

# Functional service contracts for white goods: selling a function instead of a product (FUNSERVE)

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## 1. SYNOPSIS

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Functional Service contracts supply households with energy-efficient A-class appliances including full service and guaranteed refurbishment or recycling afterwards, thus providing both maximum ecological benefits and customer convenience.

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## 2. ABSTRACT

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The FUNSERVE project, which is co-funded by the European Commission SAVE programme and started in June 1999, aims to examine and field test a new concept, which offers customers the services that they need (e.g. refrigeration) instead of an appliance that provides this service. With this concept, the leading European appliance manufacturer Electrolux and three electric utilities in Germany and Austria will jointly offer to customers a package consisting of a very energy-efficient appliance, full maintenance, and perhaps the electricity and water it needs, for a fee collected with the utility bill.

This approach will increase the market share of energy-efficient appliances by overcoming the barrier of a higher initial investment. It can be a successful value-added service for the electric utilities in the liberalised market. And it can reduce waste, since used appliances are expected to be refurbished by Electrolux and rented or sold again.

An intensive customer survey in three German and Austrian cities yielded promising results. Between 10 and 20% of the respondents showed a high interest in using such a service, and the proportion was even higher for those who are about to acquire new appliances. Customer surveys and a limited field test in Sweden confirmed this. In Germany and Austria, field-testing of the concept will also be the next step.

The paper presents current results from the FUNSERVE project.

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## 3. INTRODUCTION

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Successful policy initiatives like the EU labelling scheme, minimum efficiency standards and negotiated agreements, and co-operative procurement, have considerably improved the average energy efficiency of domestic appliances in the European white goods market. However, there is still a wide span of the energy consumption required by different appliances serving the same function, making it desirable to increase the market share of the most energy-efficient models (e.g., those with EU label class A). On the other hand, there are a number of barriers for this, most notably the often higher price of energy-efficient models, particularly as the market is increasingly split between high-value, high-efficiency models and low-value, low-efficiency models. Furthermore, not only energy efficiency but also more efficient use of other resources is needed, so that an extension of the useful life of appliances is a target.

Manufacturers of white goods face a stagnating market, which makes them look for new business opportunities. On the other hand, they face a continuing demand from policy and public to increase the energy efficiency and reduce the resource use of their products. Similar demands are put upon energy and water utilities, who are under public pressure, e.g., to contribute to the abatement of global warming. In the liberalised and competitive European

electricity and gas markets, the costs of demand-side management programmes to increase energy efficiency can often not be passed on to customers via the electricity prices as before; this is currently the case in Germany and Austria. Utilities are, therefore, looking for new ways, which are compatible to competition in energy supply, to provide energy efficiency services to their customers.

Against this background, the leading European appliance manufacturer Electrolux, three electric utilities in Germany and Austria, and the Wuppertal Institute created the idea to rent to the utilities' customers the services they need (e.g., refrigeration, cooking, washing dishes and clothes), instead of just selling appliances. This "functional service" would be a package consisting of a very energy-efficient appliance, full maintenance, and perhaps the electricity and water it needs, for a fee collected with the utility bill. After use, the appliance would be collected and refurbished by Electrolux and rented or sold again.

This approach allows several objectives to be addressed simultaneously:

- First, the market share of energy-efficient appliances is increased, thus contributing to increased economic welfare through reduced energy costs, and combating global warming by reducing electricity production and related emissions. The functional service approach considers the total lifetime costs of appliances, which is often lower for energy efficient appliances despite their higher initial cost.
- Second, since no initial investment is needed, the functional service approach makes energy-efficient appliances affordable to customers who would otherwise buy cheaper models, which are often inefficient and expensive to run.
- Third, it can thus be a successful value-added service for the electric utilities in the liberalised market, which also allows the utilities to contribute to their environmental targets in a way compatible to competition in energy supply.
- Fourth, it creates new business chances for the manufacturer and the retail trade in a stagnating white goods business, and increases the market share of the high-value, high-efficiency models.
- Finally, it can reduce waste, since used appliances are expected to be refurbished by Electrolux and rented or sold again.

