

Evaluation of the Energy Efficiency Check in Norway

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1. SYNOPSIS

Surprising results from evaluation of the Energy Efficiency (EE) Check, a Norwegian residential EE program; little effect used in mass distribution, change of use needed.

2. ABSTRACT

The Energy Efficiency Check (EEC), an EE programme, is a standardised EE audit for households in Norway. It has been used in national EE campaigns and other mass distributions. Being the EE tool of the residential sector that has required the most resources in the last years, both its goals and effects have been disputed. The results and conclusions produce valuable input to the current reorganisation of the total EE-enterprise in Norway, covering use of public funding, organisation and implementation of EE programs.

The findings are interesting and, by first glance, quite depressing for the parties that have put a lot of resources in this particular EE programme.

The most important findings are:

- The EEC used in a mass distribution has little effect on implementation of EE measures
- Customers who have not received the EEC seem to have implemented most EE measures overall
- It seems likely that the participants sought confirmation more than advice

The gain of the EEC has for the most part been successful passing of knowledge and marketing of the EE Centre and its services to end-users.

One conclusion is that one should be clear on what goals that are set to an EE programme and shape the contents and implementation accordingly. It looks as though one had expectations that the EE Check would give kWh savings, but that the programme is designed to give other gains.

We do not recommend mass distribution, but believe that the EEC can become a useful data tool in a personal advice situation one-on-one with selected customers.

3. INTRODUCTION

The evaluation of the Energy Efficiency Check (EEC) is one of 10 case projects in the SAVE II project “A European Ex-post Evaluation Guidebook for DSM and EE Service Programmes”.

The guidebook, developed in a “phase one”, is aimed at checking *ex-post* to what extent the outcome of the DSM and EE service programmes meet the anticipated and declared objectives. In spite of it being an ex-post methodology, it is also envisioned as a planning instrument for new DSM and EE programmes.

The project objective is to test the validity and usefulness of this draft guidebook and provide valuable feedback on the relevance of the presented evaluation issues and techniques. Actual evaluation of 10 DSM or EE services

programmes has taken place. In addition, this "second phase" provides applied examples incorporated in the guidebook as illustrative cases.

4. NORWEGIAN CASE PROJECT

We chose to evaluate the EEC as the Norwegian Case Programme. The EEC was first introduced as a priority programme in a national EE campaign by The Norwegian Water Resources and Energy Directorate (NVE) in 1997, and has later continued to be an important element in several campaigns. In a white paper from the Norwegian parliament, regarding Environmental politics for a sustainable future it is an expressed goal that all households in the country (houses and semidetached houses) built before 1980 shall undergo an EEC of their residence within a period of 5 years.

On the background that the EEC is one of the EE tools of the residential sector that has required the most resources in the last years, and that its goals and effect has been disputed, it is important to strike a balance for this activity. Both the use of public funding, organisation and implementation of this program would benefit from being the subject of evaluation.

The organisation of all Norwegian EE-activities/enterprise is currently under revision by the Ministry of Petroleum and Energy. The authorities plan to establish a new administrative body with a freer position in relation to the public administration than what NVE as a directorate has today. The services and programs that are offered by the Energy Efficiency Centres today will to a greater extent be exposed to free competition. It is therefore important to be competitive and able to show well-documented results. Hence examinations of existing EE services and programmes are increasingly important. The EEC is an example on such an evaluation.

5. PROGRAMME DESCRIPTION

The EEC is sent as direct mail to end-users. It consists of a form with a number of simple questions about the building in relation to energy use. The questionnaire is filled in by the customer and returned to the EE centre. Based on this questionnaire the customer will receive a letter where the specific building's consumption is compared to norms for how much energy a normal house should use. The letter also includes the estimated saving potential of the building and a recommendation of specific EE measures.

The EEC offer was distributed to the customers of the EE centre of Akershus in 1999. Akershus is a county in the central part of Norway. The offer consisted of an introduction letter printed on the EE centre's notepaper and the EEC form. A stamped envelope was also included. When the customer filled in and returned the EEC, it was processed manually by an energy adviser at the EE centre. The resulting customer response consisted of a letter stating simple EE measures that the customer could benefit from as well as a graph of the electricity consumption adapted to the individual house.

