

# How to Double the Annual Sales of CFLs with Energy Label A

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## ABSTRACT

Market transformation programs in cooperation between manufacturers, retailers, consumers, and Danish energy authorities have shown substantial progress in changing the market from mere availability of efficient appliances to high-volume sales. Strategic use of markets power and a priority to organise straightforward programs have, with limited costs to all participants, produced a substantial reduction of CO<sub>2</sub> emissions and created a win-win solution.

October 1, 2000, marked the launch of a combined program to:

- double the annual sales of CFLs with energy label A from 1.2 to 2.4 million per year within three years
- lower their prices
- increase the quality of the CFLs offered
- increase the availability of the products

Program participants include the Danish Energy Agency, the Danish Electricity Utilities, more than 1,000 shops, manufacturers and importers, Delta (an accredited testing institute), the Danish Illuminating Engineering Society, and lamp suppliers.

The program includes:

- a website at [www.a-paere.dk](http://www.a-paere.dk), with a list of CFLs meeting the EU Quality charter and recommended by the Danish Electricity Saving Trust (DEST)
- information on the use of CFLs
- a list of fixtures recommended for the use of CFLs, etc.

This paper describes the program, specifically the campaign addressed to the public in the autumn of 2000. The total budget in 2000 was \$ 2 million, of which the DEST spent \$1.2 million.

Findings from an external evaluation of the campaign, which was finished in September 2001, are described in the paper. To summarize, the CFL campaign resulted in increased sales of 850.000 CFLs and yielded energy savings of almost 1 TWh and CO<sub>2</sub> reductions of 700.000 tons.

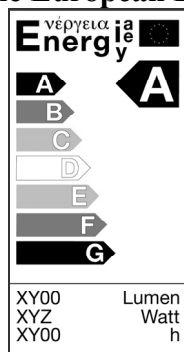
## Introduction and Background

The Danish Electricity Saving Trust (DEST) was established as a governmental agency by a law passed late in 1996. The objective of the trust is to promote energy savings

and more efficient use of electricity in dwellings, the public sector, and cooperative housing societies.

DEST planned a nationwide campaign to promote CFLs based on experience from CFL campaigns carried out by electricity suppliers over the past 10 years. One such past activity was the development of a list of CFL products called the “positive list”. To be on the list, a CFL model had to pass certain quality tests. In 1997, the tests were discontinued when the European Energy labeling scheme for CFLs and other light sources was adopted. The rating and labeling system classifies the products on a scale from A to G (see Figure 1) where energy class A is the most efficient. All CFLs are rated as either A or B on the scale (incandescent lamps are typically rated F or G). The mandatory rating system was enforced in summer 2000.

**Figure 1. The European Energy Label**



Source: EU Commission Directive, 98/11/EC

Even though the Danish electricity utilities characterized the campaign as successful, it still did not alter the fact that merely 2% of the total volume sales of lamps in 1999 consisted of CFLs, partly because the price level was very high (up to \$20).

After the positive list was abandoned in 1997 there was no control mechanism to check the quality of CFLs on the market. Consequently, many bad products were marketed in the following years, thus creating a negative consumer response toward CFL technology.

The European energy label focuses only on energy efficiency, leaving out performance out. As a supplement, the European Commission launched the European Quality Charter for local promotion activities for CFLs. The charter was established as a voluntary agreement with the manufacturing industry, the utilities, and national administrations. The charter consists of definitions of performance criteria and underlying test methods. The major criteria are:

1. Light efficacy - the CFL must be class A in accordance with EU's energy labeling directive.
2. Luminous flux reduction - after 2000 hours of use, the luminous flux must constitute no less than 88% of the initial luminous flux.
3. Life expectancy - The CFL A must be able to handle twice as many on/off's in a lighting test as the life expectancy in hours stated on the packaging. The lighting test is carried out on a sample of 20 CFLs with an on/off cycle of ½ min ON/4.5 min OFF, until less than 50% of the sample is still working (cf. EU's Quality Charter for further details).

4. Color rendering – the Colour Rendering Index, Ra, must be at least 80.
5. Color temperature - The colour temperature must be between 2,600 K and 3,000 K.

