit	
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	Growth in number of qualifying models from 2 (1999) to 190 (2002) and finally nearly 900 (2004); introduction of the A+ and A++ classes
Other comments	

Link / source for further information	(1) Engleryd & Attali 2001; (1+2) Wijshoff & Attali 2003; EVA et al. 2005

8.1.1 Further activities

EU (2006-2008): In the IEE project "Energy+ pumps", a similar approach was used to promote highly efficient circulators with electronically commutated motors It was a combination of technology and market procurement, the goal being to both make more models available for private households and bring their prices down. Partners from 11 European nations participated. Additional elements were

- the work with installers; they were provided with sales and training material including a spreadsheet to calculate and communicate life-cycle costs
- a competition for the best marketing campaign (as in this product group, final users are a more important buyer group and there are not so many bulk buyers as with cold appliances. Therefore, tools needed to be developed in order to reach final users.)

During the running time of the project, the number of available models was increased from 19 to 26, and their market share rose to about 15% (the original goal having been about 5%). Market prices have not changed much, though.

Source: Thomas & Barthel 2009.

8.2 Market procurement

(goal: lowering prices for existing technology)

Denmark (1999-2000): In its "A Club" initiative, the "Danish Electricity Saving Trust pooled the purchasing power of housing companies, municipalities and regional councils (having a building stock of some 100,000 apartments) and ran a competition for the best offer on A-rated refrigerators. The contract with the competition winner was sweetened by offering rebates for appliances sold early in the programme."

Source: Cited from IEA 2003, p. 67

9 Voluntary Agreements

UK (2007-ongoing): "In September 2007 the UK government announced a voluntary initiative led by retailers and UK energy suppliers to phase out inefficient light bulbs by 2011, in advance of measures under EuP. In parallel, Defra, along with its MTP, has been working with major electronics retailers to phase out energy-inefficient products. The central suggestion is for retailers, with manufacturers' support, to adopt a policy that ensures certain standards in the consumer electronics products they procure and sell, with the aim of significantly reducing GHG emissions by 2010."

Source: Cited from IEA 2008, p. 237

EU (late 1990s): "Voluntary agreements were used to increase the energy efficiency of water heaters, clothes washers, dishwashers, and electronic appliances sold throughout Europe during the 1990s. The agreements negotiated and signed by the European

Commission and appliance manufacturers contributed to about a 20% reduction in the energy consumption of new clothes washers and dishwashers, and a 25–35% reduction in the standby power consumption of TVs and VCRs." (Geller et al. 2006, p. 567). The commission deemed four requirements to be essential for a VA to succeed: (1) quantified targets, (2) significant market share of the manufacturers involved (at least 80%), (3) effective monitoring scheme, (4) transparency of the process, (5) sanctions in case of non-compliance.

The following VAs were concluded:

- Washing machines: A voluntary agreement negotiated by the Commission with CECED and running from 1997 to 2001 foresaw the discontinuation of the production and import of E, F and G class appliances after 31.12.1997; and of D class appliances after 31.12.1999. In addition, there was a (not company-specific) fleet target for 2000 of 0.24 kW h/kg. In 2002, 0,208 kWh/kg was reached which was however very close to BAU.
- TVs and VCRs: A negotiated agreement signed in 1997 foresaw a ban on TVs and video recorders with a standby- power consumption greater than 10 W after 1 January 2000. Furthermore, each manufacturer had to reach a company-specific sales-weighted average of 6 W by 2000 and bring it down to 3 W by 2009. In fact, already in 2003 a sales-weighted average of 2,21 W had been achieved for TVs, and of 3,53 W for VCRs.

Both VAs were concluded under the "threat of regulation" at a time where mandatory minimum standards were being discussed. The VA on washing machines delivered about the same savings as the mandatory minimum standards on cold appliances; VAs have therefore not yet proven to be an instrument for promoting highly efficient appliances beyond minimum standards.

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Sources: Geller et al. 2006, Bertoldi et al., 2001; Bertoldi & Rezessy 2007