6. GOALS

Main goals for the EE programme – The EEC in Akershus

1. More energy efficient households
2. The programme effects most exceed its costs
3. The programme shall create possibilities for follow-up activities

These goals were the basis for the EE centre in Akershus and were stated as main goals for the EE programme. The goals are diffuse and not formulated with regards to a post evaluation. They are not very precise or easy to verify and they say more about the thoughts and opinions of the EECs role in the general national EE policy. The

first goal can be about documenting kWh saved and would hence be possible to verify. The second goal says nothing about what the effect should be or who would benefit from it – the customers, the EE centre or the authorities. This goal would have been good if there was a tracking or monitoring system that would give us comparable quantities. The third goal does not specify the follow-up activities. There is little doubt that the EE centre in Akershus and other EE centres had specific goals as to what kind of follow-up they wanted at the end of the EEC programme. It is also likely that the various counties/centres has had different goals. To clarify this was outside the limits of this evaluation.

The project has taught us a lot about the need to specify clear and precise goals that are possible to meter and evaluate.

Main goal for the national evaluation project

Initially the following goal was defined: “Document kWh saved for the participating households”. This goal was redefined while working with the questionnaire. It proved to be too complicated and time consuming to answer this question through phone interviews. Also the effective output of an exact kWh number for each household is doubtful compared to the use of resources to prepare, design the questionnaire, the length of the interviews and the data processing. The questionnaire was hence designed to answer the following goals:

1. Describe how many more EE measures the participants in the programme have implemented and measure the value of these (in kWh) compared to norms
2. Document other possible effects resulting from the EEC beneficial to the involved parties (national authorities, the EE centre in Akershus, other EE centres)
3. Evaluate the use of resources against possible alternative use

The first goal is the main focus of the evaluation. The questions and the survey have been designed mainly to fulfil this goal. In addition questions were added to create a basis to evaluate whether the last two goals have been fulfilled. Redesigning the first goal to not include documentation of kWh savings has also resulted in changes to the last two as the kWh documentation was removed.

The evaluation has attempted to answer the above. In accordance with the project plan we will also make a recommendation for future use of the EEC intended for relevant decision-makers.

7. THE EVALUATION

The strategy and method for the evaluation

Our choice of strategy is based on the European Ex-post Evaluation Guidebook for EE tools and programmes. The guidebook is useful as an introduction to evaluation of EE programmes as it provides a description of various evaluation methods. We have focused on the methods that seemed relevant to the evaluation of the EEC. The following theory is taken from the guidebook to present a background for the chosen strategy.

Evaluation is particularly important when the EE programme is free, which is the case for the EEC. The demand for a service will in these cases not be sufficient to defend the advantages, effects or results. If the customer had to pay to participate a high response would in itself be a good indicator of a successful programme. An evaluation of the EEC will thus make it easier to argue for or against the programme.

The goals for the EEC have been described above. We would however like to add that there have been several different goals for the national EE policy in Norway. Goals of reducing the import of energy and initiation of grant schemes aimed only or partly at increasing employment have been visible. Marketing of the authorities or EE centres have been obvious goals. The electrical utilities have operated with “customer retention” goals to increase profit margins and profitability.

We need good, clear and realistic goals and a precise EE policy to be able to meter the effect of EE programmes. If the goals are as described above but the monitoring is focused on kWh savings we will soon end up with a lot of “failed” EE programmes and tools.

Key areas of uncertainty

We have focused the evaluation around the question of results and effect in the form of more implemented EE measures (kWh reduction) and the market response to the EEC. Evaluation of the process and implementation of the programme could have been interesting but is outside the scope of this project.

The questions below were formulated to answer the goals of the evaluation.

