

Implementation of Energy Efficiency Measures in Denmark Towards Sustainability

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<Contents>

- I. Danish Energy Planning and Development of Energy Consumption
- II. Types of Means and Organisations for Energy Efficiency
- III. Government Schemes and Means
- IV. Activities by the Energy Utilities
- V. Activities by Non-governmental Organisations
- VI. Establishment of the Danish Electricity Saving Trust for Electricity Savings
- VII. Conversion of Electric Heated Houses by DEST
- VIII. Procurement Policy Initiative for Public Organisations by DEST
- IX. Campaigns for Efficient Appliances by DEST
- X. Demonstration and Development Projects by DEST
- XI. DEST Demonstration Projects for Energy Efficient Clothes Washing and Drying in the Household Sector
- XII. Changes Due to the Electricity Market Reform

Abstract

The main aim of this paper is to present means and schemes for implementation of energy efficiency measures used in Denmark for supporting a development towards sustainability. Denmark has achieved valuable experiences during the last 25 years in energy planning and implementation of means and measures for energy savings. The

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result is a primary energy consumption, which is at the same level as 25 years ago.

Sustainability in Denmark as well as in many other countries is basically interpreted as reduction of CO₂ emissions in order to limit the very serious consequences of global climate change.

The main message in the paper is that means for implementation of energy efficiency measures and the organisational structure under which the means are managed are crucial for the process of reducing energy consumption. Even though an energy plan is important for target setting and analysis of options and scenarios, nothing is achieved without the right mixture of cost efficient means for implementation of actual measures complemented by a supportive organisational structure.

The paper briefly presents means applied in Denmark through the various organisations. It focuses then on a new successful organisation, the Danish Electricity Saving Trust, and presents the specific means used by the Trust for electricity savings in the public and residential sectors. The means used by the Trust comprise a subsidy scheme for conversion of electric heated houses, campaigns for efficient electric equipment, strengthening of the market introduction of efficient electric equipment, a procurement policy initiative for bulk purchasers in public institutions and housing associations and development and demonstration projects. Finally, the paper briefly presents some changes in the energy efficiency set-up due to the opening of the energy market in Denmark resulting in both additional opportunities and barriers.

It should be noticed that solutions chosen in Denmark should not directly be transferred to other countries. Instead, barriers, opportunities and organisational structure should be analysed in advance, before deciding on the specific set-up for implementation of energy efficiency measures.

I. Danish Energy Planning and Development of Energy Consumption

The primary energy consumption in Denmark grew considerably during the 1950s and 1960s. In beginning of the 1970s 92% of primary energy consumption in Denmark came from imported oil. The first oil crisis in 1973/74 naturally hit Denmark very seriously. Due to this, Denmark started initiating measures for reducing the dependency of energy imports.

Soon after, the first energy plan appeared and since then, several energy plans have been prepared. The targets and means in the plans have changed over the years. The first plans targeted security of fuel supply, while later the main objective was protection of the environment. Today, the key parameter in Danish energy planning is the level of CO₂ emissions.

A whole range of activities for reducing the energy consumption was initiated. In the supply sector

efficient means were fuel switching from oil to coal and natural gas for larger power plants, conversion of the plants to combined heat and power plants (CHP), extension of the district heating areas and an increased use of renewable energy.

Within the demand sector, the results were mainly successful in the space heating sector with achieved reductions in specific heating consumption of about 50% since 1974.

The results of all these activities have been a stabilised primary energy consumption of about 850 PJ during the last 25 years in spite of growing GDP. Denmark has further-more reached a 100% self-dependency of oil and gas due to the oil and gas discoveries in the North Sea.

The main targets in the most recent energy plan, Energy 21, published in 1996, are:

- 20% reduction of Denmark's CO₂ emissions from 1988 to 2005.
- Share of renewable energy to grow to 12-14% of energy supply before 2005 and to 35% in 2030.