During strategic planning of the 2000 campaign for CFLs, it was decided to focus on CFLs with energy label A meeting the above-mentioned requirements from the Quality Charter. Those products that met the criteria were accepted on the new “positive list” called the CFL A list.

### **Market Situation 1999**

Prior research, (e.g., the European Union’s SAVE studies and market research from earlier campaigns by the Danish utilities) identified several market and product barriers to increased CFL sales, including:

**Lack of information.** Options when purchasing incandescent light bulbs are limited to the base configuration and wattage. Choosing a CFL is a much more complex task due to the wide variety of configurations and the uncertainty in necessary equivalent wattage. The consumer lacks real guidance in terms of which bulbs fit which fixtures. There is, however, no tradition for providing this information among manufacturers and retailers. Moreover, the majority of the trade has a relatively modest assortment of CFLs, and the sales staffs have minimal knowledge about the various applications of the CFLs.

**Initial cost.** Financially it makes sense to use CFLs when you consider the life-cycle cost. In spite of this, the high initial retail cost, typically between \$10<sup>1</sup> and \$20, was viewed as a significant barrier to increased sales.

**Appearance and design.** The fundamental problem with CFLs is that they do not resemble traditional incandescent lamps in size or shape.

**Light quality.** The light quality of CFLs is different than incandescent lamps and often perceived as lower quality.

**Durability.** There is still concern among consumers about whether the "expensive" CFLs will, in fact, live up to their claimed long life.

The barriers to manufacturers and retailers can be formulated as follows:

1. CFL A's have a small market share compared to incandescent lamps, which implies lower involvement.
2. Although the profit from selling CFL A's is larger, the time between sales is longer due to the long life.
3. Light sources are, in general, a low-interest and low-involvement product category.
4. CFL A's require more know-how from store personnel, e.g., about which fixtures they fit

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<sup>1</sup> \$ = DKK 8,35

## Campaign Set-Up

In autumn of 2000 DEST conducted a campaign for CFLs with energy label A (CFL A's). The overall objective of the campaign was to increase consumer purchases of CFL A's instead of incandescent lamps, so that the average stock of CFL A's could be augmented.

The increased demand will create motivation for manufacturers and retail trade to focus more on this product group instead of other related products. This is the so-called pull effect, where consumers demand pulls the suppliers into supplying the product in demand.

### Objectives

Our main purpose – encouraging consumers to purchase CFL A's instead of incandescent lamps – was divided into a short-term and a long-term objective in planning the campaign for the year 2000.

**The long-term objective.** The program's goal is to double sales of CFL A's in Denmark during a three-year period by accelerating marketing and sales initiatives so that annual sales in 2003 reach 2.5 million CFL A's. Annual sales prior to the campaign were estimated at 1 to 1.2 million.

**The short-term objective.** To achieve additional sales of 150,000 CFL A's during the campaign period (September – November) that would otherwise primarily have consisted of incandescent lamps.

**Intermediate aims.** Thus, the purpose of the campaign was to secure a continued long-term growth in the sales of CFL A's with a special focus on the barriers obstructing consumers from acting in an environmentally and financially reasonable manner. As a consequence, the following intermediate aims were set for the campaign:

- expanded assortment
- increased accessibility for the consumers
- improved level of information and knowledge with consumers and dealer chains
- increased sales volume and decreasing unit cost
- more marketing activities with outlets for CFLs
- introducing the concept of "CFL A"
- increasing the number of users of CFL A's
- establishing and maintaining a user-friendly permanent home page ([www.a-paere.dk](http://www.a-paere.dk)) with information about CFL A's that meet a set of quality requirements based on EU's Quality Charter
- introducing the purchase parameter Energy Label A with consumers and dealers.

### Campaign Description

The campaign was a coordination of tasks with Danish electricity utilities and the Danish Energy Agency. The Danish electricity utilities primarily conveyed the general message about CFL A's, contributed with TV advertising, and used their many energy

advisors in local events inside the retail stores. The Danish Energy Agency participated as the authority behind the energy labelling.

The Danish Electricity Saving Trust's approach consisted of the following elements:

- quality charter
- mass communication
- internet page
- trade marketing.