- **Did the participants energy use alter as a result of participating in the program?** If not, why not? Recommended savings compared to actual savings? What parts of the savings did the EEC cause directly? Other causes for lower energy use: weather, personal economy, increased energy price, changes in attitude, more electric devices, more inhabitants, increased comfort.
- **What would the energy use have been without the EEC?** Past and present consumption data, control sample, baseline studies.
- **What measures would the household have carried out without the EEC and why?** Identify free riders: the exact same measure with the exact same savings, partially the same measure, the same measure, but at an earlier date than planned.
- **Are the achieved savings larger than the costs of implementing the program?** Cost/benefit analysis.
- **Have the participants carried out other or more EE measures than those recommended and advised by the program?** Spill-over effects: increased awareness, change in attitudes, changes in habits, measures that do not require investments, household implementing measures because of the EEC without returning the EEC form.
- **Are there other benefits than actual reduction in energy consumption?** Rebound: comfort, higher indoor temperature, new electrical devices etc.
- **Self selection**
Are the participants already “best in class” regarding energy? Are the savings due to the background of the participants rather than the EEC itself.

Investigating the lifetime of the implemented measures, delayed effects and follow-up values would be interesting but is not part of our evaluation.

Vintage of programme

The EEC program is a second/third year program. A thorough evaluation is hence right based on the Guidebook. The decision-makers will have to decide whether to continue, improve, alter or terminate the program. Surveys more fit for newer programs have been implemented in the earlier stages of the EEC program. These showed a good response and sufficient customer satisfaction. It was assumed that the detected savings was due to the program. This indicated that the program was on the “right track”.

Level of evaluation effort

Definite framework on available funds is decisive to the choice of method. In general a more comprehensive evaluation like we chose is necessary when considerable resources have been used to develop and implement a program, special findings are expected or the expectations to the program is large and the program is subject to discussion.

Our conclusion was that a different and more expensive data collection than what was done in the previous surveys were needed to provide answers to our questions.

Key decision-makers

Identifying the important decision-makers for continuing or development of the EEC was relatively simple.

The EEC was first introduced as a priority EE program in a national EE campaign initiated by NVE in 1997. It has since been an important element in several campaigns. NVE is subordinate to the Ministry of Oil and Energy (OED) and responsible for administration of national water- and energy resources in addition to management of national EE activities.

The EE centre in Akershus has used considerable resources on developing and implementing this EE program and is hence the EE centre in Norway with the most and longest experience with use of the EEC. We have used material from Akershus and based our survey on the goals set for the EEC in their area. Akershus is a county in Norway consisting of small and large towns and villages and should hence be representative of Norway as a whole.

The EEC is and has been part of the total service offer provided by the EE centres in Norway for some time. Documented results will be increasingly important in a new situation where the centres will be subjected to a free market to a larger extent. This will also imply a reconsideration of all the existing EE tools and programs including the EEC.

Planning the survey

Several possible data collection strategies were considered based on the details of the EE program, existing data and investigations of former surveys and evaluations.

In brief the former evaluations of the EEC performed by the EE centre in Akershus has focused on market response and simple impact assessments. The response rate has been considered satisfactory and the customer satisfaction has been considered high. These evaluations have also shown an average saving per household of 450 EUR for the benefit of the program. No control samples have been used. There have been made no attempts to control what the household would have done without the EEC. The documented savings are not compared to customers who did not participate in the program and are hence merely assumptions of the effects of the program.

As mentioned earlier, a low budget review is correct at an early stage of a programme. Our initial strategy was a qualitative survey using 400 phone interviews including a control group. Based on the new examination of the programme we decided to perform a larger survey to ensure significant results. We chose a main sample and two “control” samples to answer our questions regarding effects related to “non-participants”, self selection, rebound, free-riders and spill-over effects etc. As a result we decided to use an agency specialising in marked analyses and not an initially chosen agency focusing on psychology and depth interviews.

Sample 2 and 3 are comparison samples. A real control sample does not exist as this would mean two 100% identical samples where the program is the only difference. Theoretically a baseline, i.e. a sample group with the same “starting point” as the participants, could have been established. This could only be done before the program started in this kind of programme and is better suited to evaluate technical EE measures. Comparison samples like the ones we have in this evaluation will provide a good indication to the situation without the program.

