

# Transforming the CFL Market By Consumer Campaigns

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## ABSTRACT

Energy conservation, and primarily electricity conservation, is a fundamental element of the policies of the Danish electric utilities. Since 1990 integrated resources planning (IRP) has been implied and developed by the Danish Electric utilities. In IRP among others the cost of establishing new production capacity is weighted against the cost of recovering the same production capacity by electricity savings.

One of the most cost effective campaign topics is to replace incandescent lamps by CFLs. However such program has suffered serious setbacks due to consumers bad experience with poor quality CFLs mainly those imported from the far east nicknamed "Bamboo-bulbs"

Therefore the campaigns in Denmark have largely focused on promoting the high Quality CFLs by introducing a registered name (SPAREPÆRE®) for CFLs that are proven to provide the proper service life and light quality. Since 1994 the Danish electricity utilities have carried out very detailed tests of CFLs's. The CFLs that pass the test are added to the positive list. This list has been and will continue to be the fulcrum of the CFLS campaigns.

This paper focuses on the fact that it has been proven that it is possible to make a dramatic influence on the market by combining marketing tools and co-operation with the manufacturers and distributors.

## BACKGROUND

Why transform the market.

The Danish electric utilities have spotted the use of CFL's as an alternative to incandescent lamps as the absolutely most potential demand side management (DSM) program within the domestic office and retail sectors.

The major barriers to choosing CFLs was found to be:

- high "initial price"
- "does not fit"
- doubt about light "quality" (color, long light up time)
- doubt about actual lifetime
- beliefs that savings are only possible where the light is on for long periods
- fears that the CFL's cause mercury pollution

Obviously the goal for electric utilities would be to increase the market share for CFLS. However, it requires quite different approaches to overcome the barriers.

## HOW TO OVERCOME THOSE BARRIERS

The barriers were attacked by different means

### *Price*

The use of price incentives, such as give-aways, rebates and financing has been tried out. It is believed (and turned out to be true) that the price will decrease in time. When volume goes up, production technology is refined and last but not least the competition will increase.

It could be argued that keeping away the low-price/low quality products by initiatives as described in this paper would delay this process.

Lately the Danish market has experienced a price bomb by a CFLS claiming to be of high quality being offered country wide at a 1/3 of the established market price. This might be the beginning of a drastic price slide.

### *"Does not fit"*

Several activities have been considered to overcome this

problem as for instance contests among designers and architect to develop light fixtures designed for CFLs. So far no initiatives have been taken by the utilities.

The manufacturers are of course equally concerned with this barrier and more and more compact CFLs have arrived through the years. However, due to the different characteristics of the CFLs opposed to the incandescent lamp, the need for better fixture design is still evident.

#### *Light "quality" (color, long light up time)*

So far the best light quality has been consistent with the CFLs with long life time and good switch on/off capacity. Therefore no specific action has been taken to lower this barrier. However it is still expected that introduction of five-powder CFLs will have a positive effect. According to CFLS manufacturers the concerns for light quality is mainly a Nordic phenomenon.

#### *Life time*

The barrier of lifetime does not seem to be a major barrier (in 1992 it was 5%, [ref 3]). However, when the first "bamboo bulbs" arrived at the Danish market, it was immediately evident that stories about CFLs that quickly burned out or lost light output, would be a setback to the growing market for CFLs. It was therefore decided by the Danish electric utilities to attack this development by testing all the CFLs on the market. At first the tests were merely a tool for the consultants to give the proper advice to the customer. Later on the CFLs that passed the test were listed on a positive list named SPAREPÆRELISTEN®. The CFLs listed were allowed to use a special label symbol with the text "recommended by your electric utility"

#### *Beliefs that savings are only possible where the light is on for longer periods*

It is a strong popular belief that it is not economically feasible to switch off and on fluorescent tubes very often. This belief has somewhat been transferred to the CFLs. This belief could be confirmed as it turned out that frequent switching of some CFLs seemed to cause shorter service life. In 1995 it was therefore decided to add a test of the life time with a predefined switching cycle.

#### *Fears that the CFLs cause mercury pollution*

In the Danish electricity supply the major production source is coal based cogeneration. It is evident that the mercury pollution resulting from the electricity production for supplying an incandescent lamp of equivalent light output, for the service life of a CFLS, is greater than the mercury content of the CFLS.

#### **CAMPAIGNS**

The campaigns were organized in the following schedule

##### *1989*

A local test campaign is launched by ELSAM (cooperation covering 57% of the Danish electricity market) and OKE (utility).

Price incentives are used together with newspaper

advertisements and general information.

##### *1990*

NESA (utility) runs a campaign with the goal to accelerate the market penetration of the CFLS and breaking barriers, especially price and general knowledge.

The campaign used "agreements" with the suppliers of a special price. Simultaneously it was possible to pay the CFLs via the electricity bill.

During this campaign the bamboo products showed up for the first time and caused confusion as they were sold at a lower price than the "campaign price".

The number of households with CFLs was increased from 30% to 42% in the 7-week campaign period. All together 170.000 CFLs were sold in the NESA district.

##### *1990*

ELSAM and the utilities run a campaign involving TV, local radio and newspaper advertisement. Price "agreements" are used. Co-operation with the retail outlets and in-shop advertisement is introduced. Further local events by the utilities are part of the campaign.

The campaign resulted in 400.000 CFLs sold in 3 months

##### *1991/92*

ELSAM and utilities run a campaign as 1990 but also introducing the possibility to borrow a box of the different types of CFLs to test which type suit the particular application.

The campaign resulted in 400.000 CFLs sold in 30 days.

##### *1994*

The Danish utilities runs a nationwide campaign involving the above mentioned "positive list".