**Quality charter.** The purpose of the CFL A list was to ensure a certain quality level for the lamps that DEST would recommend to consumers. Originally, it was not intended that the CFL A list should play a pivotal role in the marketing by DEST. However, it turned out that only a small number of lamps could be entered on the list because one or more of the requirements were not fulfilled. For this reason, DEST determined to focus on more thorough information to consumers.

**Mass communication.** DEST decided not to use TV because of the complexity of the message. Instead, a magazine was prepared, "Nyt om lys" (News on Light) to tell the long story in a reader friendly and credible manner. The magazine contained messages, e.g. that CFL A's can be used for a variety of fixtures, that the price does not necessarily reflect the quality, and that there are considerable financial and environmental benefits from the CFL A's. One million copies were published and distributed via newspapers, stores, environment, and energy offices.

**Internet page.** DEST made a permanent homepage ([www.a-paere.dk](http://www.a-paere.dk)) with the following:

- an up-to-date survey of CFL A's that meet with a series of quality requirements on the market (the CFL A list)
- a survey of fixtures that can be used together with CFL A's
- information about applications for CFL A's in general and the individual models
- information on lighting engineering
- information on the environmental facts about CFL A's
- information about the operating economy of CFL A's.

The intention is to update existing levels of available information and that the homepage will continue to function as the encyclopedia after the campaign.

**Trade marketing.** The greatest task ahead in the trade is to expand the assortment of CFL A's, and to lower the price. But today, the retail trade is more dependent than ever on the turnover rate of goods. As a result, an expansion of the assortment requires that they believe that the item can be sold and they will make a larger profit than the item it will be replacing in the product line.

Prior to the campaign, CFL A's were only of interest to the retail trade because they could position themselves as energy efficient. About two-thirds of the sales of CFL A's were generated in the retail trade and the DIYs (Do-It-Yourself home improvement stores, e.g., Ikea and Woolworths). Lasting impacts in terms of an increased CFL A assortment would

probably only be likely if sales increased to the point that the retail trade and manufacturers felt confident of significant earnings.

As mentioned previously, we faced at least two major challenges:

- A. The assortment of CFL A's was very limited (12% CFLs and 88% incandescent) in the largest stores with the largest assortment of lamps. Since this is a low-involvement purchase, the consumer is not motivated to conduct a thorough search in several stores. Thus, the assortment, and as a consequence the accessibility to consumers, plays a central role.
- B. The lamp market was, from the onset of the campaign, divided between a few large manufacturers. One of these manufacturers had a very poor assortment of CFL A's and 60% of its turnover was generated from two lamp variants with energy label B.

The sale to the retail trade and the model itself consisted of the following elements: Listing fee, information material, home page, local print advertising, press releases, and point-of-purchase material.

**Listing fee.** To ensure the retail trade's interest in participating in the campaign, a listing fee was established - as a further incentive in addition to the more traditional approaches - consisting of a pool of \$240,000. After the campaign, the individual dealers would receive their relative share of the pool corresponding to the number of lamps (from the CFL A list) that had been sold in the six campaign weeks, not to exceed \$1.2 per lamp. The more precise terms are described below:

**Listing fee terms.** When participating in the Listing Fee arrangement, the stores were required to display the Danish Electricity Saving Trust's point-of-purchase materials supplied and paid for by DEST. The display consisted of three compartments in which lamps had to be placed according to the following categories:

- 1. Finger-type CFL A's, at least one at less than \$6
- 2. Incandescent-like CFL A's, at least one at less than \$6
- 3. The third compartment was to show a range of assorted styles without requirements to price.

## Evaluations and Analysis

### Background

The following parties have been interviewed: 1000 consumers (500 pre- and 500 post-test), 6 large retail chains, 4 bulb manufacturers, 5 lamp manufacturers, staff from the retail chains involved, small retail chains/outlets (not participating in the campaign), and staff from the local electricity suppliers.

The purpose of this part of the overall study was to conduct a qualitative analysis of the selected parties' reaction and attitude to the campaign and to assess their attitudes to CFL A's and future developments in the area.

## The Short-Term Result — A Major Increase in Sales of CFL A's

As shown in the Tables 1 and 2 below, the short-term objective to increase sales of CFL A's by 150.000 was met in full.