Experiences gained from the evaluation process

The evaluation has given useful experiences on several levels. Increased knowledge of evaluation theory and methods and the results of our evaluation have shown how crucial a systematic lifetime evaluation is to EE services and programmes.

Formulating the survey questions correctly and place them in the right order to ensure that the respondent are not influenced to give the “correct answer” is in general a large and important task. Our experience is that co-operating with experts with thorough knowledge of the programme is crucial in this regard as even small errors can have relatively large effects.

We would recommend that all types of EE evaluations should answer questions on self- selection and general social commitment. Based on these results it will be easier to differentiate between results caused by general energy and environmental attitudes and results directly due to the EE services and programmes.

8. THE SURVEY AND IMPORTANT FINDINGS

The survey was implemented in September 2000. It was carried out by the company Norsk Gallup on behalf of Norsk Enøk og Energi AS that is responsible for the Norwegian case project. Three groups of a total of 1200 customers in Akershus were interviewed. (See extract of findings in Table 1).

The three samples are:

4. Customers who have participated in the EEC programme
5. Customers who have received the EEC, but not completed or returned the form
6. Customers who have not received the EEC (or other EE material from the EE centre over the past year)

The most important findings in the survey are:

- The EEC used in a mass distribution has little effect on implementation of EE measures
- Customers who have not received the EEC (the third sample) seem to have implemented most EE measures overall

Based on the survey the first sample implemented an average of 7,65 EE measures pr. household. This was in fact less than the third sample that did not receive any offer or other information on EE measures or EE services at all. This sample had the highest score with an average of 8,48 implemented EE measures pr. household. The third sample had somewhat older houses with slightly younger people in them. Thus the need for maintenance seem to be a contributing factor to this results.

In the following more of the important findings of the survey are shortly enumerated. See table 1 for more information on the basis for these findings.

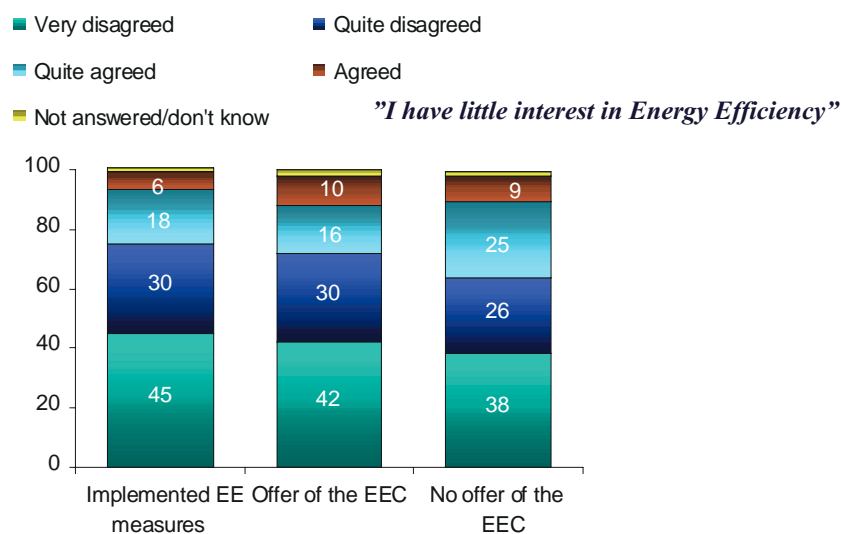
Other findings:

- The wish for a reduced energy bill and reduced energy use is the main cause for implementing EE measures.
- EE measures implemented in the past is the main cause for not implementing new EE measures.
- The customers who have already implemented several EE measures in the past are the most likely to complete and return the EEC. The same people seem to be more interested in EE than the average person.
- There are significant differences between the three samples on the issue of behaviour. Customers who participate in the programme (sample one) have a higher score than the two other selections regarding EE behaviour. This again implicates that this is the most EE aware part of the population.
- The participants of the programme (sample one) are the people that most eager readers of the EE newspaper and their general knowledge on EE is significantly higher that for those that has not been exposed to any EE service or material the last year (sample three).
- Customers who return the EEC are generally more focused on their energy use, which can be partly due to the EEC.
- The EEC works, in combinations with other distributed material, as “name branding” for the EE centre.
- Knowledge of EE is higher among the customers who have received or completed the EEC. These two samples have also received an EE newspaper and other material from the EE centre.
- Installation of energy efficient light bulbs are the most common EE measure.