10 Integrated approaches

Country	Denmark
Name of the instrument / programme	**Three campaigns on household appliances**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Energy Saving Trust (National body)
Participating actors and their roles	Energy saving trust (organizer; control of participating retailers to ensure that subsidy was only given for eligible appliances, runs websites), retailers (local marketing, listing efficient products, documenting sales), manufacturers (local marketing, submit information to website), electric utilities (planning of similar programmes)
Running period	Campaign 1: 1999; subsidy for 95 days Campaign 2: 2004; subsidy for last 4 months of the year Campaign 3: 2005; subsidy for one month Ongoing: model and price information website
Total budget	N/a Budget for subsidy in 1999: 18 million DKK (2.5 million EURO)
Geographical coverage (national, regional…?)	National
Type of appliance covered	Campaigns and subsidies covered cold appliances Subsidy in 1999 excluded chest freezers which were later included, and included tumble driers, which according to Nørgård et al. turned out not to be significant and are not dealt with in the evaluation. Website covers all white goods.
Type of instrument (financial, information?)	Integrated approach: Informational: Campaign conveying general consumer information ; website for finding models and best price Financial: subsidy Combination with appliance tests and unannounced shop visits
If information instrument	
Media used	General information: TV and radio spots, leaflets, advertisements in national and regional newspapers, point-of-sales material etc. Product, shop and price information: internet.
Target group	Persons interested in buying a new appliances
Main message	General information: meaning of label classes, advantages of efficient products; information about subsidy. A website lists the most efficient models, their prices, the cheapest price on the market and where to find the “best buy”
Life cycle costs communicated? (y/n)	Y (on website) (today; not known when it was added)
Other comments	
If financial instrument	
Financing sources	Energy Saving Trust Budget (the Trust is financed by a small tax)
Receiver of allowance (consumers, retailers, manufacturers?)	consumers
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro	Subsidy was paid at the point of sale by the retailer, and later reimbursed by the EST.

credit / on-bill financing…)	
Criteria of eligibility	1999: A; 2004 A+ and A++; 2005 A++. Only
Amount of allowance per appliance; if applicable: upper limit	1999 and 2004: 500 DKK (about 65 EUR) per appliance 2005: 1000 DKK per appliance
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	Various information measures; see above
Evaluation available?	Yes
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	1999 campaign: 35000 appliances sold with subsidy. Market shares for A appliances increased from 7% in 1998 to 15% in 1999 and 29% in 2000. Prices for A appliances dropped by 15-20% following the campaign. 2004 campaign: 86.000 appliances sold with subsidy. 2005 campaign: 35.000 appliances sold with subsidy (within one month). Market shares for A+ and A++ were not monitored separately from A before 2005. In 2005 A+ share was 27% and A++ share 6%; in 2006 A+ share 39% and A++ share 2%. Website was visited by 20.000 people/month after its launch. When the price comparison was first introduced, recommended tail prices went down by 20% within 3 weeks (personal communication by Peter Karbo to Fawcett at al.)
Other comments	Retailers were contractually prohibited from raising prices for subsidized appliances, and encouraged to lower prices. Subsidy: High participation of retailers (2004 almost all retailers in the country, including 20 chain stores; 2005 fewer, including 15 chain stores) Website: participation in price comparison was in the beginning low, especially by chain stores. Later efforts by EST, including publication of refusal to inform about the price, improved participation.
Link / source for further information	Tina Fawcett, Kevin Lane, Brenda Boardman (2000): Lower carbon futures for European households. Oxford: Environmental Change Institute, p. 64 Jørgen S. Nørgård, Birgitte Brange, Tom Guldbrandsen and Peter Karbo (2007): Turning the appliance market around towards A++. Eceee summer study proceedings ; http://www.eceee.org/conference_proceedings/eceee/2007/Panel_1/1.345/ http://www.goenergi.dk/forbruger/produkter/hvidevarer

Country	Denmark
Name of the instrument / programme	**Campaign for A-rated circulator pumps**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Danish Energy Saving Trust
Participating actors and their roles	DEST, manufacturers, retailers, installers. Retailers agreed on special offers; installers agreed on fixed-price installations, DEST ran the programme and provided information and promotion activities
Running period	2006-2008
Total budget	1.3 million Euro over 3 years
Geographical coverage (national, regional…?)	National
Type of appliance covered	Circulator pumps (A-rated by Europump standard)
Type of instrument (financial, information?)	Integrated (push-pull strategy influencing both supply and demand side) - Voluntary agreements and networking with producers, wholesalers (represented through their trade organisations) and installers - Information instruments (see below)
If information instrument	
Media used	Magazine advertisements and TV commercials; website with product, manufacturer and installer list and pump calculator; use of the DEST's own Energy Saving Label
Target group	Consumers
Main message	« 6 good reasons »: A-rated pumps save money, save energy, adjust to your heating needs, have a long lifetime, minimize noise, and reduce your carbon footprint
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	
Amount of allowance per appliance; if applicable: upper limit	
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	Yes, Lüders et al. 2009
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	The aim had been to reach a 60% market share for A-rated pumps by 2008. In fact, the market share grew from 15% to 60% in the period January 2006 to October 2008.
Other comments	
Link / source for further information	Lüders et al. 2009

10.1 Further activities

UK (ongoing): The Market Transformation Programme "uses policy tools to assess and rank the performance of energy-using products; establish performance information, including labels; encourage innovation and competition; and identify appropriate levels for minimum, average, or best practice standards. The MTP encourages more effective standards for products and the creation of a competitive market for products based on their environmental performance. It also seeks to accelerate the deployment of innovative technologies and services to support sustainable product development."