**Table 1. Sales of CFL A's in 1999 and 2000**

Period	Sales CFL A's
4 months before campaign (May-Aug 2000)	500.000
During campaign (Sept-Nov. 2000)	850.000
4 months after campaign (Dec 2000-March 2001)	1.200.000
1999 Total	1.200.000
2000 Total	2.800.000
Source: DEST, 2001, reported by manufacturers and importers	

1.200.000 CFL A's were sold in the Danish market in 1999, and 2.800.000 were sold in 2000. Of this 2.800.000, 850.000 were sold during the Sept.-Nov. campaign period. This was an increase of 620.000 over the 230.000 CFLs sold during the same period in 1999.

However, it has to be taken into consideration that the market for light bulbs is characterized by strong seasonal fluctuations, as sales in the "dark" months (October-March) are normally twice as high as sales in the spring and summer period<sup>2</sup>. Accordingly, sales in this 10-week period in 2000 should instead be 308.000 CFL A's. Therefore it is estimated that the campaign sales of CFL A's then exceed the "expected" sales by 542.000. Table 2 below show the actual sales with and without seasonal corrections.

**Table 2. Sales in Campaign Period**

	Sales without seasonal corrections	Sales with seasonal corrections
Basic sales (based on 1999 sales)	230.000	308.000
Short term increase (the campaign objective)	150.000	150.000
Objective	380.000	458.000
Total realised sales	850.000	850.000
Additional sales	470.000	392.000
Additional sales in %	123%	86%
Source: DEST, 2001		

However the sales figures for the first 6 months of 2001 indicate that the market for CFL A's would have experienced an increase from 2000 to 2001 even without the campaign – this is in line with the experiences from other countries where there also was a general trend toward an increase in CFL A's market share. An analysis of the sales data indicates that the total sales for 2001 would be in the vicinity of 2 million CFL A's. This means that the campaign generated an extra sale of 800.000 CFL A's<sup>3</sup>.

<sup>2</sup> There is no direct sales data available to validate these fluctuations, but figures from major outlets combined with talks with relevant people from the business support this assumption.

<sup>3</sup> The difference between actual extra sales in the campaign period and the total extra sales can be explained with additional sales after the campaign and, to a lesser extent, the attention created already before the campaign officially started.

## **The Long-Term Result — Expectations and Quality Problems**

The long-term purpose of the campaign was to secure continued growth in the sales of CFL A's after the campaign ended. Therefore, it was an important precondition that both manufacturers and the retail chains were positive from the beginning both toward CFL A's and toward more activities in this area.

As a starting point, both manufacturers and the retail chains believed it to be a good idea to focus on CFL A's (on the basis of very different parameters), and as a result the attitude toward a campaign in this area was positive. Concurrently, this attitude found support in everybody's expectations of explosive growth in the CFL A market in the future.

Manufacturers concur that the near future belongs to CFL A's in the struggle against incandescent lamps. Everybody wants to be in on the deal, even those who had previously been negative toward the DEST. As a consequence, they also want to be on the A-list because of the marketing benefits. They do not want to be taken over by competitors who can take advantage of a quality stamp from the Danish authorities. Concurrently, the opportunity to be rewarded by increased sales of CFL A's through the Listing Fee arrangement created a large interest in participating in the campaign.

Several manufacturers and retail chains expressed surprise at how few lamps actually meet the requirements. The general view of the requirements is that they have been much too strict.

Whether it has been necessary to "push" the manufacturers to produce high quality CFL A's is open for discussion. It is, however, a fact that more and more CFL A's are being approved and entered on the CFL A list. During the campaign there were 31 CFL A's on the list. At the latest update in April 2002 there are 49 registered.

As previously mentioned, DEST did not originally intend for the CFL A list to play a central role in the marketing activities. However, communication to consumers on this subject became increasingly important since only a small percentage of the CFLs qualified. The purpose of the CFL A list was to assure the consumer that recommended lamps met a certain quality level. Therefore, it was interesting that CFL A manufacturers and importers attach as much importance to this as they apparently do. It would seem that a quality stamp from the Danish authorities/DEST is a strong endorsement that suppliers take seriously.