When asked about EE habits people answer that they do things very “energy correct”. About 90% of all the samples say that they switch off lights in empty rooms. 90% fill up the dishwasher and washing machine before they switch it on. The participants in the EEC program are in general the best. As for age the older you get the better your energy behaviour is according to the survey.

All three samples were asked to say if they agreed in the following: “I have little interest in Energy Efficiency”. The answers are given in the graph below (in %). There is a significant difference between sample 1 and 3. The participants in the Energy Efficiency Check are according to this more interested in EE in general.

Graph 1. All three samples



It seems as if the problem of self-selection is more evident than anticipated. It looks like the participants already are the “best in class” regarding energy. Any savings might therefore be due to the background of the participants rather than the EEC itself. This seems to be the case although people’s attitudes towards EE and environmental issues in some questions are almost the same. The EEC also seem to have been used as a tool to ensure that measures already implemented are the right ones and really energy efficient.

This is also illustrated by the reasons why people do not implement EE measures. In the first sample 71% said that they have already implemented the measures. In the two other samples only 50% had the same reason. This shows again that the people who have used the EEC are already very EE cautious.

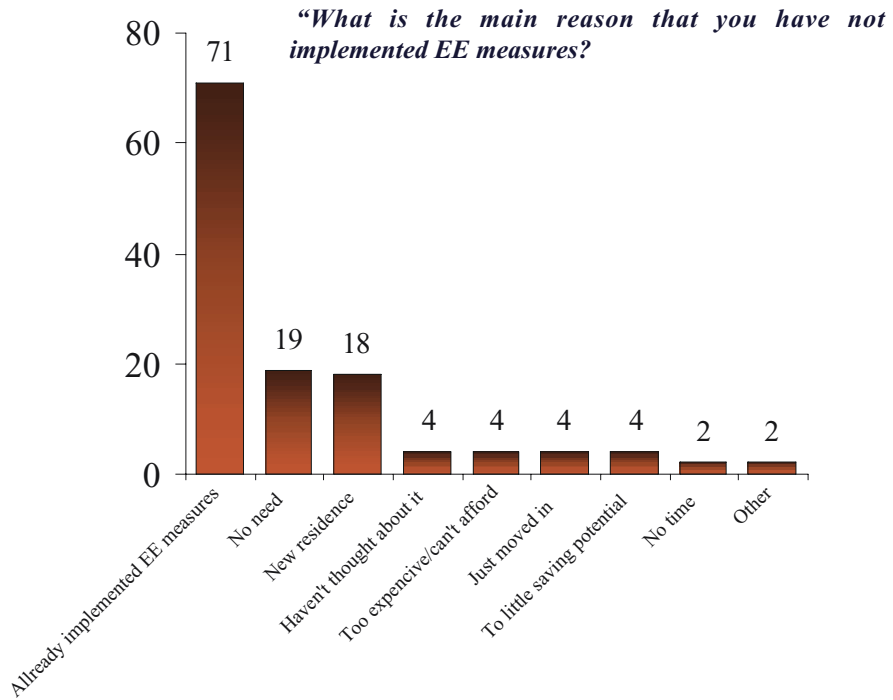
We asked the following question: “What is the main reason that you have not implemented EE measures?” The distribution of answers for the first sample is given in the graphs below (in %).

The survey also shows that very few people plan to implement EE measures over the first year. 74 % of the participants in sample one and 57 % of the people in the third sample will not implement measures in this period.

The main reason for implementing EE measures is to save energy and reduce electricity bills. More than 40% give this answer in all samples. Women and people in older houses are more interested in increased comfort.