The campaign resulted in 570.000 CFLs sold in 3 months.

##### *1996*

The utilities in the eastern part of Denmark run a campaign specially focused on the ability of the CFLS to turn on and off.

#### **RESULTS**

The market reactions have been that Denmark is among the countries with most CFLs per household. 2.0 CFLS/household (1995) [ref 1].

It is proven, that it has been possible by the above mentioned marketing tools to keep the low quality products away from the Danish market, where the market share of the far east "no name" products is less than 5% compared to the German market where the market share is 30-40% [ref 1].

The interest in energy saving by using SPAREPÆRE® has been growing, even though the general "green awareness" seems to have topped in 1995 as illustrated below.

"I always, often or sometimes:"	1993	1995	1997
Buy cleaning agents with lowest possible environmental impact	66%	71%	65%
Buy ecological food.	48%	65%	61%
Buy CFLS SPAREPÆRER®	42%	52%	56%
Prefer one product for another, if it has a lower environmental impact	50%	60%	54%
Avoid products from a company with a bad reputation	39%	53%	44%
Am willing to pay 20% more for ecological products	54%	71%	63%

source [ref 5]

The cooperation with the suppliers and manufacturers of CFLs has been excellent. The producers of the CFLs have co-operated in developing and refining the tests in so far they are not based on international standards. The campaign price "agreements" have been adhered to.

Even though the low-quality products have been kept away from the market, there is no indication of a higher price level in Denmark for identical products compared to the neighboring markets.

#### THE FUTURE

Are tests still necessary?

Although the success of the strategy seems to have created a healthy market for CFLs in Denmark, it is still found to be beneficial to continue the testing and to run campaigns. New products are continuously introduced to the market. From the tests we know that not all of them perform as to be expected from the price and the marketing of the product.

A new campaign will take place in the winter 1997/98.

The tests will in future be made in a co-operation with the Swedish Nutek, and Norway is for the time being considering to join in.

To further increase the market share of CFLs the barriers of "does not fit" and "light quality must be addressed. Therefore new light fixtures must be developed especially for the CFLS

The problems of better colors and shorter warm-up time cannot be addressed by the utilities at present but as soon as such products appear from the manufacturers, means to promote such products will be considered. Such product will further expand the potential market for CFLs

Another barrier is the lack of the possibility to dim the CFLs with build in ballasts. If this barrier could be removed, it would open up for yet another bite of the incandescent lamp market. ●

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# Successful Initiatives on Energy Savings — The Danish Approaches. Grants for Energy Savings to the Industry in Denmark

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## ABSTRACT

In the energy plan Energy 2000 from 1990 the main objectives, was to reduce Denmark's CO<sub>2</sub> emissions by 20% from 1988 level by the year 2005. In Energy 21, The Danish Government's Action Plan for Energy 1996, this obligation was maintained. The long term perspective is a further reduction in the CO<sub>2</sub> emission to half the 1990 level by 2030. A condition for this decision is that international efforts to reduce CO<sub>2</sub> emissions support the Danish effort.

One of the initiatives to fulfil the CO<sub>2</sub> obligations in these plans are new energy taxes. Energy taxes have been part of the Danish energy policy since the oil crises in the 70's. Energy taxes became the platform for the development of a very efficient heat supply by utilising excess heat from electricity production, and the use of fuels such as gas and biomass. Furthermore the taxes encouraged the households to save energy.

Until the beginning of the nineties the commercial and industrial sectors had been exempted from energy and environmental taxation. This was not acceptable to society in general. In 1992 the Parliament launched the first CO<sub>2</sub>-package introducing carbon taxes on fossil fuel and electricity for all consumers. In order not to reduce the competitiveness of the Danish enterprises, these were charged with half of the CO<sub>2</sub>-tax for households. Very energy intensive industries were given the opportunity to obtain even lower taxes by the accomplishment of energy audits.

The system of lowered taxes to enterprises and exemption for certain types of industries, however undermined the effectiveness of the tax. Consequently, in spring 1995 the Government presented an Energy Package intended to restructure the tax related to the commercial and industrial sectors. The main elements of the new package are:

- a differential carbon tax
- all the revenues raised by the tax will be fully returned to

the commercial and industrial sectors, by different channels

- energy agreements with the energy intensive enterprises

An important part of the package is that the tax rates will be gradually increased from 1996 to the year 2000.

Certain industries do however have an opportunity to secure lower tax rates if they enter into energy agreements with the Danish energy authorities.

One method to recycle all the revenue raised by the tax to the industry is the possibility of obtaining investment grants.

Grants can be offered at up to 30% of the initial expense. The pay back time for the supported projects has to be between 2 and 9 years, and the CO<sub>2</sub> effect more than 0,15kg/year per invested dkr.

These figures have to be calculated for the "individual" application. For certain more common solutions the Danish Energy Agency has done these calculations and they are incorporated in the applications, making it more simple to apply for these "standardsolutions".

Among the projects which have obtained grants are several energy-efficient lightning projects. For example grants have been given to new more energy efficient lightning projects in office buildings, shops, hotels and restaurants, industrial buildings and agricultural buildings. Examples of supported projects are installation of Electronic Ballast, Compact Fluorescent Lamps, Light Control Systems and more energy efficient illuminated advertising. Also development projects are supported. An example is development of a energy efficient light control system, based on actual daylight and personal light comfort.

In the period year 1996 - 2000 about 2,6 billions dkr. are available for investment grants.

Overall it is estimated that the CO<sub>2</sub>-taxes, investment grants and agreements will reduce the total CO<sub>2</sub> emissions in Denmark by almost 5% compared to 1988. ●