

# Energy Premium Scheme (EPR) for domestic appliances in the Netherlands

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## Abstract

The Energy Premium Scheme (EPR) redistributes money from households raised via an energy tax through a rebate on energy efficient appliances, building facilities and sustainable energy production. The EPR started in the Netherlands January 2000 and has been a success in transforming the market for household appliances: with exception of dryers, sales of A-labelled appliances went up to about 70% in 2001 and even higher in 2002. This success stimulated a revision of the EU labelling scheme for cold appliances. The costs for the EPR amount to 65 million Euro in 2000 and 135 million Euro in 2001. Regarding CO<sub>2</sub> reduction, the EPR saved about 210 million kg CO<sub>2</sub> in 2002. In 2002 the EPR has been evaluated and revised.

The paper provides an overview of how the EPR functions, including the way stakeholders are involved. Attention is paid to the question whether the success is unique for the Dutch situation or can be expected in other countries as well. Further, the paper places some critical questions on the implementation costs and the effects of the EPR. Because of the success of the EPR and the emphasis on redistribution of tax money, less focus was put on product innovation. The current revision of the EPR aims to correct these drawbacks of the original scheme.

## Introduction

EU energy labelling was introduced in the 90s to improve the energy efficiency of appliances on the market. Energy labelling is one of the basic instruments to achieve market transformation. However, it was felt in the Netherlands that the label information regarding energy efficiency alone was not sufficient to achieve a substantial market transformation. One reason was that A-labelled appliances were more expensive than appliances from other label categories. A second reason was that the label alone would not attract sufficient attention from consumers and retailers. Therefore a financial incentive was found necessary to stimulate the consumer to buy energy efficient appliances and to stimulate the retailers and manufacturers to sell energy efficient appliances. This financial incentive was called the “energiepremie” (energy rebate) and the scheme was called “Energiepremieregeling (EPR)” (Energy Premium Scheme).

This paper addresses the following questions:

- How does the energy premium scheme (EPR) work?
- What have been the effects of the EPR regarding market transformation?

At the end the results of the EPR will be discussed and evaluated. Furthermore some ideas about the future of the EPR will be presented.

## How does the EPR work?

### INTRODUCTION

In 1996 the Netherlands introduced an energy price tax for households and SMEs. This tax puts a price on the resulting CO<sub>2</sub>-emissions of energy end-use to serve as a stimulus for

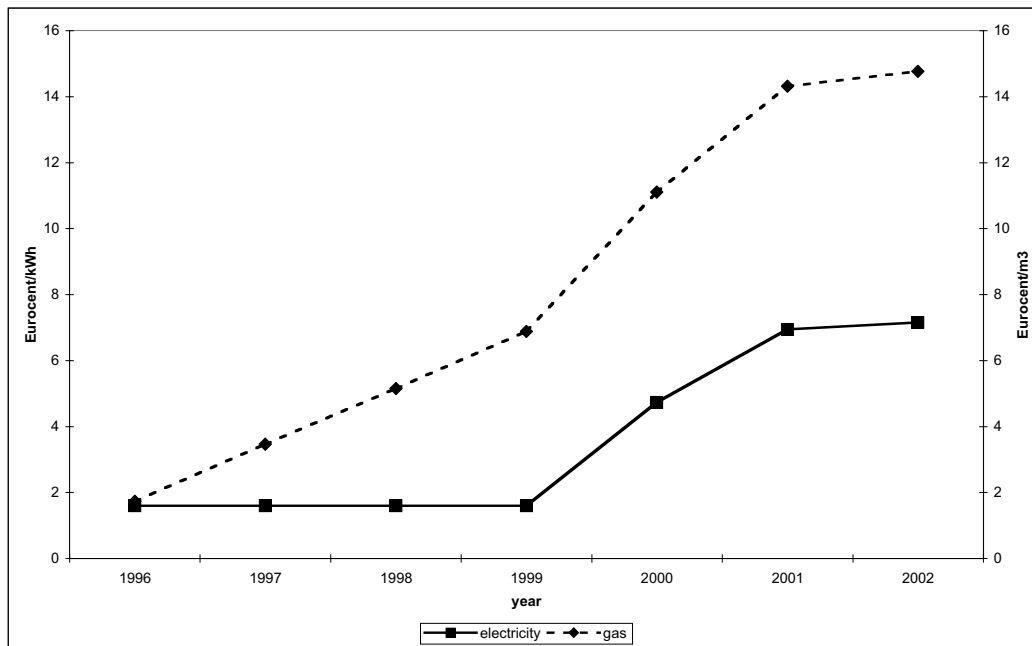


Figure 1. Development of energy taxes for households in the Netherlands (1996-2002).