As a consequence of the Kyoto Protocol Denmark should reduce its CO₂ emissions with 21% between 2008 and 2012 compared to 1990.

About half of the CO₂ reduction target in Energy 21 has been reached so far. It is expected by the government that the targets for the energy sector can be reached for the energy sector without including the transport sector. The target seems however difficult to reach in the transport sector.

Even though the results achieved in Denmark seem remarkable, it should be noticed that the technical-economical potential for reducing the energy consumption is still high in Denmark, in the order of 50% or more in the long term.

II. Types of Means and Organisations for Energy Efficiency

Before presenting means implemented by various organisations in Denmark, an overview is given of the general types of means for energy efficiency and of most common organisations involved in implementation of the means.

Basically, means can be divided into three categories:

- Regulatory means, such as legislation and other regulation
- Economic means, such as energy taxation and subsidies
- Informative means, such as information to the consumers on energy savings.

The first category has the strongest impact while the last has the weakest impact.

The means are often mixed to achieve synergic effects.

Means used in Denmark cover all three groups.

Commonly, the type of organisations working within implementation of energy efficiency measures

comprise:

- The government and government agencies
- Independent entities under the government such as trusts
- Energy utilities
- NGOs
- Consultants
- ESCOs (energy service companies)

Apart from the ESCOs, all these types of organisations are active within energy efficiency in Denmark.

Best results are achieved when involving positive resources within the area, i.e. a broad range of partners and stakeholders, who are willing to contribute positively for the reduction of the energy consumption.

III. Government Schemes and Means

Since the first oil crisis in 1973/1974, the government has used a variety of means for achieving energy savings at the demand side in addition to the supply side, which will not be described here.

As a fast response to the oil crisis the government initiated an efficient scheme targeting the space heat consumption in the residential sector. The scheme comprised a subsidy scheme for building insulation measures and information. This was complemented by the considerable energy price increases as a consequence of the oil crisis. Subsequent falls in energy prices were compensated by imposed energy taxes.

Building codes for minimum efficiency standards for new houses were also launched, which have been strengthened over the time.

A main element of government means is economic means in the form of energy taxation and subsidies. The energy excise duties have been increased over the years and extended to cover basically all consumer groups. The industry sector was exempted until recently, but the sector now also pays excise duties, which however are smaller compared to the residential sector.

For electricity sold to households, the excise duties and VAT amount to approximately 150% of the actual electricity price.

The purpose of the taxation is both to provide funds to the Treasury, partly for subsidy schemes, and to increase the energy price. High energy prices will naturally reduce the payback time of energy saving measures and make them more profitable for the enduser. It also sends the right signal to the end-user

that energy costs should include the environmental costs for the society of the energy consumption.

Subsidies have been given for investment support for energy saving measures in residential, government and commercial sectors.

The present government schemes, which include energy efficiency, are the following indicating the approximate subsidy level for 2000:

- Subsidy for energy savings in companies (328.2 million DKK ~ 40.0 million USD)
- Subsidy for CO2 taxes in energy intensive industries with energy agreements (200.6 million DKK ~ 24.4 million USD)
- Subsidy for product targeted energy savings (36.7 million DKK ~ 4.5 million USD)
- Subsidy for energy savings in pensioners houses (62.5 million DKK ~ 7.6 million USD)
- Subsidy for conversion of electric heated houses outside collective supplied areas i.e. district heating and natural gas areas (32.6 million DKK ~ 4.0 million USD)
- The Danish Electricity Saving Trust (DEST) (90 million DKK ~ 11 million USD)

Not included in the list are specific research and development schemes, an energy information service for all consumer groups, labelling schemes for electric equipment, buildings and recently vehicles, building codes and campaigns.

The schemes above total about 750 million DKK for 2000 (~ 92 million USD). Apart from the DEST, the Danish Energy Agency is managing the schemes. The Danish Electricity Saving Trust is further detailed later in this paper. The remaining schemes are briefly described in the following.