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## 4. THE FUNSERVE PROJECT

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The FUNSERVE project has the aim to develop and field-test the new approach in four EU Member States: Austria, Germany, Sweden, and the UK. The project partners are:

- The appliance manufacturer Electrolux AB;
- 3 electric utilities (2 Germany, 1 Austria);
- The Wuppertal Institute for Climate Environment Energy (SAVE project Co-ordinator);
- The Environmental Change Institute at the University of Oxford.

The targets of the project are:

- To assess the benefits and costs of the concept for customers, manufacturers, utilities, and society as a whole, and to determine for which appliances and under which conditions the economical and ecological advantages outweigh possible disadvantages;
- To assess the environmental as well as the market potential for the functional service, related to the given or to possibly improved conditions;
- To examine in detail the technical, economical and legal feasibility of this new approach, depending on the situation, in particular on the degree of liberalisation and the regulatory framework of the electric utility industry, in four European countries chosen as examples;
- To test the market acceptance of such a service through empirical research and a field test;
- To give hints on a possible extension of the new service to other energy end use products and other customer segments.

The project is divided in two main tasks:

- In the first task, the possibilities and chances of the functional service concept were assessed in a concept and feasibility study in all four countries, including empirical research on customers' needs in Austria, Germany and Sweden. This task is now concluded, and the results are the main basis for this paper.
- Based on this, if the feasibility and the market potential looks promising, in the second project task full-scale field tests including both the marketing and the use phases of the service will be held and evaluated by the partners. Such field tests are currently being prepared.

The project concentrates on the renting of energy- and water-efficient appliances; the post-use phase (refurbishment and resale) is not the focus, but will be assessed based on existing data.

The FUNSERVE project started in June 1999. The project is co-funded by the European Commission SAVE programme and by Bremer Energie-Konsens GmbH. In Sweden, the concept has been developed using market research, and a small-scale field test in the island of Gotland has been held. In Germany and Austria, the concept has been developed and the empirical research on customers' needs has been performed, but the detailed design of the field tests is still ongoing; more information is expected to be given at the Conference. In the UK, concept development is still ongoing. The project is projected to run until the end of 2001, when the evaluation of the field tests is expected to become available.

This paper will present results on the project phases and countries as detailed in the following table:

**Table 1. Results on the project phases and countries presented in this paper**

<b>Phase/Country</b>	<b>Austria and Germany</b>	<b>Sweden</b>	<b>United Kingdom</b>
Feasibility/Concept	X	X	
Market research	X	X	
Field Test		X	
Evaluation			

More detailed information on the results to date can be found in the project intermediate report to the European Commission (Wuppertal Institute *et al.* 2000).

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## 5. RESULTS FROM AUSTRIA AND GERMANY

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### **The concept of FUNSERVE for Austria and Germany**

In Austria and Germany, the functional service concept was analysed for a range of most energy- and water-efficient appliances of the AEG brand. This range included almost all major types of white goods – clothes washers and dryers, dish-washers, refrigerators, freezers and fridge-freezers, and gas cookers.

A detailed analysis of the existing technical options for measuring electricity and water consumption and for automatically transferring the data to the utility revealed that it is currently still too expensive to include the energy and water consumption into the service, unless a data transmission infrastructure is already in place (see Swedish example below). So the project team decided to proceed with the analysis of a mere renting scheme for the most energy- and water-efficient appliances. This scheme includes

- Free delivery and installation, with instructions on the optimal use of the appliance in terms of energy, water, and detergent consumption,
- Free repairs, and a service hotline, and
- Removal of the appliance after the agreed contract period.

After the removal, Electrolux will take the used appliance back and refurbish or recycle it.