The general consensus in the FMCG (fast moving consumer goods) trade confirmed that the authorities enjoy a large degree of credibility with consumers. So, apparently, this strategy is effective, in influencing consumers' attitudes toward products and brands.

## **The Long-Term Result — Sales 2000-2003**

The long-term objective was to increase sales in order to reach 2.5 million sold in 2003. As sales already have passed this level (2.8 million in 2000), the objective has been reached 3 years ahead of schedule. From 2000 to 2001 the market share of CFL A's has increased from app. 2% to above 4,5% of total lamps sales of 42 million per year. This incredible and surprisingly fast market transformation was supported by the positive tendencies of the market in general — the market was in growth — and was thereby ready for a major marketing effort such as the 2000 CFL A campaign.

It is estimated that the development of increased sales would stagnate without campaign because a major part of the sales have been driven by a small percentage of

consumers with a positive attitude and an interest in CFL A's - 13% of households have installed 48% of the CFL A's sold (this group oversees more than 12 CFL A's per household). This group cannot be expected to drive sales in the near future as they have CFL A's in practically all "appropriate" lamps and the life expectancy of CFL A's is app. 10 years. Sales among this group can only be increased if the producers can market new products that will expand the usability of CFL A's in the households.

Between 1995 and 2000, the number of households with at least one CFL increased from 40.9% to 59.7%. Future campaign strategies are important because CFL A penetration in the Danish market only covers approximately two-thirds of the households. The remaining households must be targeted in new campaigns if the positive development in sales is to be maintained.

There are, however, other factors that can have a strong influence on the development of sales. Price is probably the most important factor. Prices on CFL A's are lower than ever. But this could be influenced by the anti-dumping toll specifically on CFL A's from China imposed by the European Union in July 2001, as these Chinese imports have been the primary driving force to maintain lower prices. (At this point, the effect of the toll has not had any dramatic influence on the average prices.)

The availability of CFL A's – especially the cheap ones – is another major barrier to further positive growth in sales. Some major chains don't sell CFL A's and, in general, the choices for cheap CFL A's are very limited as the major producers that supply a large part of the market maintain a quite high price on their products. From recent studies it is evident that many consumers – although they are concerned about the environment and are aware of CFL A's – buy their light source where they do their day-to-day shopping. If the CFL A is expensive compared to standard incandescent lamps, they will buy the cheaper of the two in the store, and will not look for a less expensive CFL A in other stores. In future campaigns, it is therefore important to continuously "persuade" the retail trade to market CFL A's and to ensure that consumers get access to cheaper CFL A's wherever they do their everyday shopping.

### **Environmental & Economic Effect**

The CO<sub>2</sub>-shadow price is a way to compare the effect of different strategies and methods on CO<sub>2</sub>-emissions – comparison of cost for reducing CO<sub>2</sub> across various programs and campaigns. A negative shadow price is an expression for a societal surplus — both CO<sub>2</sub> and money is saved.

**Table 4. CO<sub>2</sub> and CO<sub>2</sub>-Shadow Prices in \$**

	CO <sub>2</sub> -saved (1000 ton)	CO <sub>2</sub> -shadow price/ton
1. Campaign 2000 (Sales 2000)	230	-28
2. Campaign 2000 (Sales 2000 -2003)	717	-71
Source: DEST, 2001		

The campaign has a CO<sub>2</sub>-shadow price of -\$28 per ton. The average shadow price for projects and campaigns in the ministry of Energy is +\$60. So this campaign has been a very

effective tool. The effectiveness of the campaign can be further illustrated by the fact that \$28.3 million would be spent on the campaign (compared to the \$1.5 million actually spend) before the CO<sub>2</sub>-shadow prices would be positive.

### **The Long-Term Result - Prices**

As mentioned previously, the sales of CFL A's have far exceeded the established criteria for success. The question is whether or not this trend can be expected to continue in the long run.

The price level for CFL A's decreased considerably in 2000 and has maintained at this new lower level — from \$10 to \$6. This reduction can, to some extent, be explained by the Listing fee arrangement and the campaign's focus on high quality and low prices. This has saved the consumers an extra cost of \$2.9 million. The campaign's total budget has thereby been leveraged by a factor 1.8.