energy efficiency. This energy tax aims to stimulate energy efficiency by increasing the cost-effectiveness of energy efficient products. Each household paid in 2002 through its electricity bill an energy tax that is on average – based on an average consumption of 3 300 kWh per year – about 235 Euro per year. Not only electricity but also gas is taxed. Figure 1 shows the development of these energy taxes since the introduction in 1996.

The energy tax was accompanied by an equal tax rebate for all end-users (169 Euro in 2002) and a tax rebate for buyers of energy efficient appliances, the Energy Premium Scheme (EPR).

The EPR has two aims: to stimulate the purchase of energy efficient products and to compensate for increased spending on energy because of the energy tax. The rationale behind the first aim is that more efficient appliances are more expensive than less efficient ones and consumers are less likely – compared to business – to make a purchase decision based on life cycle costs. The rationale behind the second aim is that the money raised with the energy tax should be redistributed to the group that paid the tax.

In the sections below the following subjects are treated:

- how the EPR works in practice,
- products and criteria for the EPR,
- the procedure to establish the product list, including criteria and rebates,
- an overview of costs,
- communication to consumers.

#### EPR: PRODUCTS AND CRITERIA

In practice the EPR works as follows. The consumer buys an energy efficient product (see below for list of products) in a shop or via mail-order. In the shop the consumer can get a

form (or she can order the form from a energy distribution company); sending in the completed form with a proof of purchase will then lead to payment of the rebate by the energy distribution company.

The products belonging to the EPR can be distinguished into the following categories:

- household appliances, including lighting, consumer electronics and office equipment;
- installed appliances;
- architectural facilities;
- sustainable energy.

In this paper we concentrate on household appliances.

Table 1 provides an overview of products, criteria and rebates. The rebates for 2000 and 2001 are rounded due to the Euro conversion. In 2001 and 2002 a combined purchase of two appliances with a rebate resulted in a bonus rebate of 22.50 Euro. The energy and performance criteria indicated by A or B refer to the A-G scale in the EC labelling directive of the product. A+ refers to the energy efficiency criteria set by the Energy+ project (Wijshoff, 2003).

#### PROCEDURE FOR ESTABLISHING THE LIST OF PRODUCTS, CRITERIA AND REBATES

The list of products, criteria and rebates is revised yearly. The procedure for this revision is as follows. In the first quarter of the year all market parties are invited to input their experiences with last year's products and criteria and give suggestions for new products on the list. Based on this input – amongst others – Novem prepares a first draft proposal for the list (products, criteria and rebate) for the next year. This draft proposal is sent to all relevant market parties and their comments are discussed. To this end, working groups have been established which consists of market par-

**Table 1. Overview of products, criteria and rebates for household appliances.**

Product	2000		2001		2002	
	criteria	rebate (Euro)	criteria	rebate (Euro)	criteria	rebate (Euro)
cold appliances	A (energy)	45	A (energy) A+ (energy)*	45 90	A (energy) A+ (energy)*	50 100
dishwasher	A (energy) A/B (perform.)	45	A (energy) A/B (perform.)	45	A (energy) A/B (perform.)	45
washing machine	A (energy)	45	A (energy) AAA	45 90	A (energy) AAA	50 100
drier	A (energy) or gas heated	160	A (energy) or gas heated	160	A (energy) or gas heated	160
washer-drier	A (energy)	205	A (energy)	205	A (energy)	205
lighting	NA	NA	dedicated CFL	45	dedicated CFL	50
monitor	NA	NA	LCD	45	LCD	50