Sources: IEA 2008, p. 237; www.mtprog.com

USA (until 2009): "Market transformation efforts began in the US state of Wisconsin, which used its low-income weatherisation programme to train installers and provide free furnaces to low-income households. Natural gas utilities offered incentives, and the market share of condensing furnaces in Wisconsin rose over several years to about 85%. Several other northern US states and Canadian provinces began similar efforts, and the federal Energy Star programme began to require a 90% efficiency rating to earn its label. In 2009, the US market share of condensing furnaces was about 40% […]. In 2008/09, several states and provinces adopted minimum efficiency standards requiring new furnaces to be condensing. In 2009, furnace manufacturers and efficiency supporters negotiated a consensus agreement to require
condensing furnaces in northern states; this recommendation is now being considered by the
US Congress and the US Department of Energy."

Source: IEA 2010, p.8

10 Actor networks

Activities by actor networks described here partially resemble those described under „integrated approaches" or "procurement". The special feature is that there is a strong focus on constructing coalitions and bringing together community organizations, sometimes (as in the clothes washers example) without a central responsible body, or (as in the case of the Refrigerator Retirement Programme) with explicit social goals of community building and achieving social goals as much as energy efficiency.

Country	USA, Oregon
Name of the instrument / programme	**Refrigerator Early Retirement Pilot Programme**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Energy Trust Oregon in cooperation with Community Action Program East Central Oregon (CAPECO), a non-profit community service organization
Participating actors and their roles	Energy Trust Oregon (organization, marketing material, payment of incentive to customers as well as monitoring fee and incentives for successful replacement to CAPECO) CAPECO (customer outreach, home monitoring) Local retailer (providing rebated appliances and organising their delivery and the pick-up of the old one) Local sanitary services (collection and recycling of the refrigerators)
Running period	2007
Total budget	78.700 USD
Geographical coverage (national, regional…?)	Local
Type of appliance covered	Refrigerators
Type of instrument (financial, information?)	Combined (information / counseling, service, networking, financial)
If information instrument	
Media used	Direct mail, pre-screening on the phone, in-home monitoring visits, follow-up call and letter, near the end: ad in local newspaper, radio spot
Target group	Primarily low-income households (but all households were eligible)
Main message	To encourage participation in the programme
Life cycle costs communicated? (y/n)	N
Other comments	
If financial instrument	
Financing sources	Energy Trust budget (ET is a non-profit organisation financed by a 3% charge on investor-owned utilities)
Receiver of allowance (consumers, retailers, manufacturers?)	Consumers
Criteria of eligibility	Refrigerators targeted for replacement: 10 or more years old with a minimum usage of 1,000 kWh per year. Eligible appliances were determined by in-home monitoring over 24 hours. New appliance: Two qualifying models were determined in advance, both consuming about 400 kWh/yr
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	Rebate at the point of sale;
Amount of allowance per appliance; if applicable: upper limit	250 USD rebate on the appliance, plus defined amounts to the partners for monitoring costs, delivery, pick-up and recycling cost, and success premium, in total: max. 474,50 USD per refrigerator.
Other conditions (e.g.: only one subsidy per house-	One subsidy per household, disposal of the old ap-

hold; disposal of old appliances must be demonstrated etc.)	pliance must be documented
Accompanying measures? (e.g. information campaign)	In-home monitoring visits also included the optional installation of up to six free CFLs, and information material.
Evaluation available?	Yes
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	Goal: to recycle 150-225 inefficient refrigerators and replace them with new, efficient models, while remaining within a budget of $100,000 and achieving a minimum of 100,000 kWh of savings. Results: 184 appliances replaced, 210.927 kWh saved, average savings of 1146 kWh / refrigerator, 34% low-income households (under 80% of average income),
Other comments	
Link / source for further information	Ferington & Scott 2008