Some of the utilities are interested to be the supplier of the service, while others only want to be a partner in marketing the service; so the supplier would be either the manufacturer or the local retailers. The retailers are

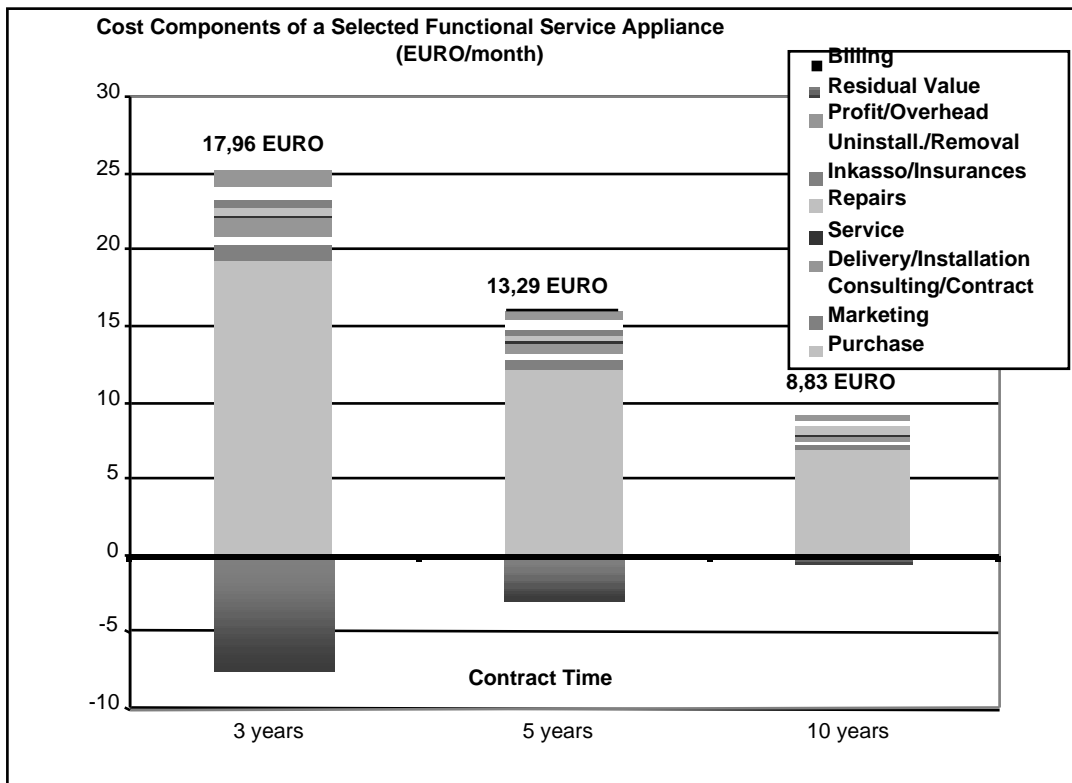
important partners for the AEG brand, so it is clear that they should also be partners for the functional service. There are, thus, three possible concepts for organising the service, and for the roles of the partners in the different steps; and sometimes there are alternative options for the steps:

**Table 2. Roles of the partners in organising the service – three alternatives**

Supplier of FUNSERVE	Alternative 1: Utility	Alternative 2: Manufacturer	Alternative 3: Retailer
<b>Task</b>			
Marketing	Jointly: utility, manufacturer, retailers	Jointly: utility, manufacturer, retailers	Jointly: utility, manufacturer, retailers
Point of sale	Utility info centre or retailers	Retailers	Retailers
Delivery / Installation	Retailers / Utility?	Retailers	Retailers
Hotline	Utility	Manufacturer or retailers	Retailers / Utility?
Service	Retailers or manufacturer	Manufacturer or retailers	Retailers
Billing	Utility	Utility as service; manufacturer	Utility as service; retailers
Removal after contract period	Retailers / Utility?	Retailers	Retailers
Refurbishment/ Recycling/ Resale	Manufacturer	Manufacturer	Manufacturer

Electrolux provided appliances prices for wholesale of the new, and for taking back the used appliances, and Electrolux and the utilities provided some other cost data. Based on these and on estimates of the missing data, possible prices for this renting service were calculated. These prices also sought to provide a fair offer to customers compared to buying an appliance, and a fair business to the manufacturer, the retailers, and the utility, after such a service will be fully introduced in the market.