\*: EEI &lt; 0.42

NA: not applicable

**Table 2. Overview of costs for the EPR.**

	2000		2001	
	costs (Euro)	nr of applications	costs (Euro)	nr of applications
Marketing	3 102 325		3 237 853	
Handling of applications	12 214 675		23 375 147	
<b>Total operational costs</b>	<b>15 317 000</b>		<b>26 613 000</b>	
<i>Rebates Appliances</i>				
cold appliances	13 820 194	304 557	24 367 094	504 952
washing machines	14 349 574	316 225	22 175 922	441 385
dishwashers	3 415 966	75 274	6 614 664	145 768
driers	467 189	2 901	661 500	4 488
combined purchase	1 321 181	58 230	2 575 838	113 528
LCD monitor	NA	NA	586 148	12 917
<i>Rebates other products</i>	16 659 399		51 700 245	
<b>Total rebates</b>	<b>50 033 503</b>		<b>108 681 411</b>	

ties representatives (industry organisations) and are chaired by Novem. If relevant, the working groups can be supported by input of research institutes. Furthermore, a Technical Committee is established, which consists of the chairpersons of the working groups. This Technical Committee compiles the proposals from the working groups into one final draft list for the Interdepartmental Consultation. The Interdepartmental Consultation, a joined group from the ministries of Economic Affairs and Housing, Environment and Spatial Planning, makes the final decision which is then approved by the ministers.

A drawback of this interactive procedure is that the final list is only known late in the year, whereas the new products, criteria and rebates are expected to be effective from January 1st. Furthermore, if the scheme wants to stimulate innovation at manufacturers, then the criteria should be known well in advance (at least one year) and also be valid for more than one year.

The following guidelines are used to determine whether a product is suitable for the EPR, what the energy criteria should be and what rebate will be given:

- cost effectiveness: a cost effectiveness of at least 45 Euro per 1 000 kg of CO<sub>2</sub> reduction is aimed for;

- the height of the rebate: only rebates above 45 Euro will be used;
- energy efficiency: only the most efficient products will be on the list;
- simple verification, e.g. by labels and quality marks that appear on the appliances in the shop;
- guaranteed energy savings for the consumer (compared to market average).

#### OVERVIEW OF COSTS

The costs for the EPR can be split into operational costs (marketing, handling of applications) and the rebates. Table 2 provides an overview of costs in 2000 and 2001.

Between 2000 and 2001 the costs for rebates more than doubled. For appliances the operational costs are 30% (2000) and 24% (2001) of the rebate costs.

Regarding the redistribution of the tax, the following figures can be given (see Table 3).

#### COMMUNICATION

An extensive campaign was set up to communicate the EPR message to consumers: a TV show, advertisements in na-

**Table 3. Redistribution EPR.**

	2000 (10 <sup>6</sup> Euro)	2001 (10 <sup>6</sup> Euro)
Planned	66.71	96.21
Realised	50.03 (75%)	108.68 (113%)

**Table 4. CO<sub>2</sub> reduction.**

Appliance	CO <sub>2</sub> reduction [10 <sup>6</sup> kg]	
	2001	2002
cold appliances	6.9	14.4
washing machine	9.0	17.2
dishwasher	2.6	5.3
drier	0.4	0.6
LCD monitor	NA	0.4

**Table 5. Average energy consumption (kWh) of white goods (1999-2001) in the Netherlands.**

Appliance	1999		2000		2001	
	all	only A-label	all	only A-label	all	only A-label
refrigerators (per year)	319	230	294	242	272	248
freezers (per year)	309	230	270	225	250	224
washing machines (cycle)	1.08	0.99	1.04	0.99	1.00	0.99
dishwashers (cycle)	1.33	1.19	1.26	1.16	1.22	1.15

**Table 6. Percentage of A-labelled white goods (1996-2001).**

Appliance	1996	1997	1998	1999		2000		2001	
	NL	NL	NL	NL	EU	NL	EU	NL	EU
refrigerators	7	10	14	26	12	55	19	67	27
freezers	3	13	18	29	12	55	16	69	
washing machines	0	3	19	40	15	71	26	88	45
dishwashers				27		55		73	

EU: Germany, UK, Ireland, Italy, France, Austria, Belgium, Netherlands, Portugal, Sweden, Spain

tional newspapers and magazines, information via local media (radio, TV, newspapers, magazines).