Subsidy for energy savings in companies: This a broad subsidy scheme covering a broad range of means for companies. Subsidy is given to energy efficiency measures (up to 30% of investments), industrial CHP (up to 40% of investments), development, pilot and demonstration projects and information. The main part (about 70%) is allocated to manufacturing companies. Presently, specific means within the scheme comprise:

- Energy-conscious design of new plants and installations
- Energy management
- Industrial CHP
- Development projects
- Individual investment projects
- Information projects
- Employment of energy managers
- Standard solutions for energy efficient technologies
- Development of a new programme for smaller trade and industrial companies

- Energy efficiency campaigns targeted individual branches
- Demonstration projects for high energy-intensive processes

Subsidy for CO₂ taxes in energy intensive industries with energy agreements: Agreements are entered between Danish Energy Agency and energy-intensive companies. The companies agree to implement certain energy saving measures and to initiate energy management. As compensation, it receives a subsidy, which partly covers the CO₂ excise duties. The agreement could also cover a range of companies with similar processes.

Subsidy for product targeted energy savings: Subsidy is given for development of new energy efficient products, for initiatives, which promotes marketing, purchase and use of energy efficient products, for analyses and for pilot and demonstration projects.

Subsidy for energy savings in pensioners houses: Subsidies are given for energy saving measures, i.e. insulation, windows improvements, etc., in houses owned by pensioners, who receive partly coverage of the heat bill as part of the social security system.

Subsidy for conversion of electric heated houses outside collective supplied areas i.e. district heating and natural gas areas: Subsidy is given for private houses and public buildings located outside areas of collective heat supply through a district heating or natural gas system. Subsidy is given for installation of a central heating system.

In general, the energy savings in the business sectors are more cost-efficient compared to other sectors.

IV. Activities by the Energy Utilities

Of the energy utilities, especially the electricity utilities are active within electricity savings. They have had a very long tradition of consumer information, which started by advising on how to use the electric appliances and electricity safety. Over the years, more electricity saving areas have been including in the work areas.

All electricity utilities are doing saving activities, either directly through the utility or through being part of an energy centre together with other utilities. This was more formalised as part of an agreement between the utilities and the government in 1992, which established the level of services and the average budget spent.

Today, more than 200 full time employees in the electricity sector are working with saving activities. In average, 0.005 DKK/kWh supplied (~ 0.0006 USD/kWh) should be spent on saving activities.

The set-up is being changed due to the opening of the energy market. The electricity utilities will be

split into production companies for electricity production, grid companies for operating the grid, trade companies for sale to elective customers and supply obligation companies for the remaining customers.

The grid and the supply obligation companies are by law obliged to promote energy efficiency, while it is expected that the trade companies will offer energy efficiency services as valued added to the electricity sale.

The typical activities by the utilities comprise:

- On-site counselling of customers
- Telephone counselling
- Arrangements for schools and other groups
- Show rooms
- Exhibitions
- Information
- Loan of saving tools
- Campaigns

The on-site counselling of customers is mainly for industrial customers, which are offered energy auditing services for free. This is the largest activity by the utilities. Onsite counselling of residential consumers is primarily focused in customers with electric space heating, which have the largest potential for savings compared to other residential consumers.

The telephone counselling is used for giving advices to the consumers, especially for residential customers. In many cases the contact is initiated in connection to questions to the electricity bill.

Arrangements for schools and other groups comprise an arrangement at the utility, where presentation is given on savings in connection to kitchen appliances, washing machines etc. It could include practical demonstrations. School arrangements are for school children at the age of 13 to 16 and the arrangements normally also comprise general information about the electricity sector, electricity safety etc.

Show rooms for the residential consumers comprise a working exhibition of a large selection of the white-goods and other appliances on the market. Consumers can get advices regarding the purchase. An efficient tool used by the utilities is ELDA, a database with data on all household appliances on the market.