Country	USA
Name of the instrument / programme	**Consortium for Energy Efficiency (CEE)**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	CEE was founded as a non-profit, public benefit corporation including various stakeholders and aiming at expanding national markets for super-efficient technologies using market transformation strategies
Participating actors and their roles	Members include electric, gas and water utilities, research and development organisations, state energy offices and regional energy programmes. Major support is provided by the US Environmental Protection Agency (EPA) and the Department of Energy (DOE).
Running period	
Total budget	
Geographical coverage (national, regional…?)	at first regional, later national
Type of appliance covered	Washing machines, refrigerators, room air-conditioners, dishwashers, CFLs and lamp fixtures, Central air-conditioners and heat pumps, Gas furnaces
Type of instrument (financial, information?)	Various, including common specifications (efficiency targets), bulk purchases, government procurement, manufacturer incentives (“golden carrot”), consumer / supplier education
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	
Amount of allowance per appliance; if applicable: upper limit	
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	
Success (desired impact achieved; environmental effectiveness; cost effectiveness)?	
Other comments	
Link / source for further information	www.cee1.org IEA 2003, p. 84-86

Country	USA
Name of the instrument / programme	**Residential Clothes Washers Initiative**
Responsible body / organisation (government, energy supplier, manufacturer, energy agency etc.)	Divided responsibilities: Consortium for Energy Efficiency (CEE) (see above) as a central clearinghouse Utilities for local and regional activities No responsibility or funding of CEE for design of local campaigns, rebate levels, timing etc.
Participating actors and their roles	Utility partners (12 in 1995, up to 291 in 1999) agree in a letter of support to provide informational programmes and / or financial incentives for highly efficient clothes washers CEE develops specifications, provides lists of qualifying models, product tests, information dissemination and managerial support. It also serves as a contact point with manufacturers, retailers, and national agencies (the latter for cooperation in the development of Energy Star requirements and federal minimum standards). Regional organizations acting as sponsors (in total 250)
Running period	Developed since 1991 Fully operational since 1995 Running at least until 2000
Total budget	
Geographical coverage (national, regional…?)	Regional campaign areas, national impact
Type of appliance covered	Highly efficient horizontal-axis washing machines
Type of instrument (financial, information?)	Combination of networking (utilities and manufacturers), informational instruments and financial incentives
If information instrument	
Media used	
Target group	
Main message	
Life cycle costs communicated? (y/n)	
Other comments	
If financial instrument	
Financing sources	
Receiver of allowance (consumers, retailers, manufacturers?)	
Criteria of eligibility	
Type of allowance (e.g.: rebate at the point of sale, direct payment, tax reduction, indirect subsidy (bonus points, vouchers); bonus / malus system, micro credit / on-bill financing…)	
Amount of allowance per appliance; if applicable: upper limit	
Other conditions (e.g.: only one subsidy per household; disposal of old appliances must be demonstrated etc.)	
Accompanying measures? (e.g. information campaign)	
Evaluation available?	yes
Success (desired impact achieved; environmental	The goals had been to increase the number of

effectiveness; cost effectiveness)?	models and market penetration of highly efficient washing machines: Both goals were reached: the number of models rose from 1 in 1995 to 35 in 1999; prices dropped from 700 to 600 USD between 1997 and 1999, and national market penetration rose from under 1% in 1995 to 6% nationally, 20% in the program regions, in 1999.
Other comments	Federal minimum requirements and Energy Star specifications are credited with a major contribution to the overall success. It was important to formulate energy and water consumption standards technology independent.
Link / source for further information	Shel Feldman et al. 2001

Come On Labels
www.come-on-labels.eu

Come on Labels project members – contacts

Czech Republic – project coordinator	**SEVEn**, The Energy Efficiency Center **www.svn.cz**
Austria	**Austrian Energy Agency** **www.energyagency.at**
Belgium	**Brussels Energy Agency** **www.curbain.be**
Croatia	**ELMA Kurtalj d.o.o** **www.elma.hr**
Germany	**Öko-Institut e.V., Institute for Applied Ecology** **www.oeko.de**
Great Britain	**Severn Wye Energy Agency** **www.swea.co.uk**
Greece	**Center for Renewable Energy Sources and Saving** **www.cres.gr**
Italy	**ENEA** – Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile **www.enea.it**
Latvia	**Ekodoma, Ltd** **www.ekodoma.lv**
Malta	**Projects in Motion** **www.pim.com.mt**
Poland	**KAPE**, Polish National Energy Conservation Agency **www.kape.gov.pl**
Portugal	**QUERCUS** – Associação Nacional de Conservação da Natureza **www.ecocasa.pt**
Spain	**ESCAN, S.A.** **www.escansa.com**

INTELLIGENT ENERGY EUROPE
FOR A SUSTAINABLE FUTURE

This document was prepared within the Come On Labels project, supported by the Intelligent Energy Europe programme. The main aim of the project, active in 13 European countries, is to support appliance energy labelling in the field of appliance tests, proper presence of labels in shops, and consumer education.

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