**Figure 1. Cost components of a selected Functional Service Appliance, dependent on contract duration**



However, it proved crucial for an objectively fair offer to the customers that the appliances achieve a certain residual value when sold back to the manufacturer. I.e., the full economic (and ecological) benefits of the concept can only be

harvested if really a market for high-quality, manufacturer-refurbished used appliances is established in parallel to FUNSERVE.

### Results of the customer surveys

After the concept was developed, it was tested in a number of surveys. The most important survey was based on a written questionnaire, which was sent to 3,000 of their customers by each of the three municipal utilities. This quantitative survey was complemented by focus groups and interviews with both institutional buyers (housing companies, student's homes) and retailers.

The written questionnaire asked for the attractiveness of the offer for a washing machine and a fridge-freezer, using three different combinations of contract duration (3, 5 and 10 years) and price for each of the two appliances. The questionnaire also asked for the motivations of customers why they would use the service, also for other types of appliance, which features would be most interesting, and for some optional features. Furthermore, the questionnaire allowed for differentiation of lifestyle groups and socio-economic factors.

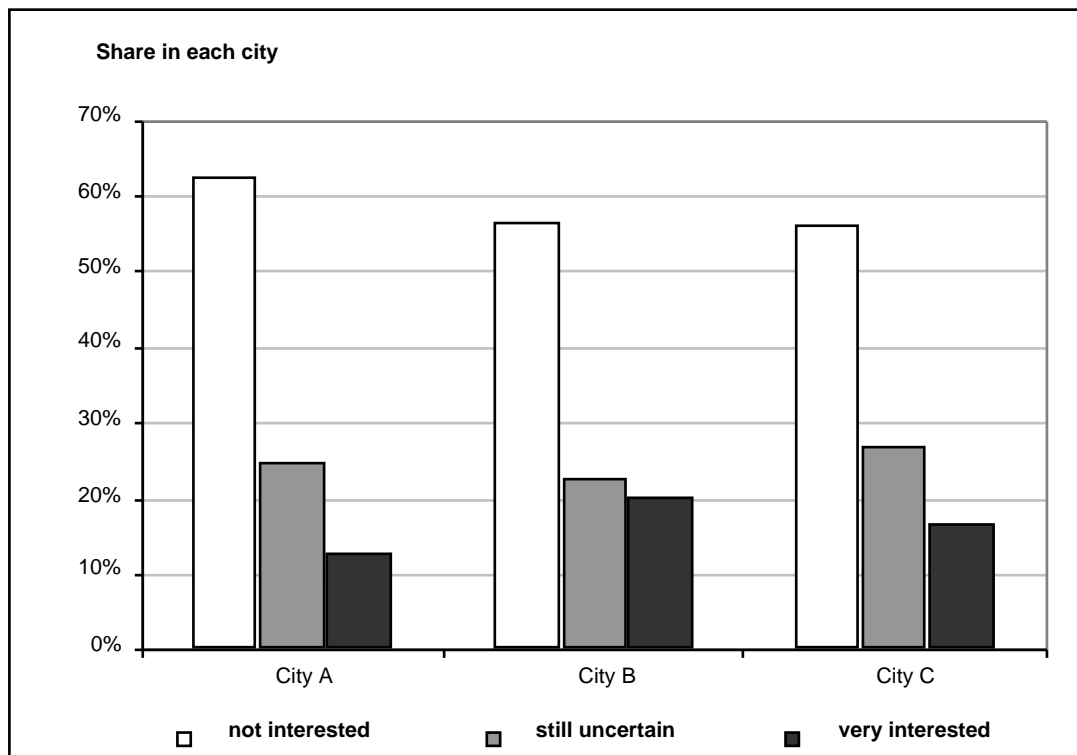
The customer surveys revealed a promising level of interest for this new service. As Figure 2 shows, between 12 and 21% of the respondents showed a high interest in using the renting service, and in addition more than 20% may be interested. When looking only at those customers who are about to acquire an appliance, the share of customers who are interested becomes even higher.