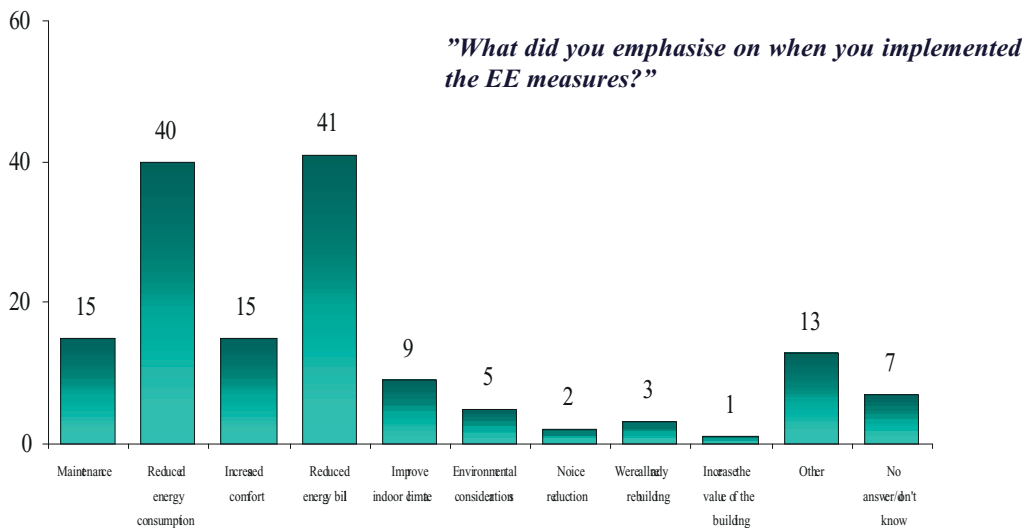
The houses in the third sample are in general older and hence they require more maintenance. In the same sample there are more young people in older houses. This can of course be a contributing factor to why this sample group has implemented more EE measures on the whole.

Graph 2. Sample 1



The following question was asked: "What did you emphasise on when you implemented the EE measures?" When we look at the graph for the third sample (Graph 3) there are somewhat fewer that mainly want to reduce energy consumption and the energy bill. In sample 1 respectively 41 % and 44 % had this as their main emphasis. For sample two the percentage was 45 and 40. In sample 3 we also see slightly more emphasise on maintenance (15 %) and increased comfort (15 %) compared to sample 1 (10 % and 11 %).

Graph 3. Sample 3



Who participates in the programme?

The survey gives several characteristics of the participants. 72% of the 2300 people that completed the EEC were men. This might indicate that men are more interested in private economy and maybe also implementation of EE measures as most participants says that saving and maintenance is the main reason for implementing EE measures. Other surveys performed by Norsk Gallup have similar conclusions regarding men's field of interest. There are no large differences regarding age, but it seems that older people are more interested. The number of people in the household does not influence the reaction to the EEC. The income however seems to make a difference in whether you use the EEC or not. People with high income are more likely to participate in the program. It seems that the households with living area of 100 – 250 square metres are more likely to return the EEC. The heating system of the houses has little influence.