Exhibitions comprise information to the customers about energy savings, their electricity bill, general information on the utility, etc.

Information comprises leaflets with good advices when purchasing and using appliances and informative billing, which is providing clear information on the development in electricity consumption on the electricity bill.

Loan of saving tools comprise loan to residential consumers of boxes with CFLs, electricity meters and thermometers. The consumers can use these at home for checking types of CFLs required for the lamps, measuring electricity consumption for appliances such as the refrigerator and controlling the temperature in the refrigerator and freezer.

Campaigns comprise information campaigns and subsidy campaigns during which subsidies are given to efficient equipment.

District heating and natural gas utilities are less active within energy saving activities targeted the individual customer. They have been part of campaigns for condensing gas boilers, installation of solar thermal heaters and use of gas stoves. Furthermore, they provide informative material to the customers. A few are included in energy centres in collaboration with electricity utilities.

V. Activities by Non-governmental Organisations

Several energy and environmental organisations are active in Denmark within the area of energy efficiency. One organisation, which is having energy high in the agenda is the SEK (collaborating energy and environmental offices). The organisation is closely connected to the Organisation for Renewable Energy, OVE. SEK consists of around 20 offices connected to local associations and the staff gives advices in energy savings, renewable energy and environment. The main part of the offices receives subsidies from the government for part of their activities.

Several other more environmentally based organisations cover areas within energy savings.

VI. Establishment of the Danish Electricity Saving Trust for Electricity Savings

Danish Electricity Saving Trust (DEST) was established by a law passed by the parliament in end of 1996. The objective of DEST is to promote savings in electricity consumption in dwellings and public institutions in accordance with socio-economic and environmental considerations.

DEST was established to fill a gap in the governmental schemes, because the household and public sectors did not have any schemes for electricity efficiency of importance even though government's action plan, Energy 21 had efficient electricity use in all sector as a priority.

The trust model was selected as a new kind of organisation in Denmark. Previously, similar schemes were implemented by the Danish Energy Agency. However, the parliament wanted to create a new model, which in a higher degree than previously could involve all possible stakeholders in the implementation and could act more freely within the scope of the organisation.

A trust model could however also cause less optimised collaboration between the trust and the traditional organisation for electricity savings, due to the shifting of the responsibilities from the traditional organisation to the new organisation.

DEST is led by a Board, which should represent expertise and interests within the sector. The Minister of Energy and Environment appoints the Chairman and the individual members of the Board. DEST has a small secretariat with six permanent staff members including assistants. Due to the limited staff, DEST involves consultants for specific activities.

DEST has two main areas:

- Conversion of electric heated houses in areas with district heating or natural gas to central heating based on the collective energy supply.
- Development, marketing, procurement and utilisation of electricity saving appliances and equipment.

Subsidies may be used within these areas.

The total annual budget of DEST is around 90 million DKK (~ 11 million USD). It is financed by a small extra tax (0.006 DKK/kWh, ~ 0.00073 USD/kWh) on the electricity consumption for the target groups, i.e. the household and the public sectors.

The conversion of electric heated houses covers the largest part of DEST budget for the first ten years.

The expected electricity savings by DEST activities are 70 GWh/year for the electric conversion and 5-10 GWh/year for the electricity saving appliances and equipment. These figures should be achieved in addition to the savings achieved in the previous years, thus in the tenth year, savings of a total of 750-800 GWh/year should be achieved. This corresponds to about 6% of current electricity consumption in the household and public sectors.

DEST collaborates with a broad range of partners in Denmark and has transparent procedures for all of its work. The work can be followed through DEST's web site (www.elsparefonden.dk).

The main specific means initiated by DEST are presented in the following.

VII. Conversion of Electric Heated Houses by DEST

In Denmark it is not anymore allowed to establish electric space heating for buildings in areas with collective heat supply from either district heating or natural gas. However, still 50,000 buildings in these areas have electric space heating. A main activity by DEST is to support the conversion of these houses to collective energy supply. The target is to convert these 50,000 buildings over a period of ten years.