It is also interesting that those who are interested in the service consider the utility as the preferred supplier of such a service: Between 60 and 80% of those who are interested in the service say the utility should be the supplier; 40% each would accept the manufacturer or the retail trade (multiple answers possible).

Furthermore, depending on the location and the appliance, most of the interested respondents prefer the 10 years, or the 5 years contract duration, but much less the 3 years duration.

Overall, the survey showed that this renting offer is perceived as something new and different from leasing by the customers. The option to buy the appliance after the contract period, like in leasing schemes, did not receive a high score by the respondents. The interested customers seem to like the freedom from possessing an appliance that the service creates for them.

Figure 2. Customer interest in the Functional Service in Austria and Germany



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## 6. FIRST RESULTS FROM SWEDEN

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### Background

In Sweden, the major utility Vattenfall has for the last few years been running a technical project testing intelligent electrical meters. It is among other tasks possible to perform a remote reading of the electricity consumption and get access to various appliances and products connected to the powerline.

Vattenfall and Electrolux have been in discussion about various partnership projects during some years, all related to get the consumers to use energy efficient appliances and get them to use the appliances in a smarter and more energy efficient way.

The technical platform, used in Vattenfall's project in the island of Gotland makes it possible to test an interesting concept of supplying appliances to the households. Instead of selling or renting out the appliances it is possible to get the payment from the consumers to the producer according to how much the appliances are used.

When the project was started, 7.000 smart meters had been installed, mainly around the city of Visby.

### Project concept

The idea behind the project was to design a business model around selling a function instead of a product, i.e. to base the commercial relationship between the user and supplier of the appliance on how much the appliance is used.

Since the project has its origin in the environmental department of Electrolux, the environmental issues of the project were highlighted. The appliance selected for the test was one of the most energy efficient products in the range of Electrolux. Furthermore one important assumption in the project was that the appliances used in the project should be used in a more energy efficient way than the appliances sold under normal conditions. If a consumer is aware that each washing cycle costs a specific amount of money, it is foreseen that he/she will fill the washing machine with a maximum load before starting it.

The end consumer signs an agreement with AB Electrolux, represented by the local Home-dealer (Electrolux has a chain of franchise shops in Sweden, selling exclusively Electrolux products). The initial payment for the consumer is 495 SEK (approximately 60 Euro), covering the cost for the installation. The agreement period is not written for a certain time period, instead the limit is set to 1,000 "washing cycles". A "washing cycle" is defined as 1 kWh of electricity used. This gives an additional incentive to use the lowest washing temperature possible (1 kWh roughly accounts for one 60°C wash or two 30°C washes; consequently, the user will probably wash two charges for the price of one as often as possible). For each "washing cycle" (= 1 kWh) the consumer pays 10 SEK (1.25 Euro). If the consumer terminates the agreement before 1,000 cycles, the consumer has to pay for the cost to collect the washing machine (max 500 SEK/ 60 Euro).

During the duration of the agreement Electrolux owns and services the machine. At the end of the agreement Electrolux is responsible for the used product. It can be scrapped, remanufactured or used as a source of spare parts.

The consumer has the right to get a new machine, after signing a new contract when the agreement ends.