Table 1

Survey of the Norwegian Energy Efficiency Check				
Implemented by Norsk Gallup on behalf of Norsk Enøk og Energi AS, September 2000				
Approach	Sample 1	Sample 2	Sample 3	Total
(some examples from the survey)	Participants	Not participants	No offer	Average for
	Given other info	Given other info	No other info	all three groups
Sample size	600	300	300	1200
Total number of implemented EE measures pr. household	7,65	6,57	8,48	7,57
Implemented measures in % of total				
Installed fotocell for outdoors lighting control	4%	4%	4%	4%
Installed new windows	13%	15%	11%	13%
Installed energy saving light bulbs indoors and outdoors	52%	51%	48%	50%
Sealed air leakage around windows	8%	7%	11%	9%
Sealed air leakage around doors	5%	3%	9%	6%
Replaced balcony door	1%	1%	2%	1%
Installed new door	2%	2%	2%	2%
Insulated roof	1%	1%	1%	1%
Insulated walls	1%	2%	2%	2%
Installed energy saving shower head	4%	5%	4%	4%
What are the main reasons for not having implemented EE measures?				
Have allready implemented EE measures	71%	53%	50%	58%
No need	19%	18%	15%	17%
New building	18%	22%	13%	18%
Do you have plans to implement any EE measures the next 12 months?				
No plans to implement any measures	74%	71%	57%	67%
Will replace doors or windows	4%	8%	9%	7%
Will start using energy saving light bulbs	4%	5%	3%	4%
Behaviour: Do you do one of the following things?				
Turn off light during the night	21 %	17 %	21 %	20%
Air out short and effective	82 %	76 %	78 %	79%
Take short showers	41 %	36 %	41 %	39%
Rinse dishes in cold water	29 %	22 %	21 %	24%
Fill up dishwasher and washing machine before use	89 %	83 %	87 %	86%
Reduce temperature in rooms that are not in use	74 %	73 %	74 %	74%
Turn off light in rooms that are not in use	91 %	90 %	88 %	90%
Can you remember to have received a news paper about EE during the last 12 months?				
Yes	70 %	62%	47%	60%
No	26%	33%	48%	36%
I don't know	4%	5%	5%	5%
Knowledge: Identification of EE measures. Four alternatives given - two were correct.				
Share that gave the right answer	78%	77%	67%	74%
Do you follow up your energy use by reading the meeter at least every month?				
Yes	42%	31%	30%	34%
Do you know of the EE Center?				

9. HAVE THE GOALS BEEN FULFILLED?

The goals for the evaluation were set based on previous mentioned disputes concerning the goals and effects of the programme. In the following the three goals of the evaluation will be discussed:

Describe how many more EE measures the participants in the programme have implemented and measure the value of these compared to norms

The project aimed to describe how many additional EE measures the participants in the programme had implemented and then calculate the impact of these measures using to norms for energy use. Looking back we can see that even at the design of this aim we assumed that the customers who had implemented the EEC would have carried out more EE measures than the other two groups in the survey. This was not however the result of the survey. It was group 3, who had not even received the EEC, who had implemented most EE measures in total. We saw therefore no reason to perform these calculations.

Document possible other effects resulting from the EEC beneficial to the involved parties

The involved parties are as mentioned NVE, the Ministry of Oil and Energy, the EE centre in Akershus and other EE centres in Norway.

The initial programme goals seem to have resulted in too high expectations regarding the effects. Other goals could have been used. Building customer relations, name branding, marketing of other services by the EE centres as well as providing positive feed-back or "insurance" for energy efficient house owners are possible goals which would have resulted in more positive evaluation results.

Suggestions have been made that the EE centres had varying goals and expectations to the program. Not all the EE centres thought the main goal of the EEC to be kWh savings.

We think that it is important to be clear about programme goals and design the contents and implementations according to this. It seems that one expected the EEC to result in reduced energy consumption (kWh) while the programme was designed to give other results.

The EEC has been successful in transferring knowledge and in marketing the EE centre. Knowledge of EE and where to obtain more information and advice are central goals for the national EE work in Norway. We think that this evaluation has documented that the EEC has made a positive contribution towards these goals and thus not been a total loss for any of the involved parties. We will later return to recommendations for further use of the EEC.

Evaluate the use of resources against possible alternative use

The evaluation of use of resources against obtained savings for distribution and processing of EEC data are based on the campaign implemented by the EE centre in Akershus in 1999 as this is the most recent mass distribution of the EEC. This distribution is the basis for the survey implemented by Norsk Gallup. All completed EECs were processed manually. The cost of producing and distributing 30 000 EECs was 1,6 EUR/EEC. Total costs divided on 2300 processed EECs were 59,7 EUR/EEC.