Previous experiences in Denmark with government subsidies for this kind of conversion resulted in

high installation costs for installation of the central heating systems comprising heat unit, heat distribution and radiators. The new approach by DEST is to enter collaboration with both the energy utility in the area, i.e. the district heating or natural gas utility, and an installation company. The basis for the collaboration is that the energy utility, the installation companies and the society all will benefit from the conversion.

The energy utility will benefit from having extra customers at small marginal costs; the installation companies will have economies of scale if the company will be in charge of the majority of the conversions in an area and the society will benefit from the reduced electricity consumption. It is therefore natural that all three partners should contribute with an economic support. The principle is called the three-stage rocket.

DEST will only work with energy utilities, which want to participate and want to contribute positively. In the remaining areas, no campaigns will take place.

The energy utility will contribute by reducing the connection costs or even give a small subsidy to the customer if connected and by taking part in a campaign towards potential customers. Typically the connection costs are around 15,000-25,000 DKK (~ 1,800-3,000 USD). The installation company will contribute by reducing the installation costs from typically 60,000 DKK (~ 7,300 USD) to 50,000 DKK (6,100 USD), which takes place through a public tender of a framework contract for installation in a specific area for a fixed price depending on number of radiators. Finally, DEST will give a subsidy of 10,000-15,000 DKK (~ 1,200-1,800 USD) to the customer. All three partners will participate in a marketing campaign.

In this way, the subsidy by DEST has been multiplied three times by having a total subsidy level from all three partners of about 40,000-45,000 DKK (~ 4,900-5,500 USD) per installation in average.

The total investment for the customers is reduced substantially due to the subsidy, about 50%, and in some case up to 75%. The payback time is about 3-6 years.

The trust is using an efficient standard procedure for the promotional campaign with brochures, advertisements, public meetings, sales persons, etc. Furthermore, information is taking place through DEST's website and a dedicated web site called "goodbye electricity" (www.farvelel.dk).

The results achieved so far are successful. 4,000-5,000 houses are being converted each year. An external evaluation in 1998 showed that DEST achieved a reduction of CO₂ emissions that is four to five times greater per DKK paid out in subsidy compared to other subsidy schemes.

VIII. Procurement Policy Initiative for Public Organisations by DEST

DEST launched in beginning of 1999 a procurement policy initiative for public organisations and public housing associations with the common name "The A-club". The basic idea is that an agreement is entered between DEST and the individual public organisations. The organisation obliges itself during the following four years only to procure electric equipment, which is within the best 20% to 30% of the market regarding low electricity consumption. E.g. only A-labelled white-goods can be bought, which has given the name of the initiative. The incentive for the organisations is mainly image creation, i.e. being an environmentally greener organisation.

It is common in Denmark that the public housing associations provide the households with refrigerators, freezers, electric cookers and in some cases washing machines. About 20% of all refrigerators and kitchen stoves are purchased by public housing associations.

DEST supports the organisations in the A-club with simple procurement guidelines printed on one sheet of paper. DEST has furthermore started publishing a quarterly newsletter and has established a web site for the A-club (www.a-klubben.dk). The newsletter and the web site support each other by having the newsletter detailed on the web site. The web site provides more detailed information on the electric equipment including good advices when purchasing and using the equipment. Furthermore, a member-only area has a discussion forum through which the members can give each other advices related to electricity savings and implementation of the A-club agreement.

DEST has also carried out a public framework tender for reducing the price of the A-labelled refrigerators and has during a shorter period given a special subsidy of 500 DKK (~ 61 USD) per refrigerator for organisations buying through this framework agreement. In future, framework tenders will probably take place through a collaborating organisation, Indkoebs Service (Purchase Service), which provides low prices through framework contracts that all public institutions can use. A recent tender on energy efficient lighting resulted in price reductions of up to 60% compared to normal market price.