### Project phases and involved parties

As a first step, a rough potential analysis was carried out by interviewing 650 households, asking them on the telephone about their views of the Pay-per-Wash-concept. The answers were rated in a 1 – 10 scale, with 1 = not at all interested and 10 = very interested.

The results were encouraging:

5% of the interviewees were easy to convince (10 on a scale 1-10); 13% might become possible customers on short sight (8-10 on a scale 1-10); and 24% might become possible customers on longer horizon (6-10 on a scale 1-10). On the whole, more than 40% of the households stated their interest in the new concept.

This quantitative potential analysis was followed by 6 focus group discussions in Sweden with the objective to find out more details about the important features of a Pay-per-Wash-offer, i.e. service level, additional functions etc.

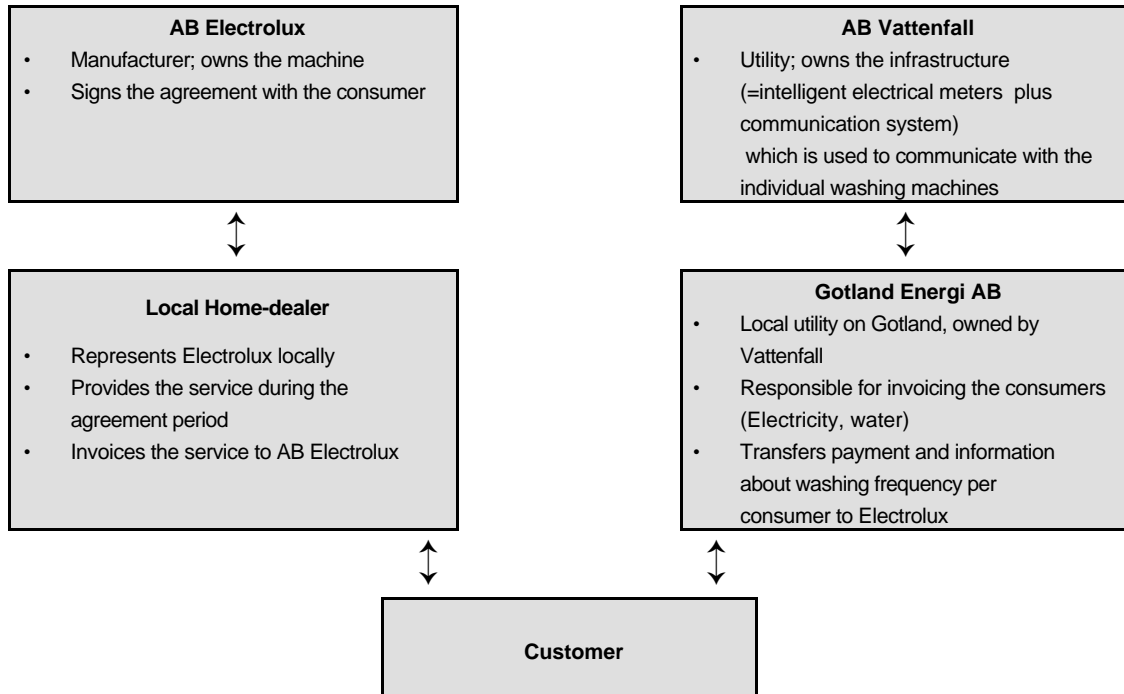
In a second step, several possible pricing models were investigated in a pricing model test, including the customers' willingness to pay and the estimated value of a washing cycle.

Simultaneously, a field test for the pay-per-wash concept on the Gotland island was prepared. Suitable machines were selected and technically adapted for this test. The selected machines are standard except for an added energy meter.

During the installation, an extra connection, compared with a standard installation, has to be placed between the energy meter of the appliance and the electrical meter of the home.

The different tasks of the involved parties are illustrated in the following Figure 3:

**Figure 3. Tasks of the involved parties in the Swedish Pay-per-wash field test**



The Swedish field test on the Gotland island is still on-going. First results might be presented at the conference in June 2001.