A special website, [www.energielabel.nl](http://www.energielabel.nl), was set up to provide information to consumers about which appliances had a rebate. The website lists for each product category, e.g. washing machines, the products (brand name, model name) for which a rebate can be received and provides information on the main energy and performance characteristics, as indicated on the EU energy label.

At the beginning of the campaign (early 2000), 40% of the consumers knew the EPR, whereas in November 2001 this percentage had doubled to 82%. Also 76% of the people that had not used the EPR till that time knew of it.

About one third of the people knew how the EPR was financed (i.e. through the energy tax); 80% had a positive opinion of this way of financing, 10% had a negative opinion and 10% had no opinion.

### The effects of the EPR

The effects of the EPR can be categorised into:

- environmental effects: CO<sub>2</sub> reduction, energy consumption reduction;
- market effects: percentage and sales of appliance with A-label.

Table 4 indicates the CO<sub>2</sub> reduction (cumulative) for the (household) appliances on the list. The reduction in 2001 is derived from the appliances purchased in 2000, the reduction in 2002 is derived from the appliances sold in 2000 and 2001. The CO<sub>2</sub> reduction is calculated over the lifetime of the appliance. A well known problem with calculated values is that the “real life” energy savings (and CO<sub>2</sub> reductions) need not be the same as the calculated savings. The appliance can be used more or less and under different conditions than is assumed.

Table 5 shows the average energy consumption of household appliances for the years 1999, 2000 and 2001 in the Netherlands.

From Table 5 it can be concluded that the reduction in average energy consumption for each category of appliances is realised by an increased sales of A-label appliances (see also table 6). Table 5 shows that the consumption of A-labelled appliances was more or less stable during the years 1999-2001 and in the case of cold appliances even increased a little. Reason for this increase is the increase in sales of larger A-labelled fridge-freezers.

### Discussion and evaluation

Before we will place some critical questions regarding the success of the EPR, we will pay attention to the question whether this success is typical for the Dutch situation or can

be expected in other countries as well. This question is in our opinion best answered by looking at the critical drivers of the success of the EPR. Other countries then can investigate whether these conditions can be fulfilled in their situation.

In our opinion the following critical drivers for success can be distinguished (not in priority order):

- The EPR is a *national* scheme. In the past regional schemes were also used, e.g. for promoting efficient lighting, but a national scheme has advantages regarding promotion and involvement of nationwide retailers. Also a national scheme is more attractive for retailers.
- Since price is an important item in the selling process, the rebate provides *retailers* with an extra reason to sell A-labelled appliances, especially because the rebate is connected with “doing something good for the environment”. This is contrary to promoting a product with a lower price, where consumers might fear that a lower price means lower quality. Since A-labelled appliances were – in general – more expensive than appliances from other categories, it was more attractive for retailers to sell A-labelled appliances.
- Rebate actions are known and common in the Netherlands. According to the evaluation report of the EPR, 80% of the respondents has a positive opinion on the financing of the EPR (Belastingdienst, 2002).
- The *electricity distribution companies* supported the EPR scheme, not in the least because they were contracted for the handling of the applications and part of the marketing.
- The EPR was not a short term action, but is a *multi year scheme*. This means that the rebate does not urge consumers to pre-empt on their decision to buy an appliance. Furthermore, retailers have ample time to adjust marketing and selling practices.
- Last but not least: the *money*. The EPR scheme was paid for by the energy price tax which amounted to 50% of the energy prices in 2002. The EPR scheme was an investment of 50 million Euro in 2000 and more than 100 million Euro in 2001.

Despite the success of the EPR in terms of market transformation, we can ask the following critical questions:

- What about the free-rider effect? Does, at the end, the EPR subsidise a lot of people that also would have chosen an A-labelled appliance without subsidy?
- Does the EPR hamper innovation?
- Is the EPR cost-effective?
- Does the EPR stimulate consumers to buy appliances that they otherwise wouldn't have done?