In addition, some of the demonstration projects being carried out by DEST take place with A-club members as participants.

The procurement guidelines are based on European schemes within the area, which is the energy labelling for white-goods and the GEA scheme (GEA: Group for Efficient Appliances), which is based on the Swiss Energy 2000 scheme.

The present guidelines include refrigerators, freezers, washing machines, clothes dryers, dish washers,

computers, monitors, printers, copy machines, fax machines, multifunction machines, scanners, TV sets, videos, combined TV-video sets, audio equipment, lighting, battery chargers, wall packs and energy saving devices for disconnecting equipment after a period without use.

The background for the initiative is that bulk purchasers in public organisations and public housing associations often purchase equipment with higher electricity consumption compared to private households. The reason for this may be that the bulk purchasers do not evaluate investment and operation costs as a whole, whereas households directly benefit from a lower electricity bill. On the contrary, the bulk purchaser is often under pressure to reduce expenses for buying equipment.

It is the aim of DEST to turn this tendency around by supporting and motivating the bulk purchasers to make energy-correct purchases.

The initiative supports other initiatives by DEST of creating a higher demand for equipment with low electricity consumption and thereby of reducing prices.

The results so far are quite promising. Presently, almost 80 organisations have entered an agreement and the number is still growing. Through the public housing associations in the A-club more than 100,000 households are covered. State institutions have recently started joining the club, e.g. the Danish Parliament, the Technical University of Denmark and the Danish Railway Company, DSB.

When all these organisations from now on only procure efficient equipment, an immediate impact on the electricity consumption will be achieved.

IX. Campaigns for Efficient Appliances by DEST

An important means to reach the broad public are campaigns for efficient appliances. DEST carried out a campaign for A-labelled refrigerators, freezers and clothes driers during last part of 1999 and has participated in a campaign for gas stoves substituting electric stoves.

The campaign for A-labelled refrigerators, freezers and clothes driers (i.e. only one A-labelled drier was on the market at that time, an AEG heat-pump driven type) was carried out in the period from 20 September to 4 December 1999. The aim was to increase the sale of A-labelled appliances during the campaign, to increase the number of A-labelled appliances on the market and to increase the awareness on efficient equipment.

500 DKK (~ 61 USD) was given to the customers for each cold appliance bought in the campaign period and 1000 DKK (~ 122 USD) for the clothes drier. Agreements with the larger shop chains were made in order to do a more comprehensive campaign. The shops also lowered their prices, which made the A-labelled refrigerators and freezers just as cheap as the corresponding B-type when the subsidy was

subtracted.

The electricity utilities collaborated during the campaign through a general campaign on A-labelled appliances.

The campaign resulted in about 35,000 sold appliances, which was about 80% more than expected by DEST. Furthermore, the number of A-labelled refrigerator with freezers on the market increased from 61 to 171 different types.

During the campaign DEST launched a very efficient tool for reducing the price of A-labelled appliances through increasing the price competition. Due to lower sale volumes the profit margin is higher on A-appliances compared to less efficient appliances. The tool consists of a web site with market prices on A-labelled white-goods (www.hvidearepriser.dk meaning "prices on white-goods"). Shops who participate in the scheme can enter their current sales prices on all A-labelled white-goods on the Danish market and the consumers can check where to find the cheapest price before buying an appliance. The web site has recently been translated to English (www.uk.hvidearepriser.dk).

The larger white-goods retailer chains however did not want to participate, presumably due to fear of profit reduction. In spite of this, the web site has substantially reduced the prices because the customer in any case can get price information from the participating retailers. In average 1300 people visited daily the site during the campaign period. The interest continues and now about 500 people visit the site daily.

Customers who do not have Internet access can get the same price information over a telephone service.