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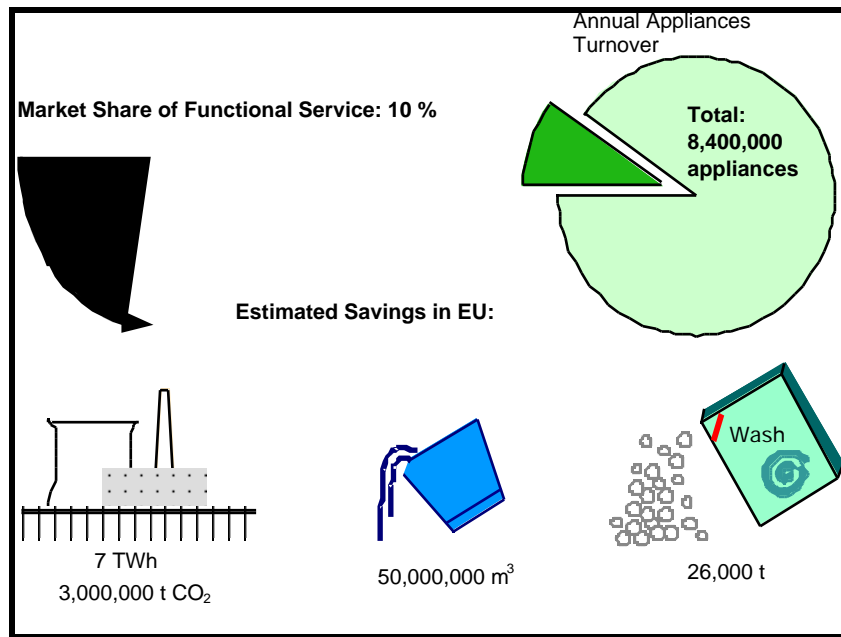
## 7. CONCLUSIONS AND OUTLOOK

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The customer surveys in Germany, Austria, and Sweden, and the Gotland field test have provided promising perspectives. There seems to be a considerable fraction of domestic customers who are interested in renting an energy- and water-efficient appliance. The retail trade also has shown a high interest in being a partner in such a service. Based on these results, the partners can take a decision on further field tests. These will be needed to prove if really this new approach can provide a fair offer to customers compared to buying an appliance, and a fair business to the manufacturer, the retailers, and the utilities.

Such a service could also yield high environmental benefits. If only 10% of the appliances market could be converted to a rental market for efficient appliances in some years from now, we estimate that in the EU within 10 years the annual electricity demand could be reduced by approximately 7 TWh, corresponding to a CO<sub>2</sub> emission decrease of nearly 3 million tons per year. Furthermore, 50 million m<sup>3</sup> of water and 26,000 tons of detergents could be saved each year.

Figure 4. Estimated energy, water, and detergent savings in the EU in case of a Functional Service market share of 10%



The savings can be increased, if remote metering, as in the Swedish pilot, becomes available at reasonable prices for more households in Europe, or for implementation in all appliances. Then the energy and water consumption can be included in the price and the bill for the FUNSERVE, making it a real Functional Service, and giving incentives to the customers for optimal use of the appliances, e.g. to use lower wash temperatures for clothes and dish washers, and to use the machines only when they are full.

Furthermore, the economic analysis confirmed that the full economic (and ecological) benefits of the concept can only be harvested, if really a market for high-quality, manufacturer-refurbished used appliances is established in parallel to FUNSERVE. In Sweden, Electrolux has already installed a refurbishment line in one of its factories; in Germany, Austria, and the UK the possibilities for refurbishment still have to be explored.

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## 8. REFERENCES

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Wuppertal Institute *et al.* 2000: *Selling a Function Instead of a Product: Renting White Goods via Functional Service Contracts (FUNSERVE)*, SAVE Project Intermediate Report, Wuppertal, 2000