For comparison a 16 page EE newspaper like the one distributed by several EE centres in Norway costs between 0,25 to 0,5 EUR delivered to the customer. A EE magazine like the one distributed by the EE centre in Oslo and by some others will cost between 1,2 and 2,4 EUR. These are not directly comparable products, but as the evaluation of the EEC shows that the results are mainly increased knowledge and marketing of the EE centre a comparison of costs can still be relevant. Based on the performed survey one can argue that every single EEC has a value and hence calculate the cost price to be 4,6 EUR/EEC distributed. This shows that the EEC is an expensive way of promoting EE and EE behaviour.

There is little evidence that the EEC as an independent programme has fulfilled its main goals. The customers who accept the EEC in a mass distribution campaign are already the most energy effective households. Further it is not possible to document any kWh savings for the participants. The programme however seems to have a

marketing value and it can result in increased knowledge of the EE centre. The EE centre can also use the EEC as a basis for contacting households with particularly high-energy consumption. According to Norsk Gallup a more environmental angle to the EEC would attract more women.

We call attention to the fact that it is mass distribution of the EEC, uncritical with regards to whom has the need or the greatest saving potential that appear to be unprofitable.

Recommendations for further use of the EEC

All though the evaluation has shown some negative results we are not all negative with regards to the future of the EEC. Positive results exist and it is possible to implement the EEC in a more cost-effective way in the future.

There is little evidence that the EEC as an independent program in a mass distribution has the desired effect based on the main goals of the evaluation. It is still the most energy efficient households who decide to participate in the program when it is used in a mass campaign. It is not possible to document that the participants implement more EE measures than households in the two other sample groups do. On the contrary it is the third sample group that has implemented the most EE measures on a whole. The program however seem to have a marketing value and hence it can increase the knowledge of EE and the EE centre. The EE Centres can also on the background of the EEC contact customers with especially high-energy consumption.

Who you reach with the EEC is crucial to the effect of the programme. The lack of results in the form of kWh suggests that the EEC does not reach the households with the highest energy consumption and/or the highest saving potential. We see no possibility of recommending the EEC as the main element of a mass campaign for households. The risk of providing the wrong customers with the wrong feedback is too large and the benefit is questionable. Indications that the most energy efficient households is the most frequent users of the EEC supports our conclusion that the EEC is unsuited as a service for all houses built before 1980.

The EEC – a good EE tool for selected customers

Based on the previous discussion our recommendation is that the EEC should be used in dialog with customers who have contacted the EE centre as basis for giving individual EE advice. The energy advisers should first evaluate the total energy use of the customer compared to general norms. If the consumption is judged to be high the EEC can be filled in by talking to the customer or by the customer himself. After processing the data the results should be gone through with the customer directly, not in a letter which was the case in the campaigns. This use of the EEC can be a valuable tool in achieving more energy efficient households. Used this way one avoids the use of the EEC as a “proof” for the most energy effective customer (they want someone to tell them that they are doing a good job). Data errors are also avoided by filling in the form in co-operation with the customer and explaining the form. This form of communication also builds positive relations crucial to ensure knowledge and motivation for implementing EE measure.

One could also perform a small test of the effect of charging a price for the EEC. By setting a price to for example 40 EUR/EEC one could compare the effects and results with those of the free checks. We are convinced this would have a immediate effect on the response. It is also possible that this would give a different picture with regards to self-selection. It would most likely also eliminate the customers participating in the programme to get a confirmation on already implemented measures. The total effect can then presumably be better if the programme’s goal is kWh-savings.

We recommend that an “EEC Online” would be considered used and marketed as this provides the customer with instant feedback. An EEC online is discussed and implemented in small and large scales in different countries. This is also an offer in some parts of Norway. A small evaluation of advantages and disadvantages of such a product would be interesting. We think however, that even the use of an EEC online may require contact with an energy adviser, because the form itself can be complicated and data errors often result in the wrong feedback.

For further developers of the EEC or any EE programme we will stress the need to specify clear and precise goals that are possible to meter and evaluate.

In the “aftershock” of this evaluation the EE centre in Akershus has started a small national project of restructuring the EEC to be a data tool in a personal advice situation one-on-one with selected customers.