The campaign for gas stoves aimed at getting households to maintain their gas stoves or replace their electric stove with gas stove. In many cities in Denmark, the town gas network has been abolished, and only a few major cities have maintained it. The tendency is that households with gas stoves change for electric stoves. In households with natural gas, only a few have gas stoves. During the campaign, a subsidy of 500 DKK (~ 61 USD) was given to the customers when buying a new gas stove to substitute the existing electric stove. The campaign was implemented by the gas utilities and DEST only provided the subsidy funds.

DEST has launched a CFL (Compact Fluorescent Lamp) campaign, which will be ongoing during October and November 2000. No subsidies will be given to the customers due to the administrative costs of handling a very high number of smaller subsidies. The retailers can get part of their additional promotional costs covered. Agreements with the suppliers on price reductions have been entered combined with a high level of information towards the customers partly through a web site (www.a-paere.dk), partly through advertisements, public information, in-store material, etc. The web site will

include a list of approved quality CFLs and a list of typical lamps used in Danish homes with indication of which CFLs fit into the lamps.

X. Demonstration and Development Projects by DEST

DEST initiates demonstration and development projects for testing and developing technologies in order to have a better foundation for establishing strategies for efficient equipment and for developing new and more efficient equipment. Ongoing and finalised projects comprise:

- Ventilation systems in schools
- Lighting in schools
- Lighting for building passages
- Demonstration projects for energy efficient clothes washing and drying in the household sector
- Use of flat screens for computers
- Development of super low electricity refrigerators
- Environmental documentation of A-club procurement with copy machines as an example

As an example of the projects, the demonstration projects for energy efficient clothes washing and drying in the household sector is briefly described in the following.

XI. DEST Demonstration Projects for Energy Efficient Clothes Washing and Drying in the Household Sector

The long-term objective is to increase the market share of new, energy efficient appliances for clothes washing and drying in households and laundrettes including appliances, which substitute part of the electricity consumption with district and central heating and with natural gas.

The short-term objectives are:

1. To test new, energy efficient appliances for clothes washing and drying in approximately 50 households and in two laundrettes, to measure and to collect observations and practical experiences.
2. To evaluate the appliances on the basis of the tests and analyses, including energy and environment issues, technical function, use qualities, barriers for introduction of the appliances on the market and possibilities for removal of the barriers.
3. To disseminate the results to relevant groups, including public and private owners of buildings, manufacturers and suppliers of appliances and public authorities and through this, influence them

for promoting the introduction of the appliances on the market.

4. To support the DEST in formulating a strategy for introduction of the appliances on the market.

The appliances comprise washing machines with combined cold and hot water intake, a three-kilos washing machine for smaller households, specially developed washing machines and clothes dryers with heat exchangers for central and district heating, clothes dryers with heat pump, gas-heated clothes dryers and an un-heated clothes cabinet dryer. For the laundrettes washing machines with combined cold and hot water intake and clothes dryers with heat pump are being tested.

The perspective is that in the long term about half of the electricity consumption for clothes washing and drying can be saved corresponding to 5% savings of the total electricity consumption in the households.

All the machines are being tested over a one year period during which data and other information are collected including the clothes weight for each wash and drying. The project is expected to be completed during by the end of 2000.

XII. Changes Due to the Electricity Market Reform

The electricity market is under reform and by 2003 all consumers can freely select their supplier. Electricity utilities responsible for promotion of electricity savings in accordance with the reform are described in the previous section on the utilities. In addition to the present trade companies for electricity, more companies are expected to be offering electricity. It is expected that these companies in a certain degree also will be offering energy saving services. The level and type of services as well as the reactions from the future customers are uncertain.

One fact is that the electricity price will be reduced due to the competition in supply. If no other measures will be taken, this will counteract electricity savings.

As part of the electricity reform, the government has prepared and passed an energy saving act. It includes establishment of local energy saving committees for debating energy savings; energy savings in public buildings; labelling of energy consuming equipment, machines, installations, buildings, vehicles, etc., and energy pricing issues. Several organisations have however expressed that the act is unsatisfactory and does not provide a sufficient level of activities.