### **Listing Fee as a Tool**

Undoubtedly, the pool of \$240.000 has created increased interest among retail chains in participating actively in the campaign, and thus in being entered on the positive list. However, there are certain reservations in relation to this method.

Most of the retail chains believe that it has been a problem not knowing exactly what amount per lamp the individual stores would receive in bonus. Consequently, the listing fee has been primarily viewed as a safety net or extra help that can contribute to (or perhaps cover) the extra cost in connection with the preparation of campaign material and other marketing initiatives.

The manufacturers' attitude toward the Listing Fee arrangement has been quite negative. The reason for this is in part the element of insecurity, as with the retail chains, and in part the fact that the listing fee arrangement forms are directed toward retail chains with a simple and clear structure and with a rather large turnover.

### **Assortment**

One of the existing barriers to increased sales of CFL A's is the technical product qualities and the limited assortment. Somewhat surprisingly, most manufacturers and importers in the interview study toned down the problems. In fact, the consensus is that the quality of the CFL A's will be improved as demand increases, and that the assortment will be expanded to encompass all of the types and sizes now available only in incandescent lamps.

This assumption is verified by the development on the market. There is actually a trend toward a wider range of CFL A's in the outlets. ELFOR has carried out market surveys in outlets in the period 1999-2001 that confirms a major increase in the assortment of CFL A's per shop. From 1999 to 2000 there was an increase of 97% in. From 2000 to 2001 there was a further increase of 73%.

## **Monitoring the Development**

Before the 2001 campaign, DEST initiated a program to monitor the market for energy efficient appliances<sup>4</sup>. With this monitoring program, it is possible to follow the development of consumer trends, for example, awareness and attitudes. The objective with this kind of monitoring is to be able to continuously follow the market's response to activities. This helps DEST to pinpoint problem areas so marketing or other strategic activities can be initiated.

Our findings show that the awareness of CFL A's has increased from 75% in August 2001 to 93% in March 2002. Our conclusion is that the focus of future campaigns can be directed toward more specific communication targets.

Although the awareness of CFL A's has increased, there are still some very concrete problems that have to be targeted in future activities. For example, between 40 to 50% think that CFL A's are expensive and/or ugly. With this knowledge, research can focus on determining whether these attitudes are based on real knowledge of the prices and assortment available or whether it is determined by consumer buying patterns – i.e., just what is available in the stores where consumers do their daily shopping of FMCG.

## **Conclusions**

Sales results from the DEST campaigns in 2000 have proven that market campaigns based on the push/pull strategy can be very effective. Compared to other public projects and campaigns, the societal effect is extremely positive, and long-term sales objectives has been reached 3 years ahead of time, while the market share of CFL A's has increased from 2% to 4,5%. The campaign has also had a positive influence on the assortment of CFL A's available. The campaign has helped visualize the potential market for CFL A's thereby further ensuring that manufacturers and importers will give higher priority to CFL A's in the future.

The CFL A campaign will have — and already has had — an effect on the development of the market in the future. More manufacturers and importers will test their CFL A's and demand better documentation to help ensure better products for consumers. The setting of a price cutoff proved to be an important tool to lower the average prices (they were 39% lower after the campaign) and this tactic could be implemented in other campaigns – if legislation in the country approves. The large retail chains have also demonstrated that you can buy quality CFL A's at very reasonable prices. In that way, the cheap CFL A's from the East can compete against the recognized brands.

One problem with the campaign is that it has primarily targeted existing users of CFL A's. Without doubt the impact of the campaign would have been increased if the approved CFL A's had been more widely distributed and if the assortment had been larger.

Based on experiences from the campaigns and monitoring of the market, DEST will focus on and initiate further research to analyze why approximately 33% of households do not have any CFL A's, despite the obvious economic advantages, and how future strategies should approach this target group. For example

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<sup>4</sup> 100 nationally representative consumers, aged 18-70, surveyed every 4 weeks.

- If distribution and availability are major factors, how can distribution be increased?
- Is there a connection between distribution and consumer perception?
- Is a specific creative form of mass communication needed to target the remaining households?
- How many cannot be persuaded due to the present technological stage?
- How can the Listing Fee tool be improved?

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