To start with the last question, it is our opinion that the answer is ‘no’. Although no research has been carried out on this subject, we think important reasons are that the EPR is a multi year scheme and that the EPR subsidizes appliances that belong to the standard household equipment. As indicated above no deadline exists, apart from the yearly chang-

es in the list, so consumers are not “forced” to buy a new appliance in April, because the scheme is running only in that month. This effect can only be expected at the end of the year (December) for those products for which the subsidy is discontinued. Furthermore, since the appliances that are subsidised belong to the standard equipment of the Dutch household, it is not to be expected that the EPR is a stimulus to buy such an appliance. In other words: the decision to buy appliance X is not affected by the EPR, but given the decision to buy an appliance, the EPR stimulates consumers to buy an efficient one.

Regarding the *cost-effectiveness* of the EPR scheme, two types of costs have to be distinguished (see Table 2): the operational costs and the rebate costs. The rebate costs are based on a cost-effectiveness of 45 Euro per 1 000 kg CO<sub>2</sub> reduction. Although this figure can be discussed, it is an agreed basis in the Netherlands. On the other hand, the operational costs and especially the handling of applications amounts to more than 20% of the rebate costs. Although the EPR scheme is a legal scheme which puts special attention to the correct handling of applications, this percentage should be reduced.

One of the secondary goals of the energy tax and EPR was to stimulate (market) *innovation*. At the time the energy tax started (1996) only a few percent of the white goods were A-labelled (see Table 6) and only a few manufacturers offered these products. As indicated before, the EPR has transformed the market for household appliances in the Netherlands. However, the EU energy label on which the criteria for the EPR are based has not evolved. So, at the moment, further stimulation of innovation can only be achieved by using other initiatives, e.g. Energy+ (Wijshoff, 2003 and www.energy-plus.org). Because these require separate testing by an independent laboratory, costs for manufacturers increase. So, it is not the EPR scheme that hampers innovation, but the slow development of the EU energy label criteria.

Regarding the *free-rider effect*, two aspects can be distinguished: a market shift towards energy efficient products and the autonomous sales of appliances with a subsidy. The market shift towards energy efficient appliances clearly is a desired effect of the EPR. However, if all appliances fulfil the EPR criteria, the subsidy is no longer useful. So, minimising this free-rider aspect means identification of the realisation of the market transformation. It is clear that market transformation is realised when (almost) all products of a product category fulfil the criteria, but is more efficient to lower this level to 70 or 60%. The aspect of autonomous sales refers to appliances that fulfil the EPR criteria but the consumers who buy them do not apply for the subsidy; this could be called the free-driver effect: no subsidy is needed to achieve a market shift with these consumers. However, this reasoning ignores the fact that the EPR triggers a lot of promotion and activities of sales people to attract the attention of consumers for energy efficient appliances. For the sales people it does not matter whether the consumer applies for the EPR or not, they can anyhow use the rebate in their sales talk.

Since the free-rider effect was obvious in the results of the EPR for 2002, the discussion on the product list for 2003 was dominated by this subject (and the budget cuts imposed on

the scheme by the new government). This resulted in much more stringent criteria for appliances in 2003, so that only the most efficient appliances are on the list.

### Conclusions and recommendations

The EPR has been a huge success in transforming the market for household appliances in the Netherlands, with the exception of dryers. Nowadays it is difficult *not* to buy an A-labelled appliance in a shop in the Netherlands.

However, this success also resulted in a more critical investigation into the overhead costs of the EPR and the role the EPR has in stimulating innovation. It is the aim to reduce overhead costs and to increase the role regarding further innovation of energy efficient appliances. However, the slow development of the EU energy label criteria is an important barrier for further innovation.

The discussion on the free-rider effect resulted in significant changes in the list of products for 2003, which focuses on the most efficient products.

That further improvement of energy efficiency of appliances is necessary, show the latest electricity consumption figures for households in the Netherlands: despite the success of the EPR, average household electricity consumption has increased by 3% over the last years (EnergieNed, 2002).

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