Developing the Supply Side of Existing State Controlled Energy Consultancy

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This paper discusses the criteria behind state controlled consultancy schemes and their impact on the overall effectiveness. The analysis is based on an evaluation of two Danish consultancy schemes for inspection and maintenance of heating equipment in the housing sector. The analysis takes the following approaches:

1. An organizational approach, where a definition of energy consultancy and the basic criteria from which consultancy is organized, will be presented. The impacts of the criteria will be evident from the presentation and discussion of the following headlines: Energy savings and the costs of obtaining them due to the two schemes. The impact of the statutory requirement on a big scope. The implications of the inspection of the service delivered by the consultants.

2. A target-group approach, where the performance of the consultant is valued from the costumers' point of view. Headlines: Characterization of the customers' energy awareness. Customers' valuation of the service delivered by the consultant. Their views upon the neutrality of the consultant.

The general conclusion of the analysis shows that state controlled energy-consultancy programmed can improve their effects in saved energy at lowest costs if they develop some of the criteria and leave the other criteria to be decided by the consultant and the consumers.

Introduction

Consultancy can be defined as "an assistance from an expert with the purpose of increasing the consumer's knowledge about and understanding of energy savings. The assistance is goal-oriented and adapted to the individual consumer." The definition is inspired by Poulfeldt (1982). The view from which consultancy is likely to be seen is as a peaceful process between consumer and consultant, where the consumer, through individual teaching from the consultant, learns to save energy on a voluntary basis. Maybe this process of individual teaching is the reason why Denmark is one of the countries where the State, since the late 1970s, has actively implemented energy-consultancy schemes in quite a unique manner: Through law, but without sanctions, and at the same time, consumer paid. I will discuss some useful general lessons to be learned from this long-term experience.

Characterization of State Organized Energy-Consultancy Schemes

Consultancy schemes organized by the Danish State are all, to a greater or smaller extent, organized along the lines shown in Table 1. These characteristics of state organized consultancy schemes have been implemented in order to secure different mechanisms of reaching an overall success of the prograrnme.

The idea of making the schemes obligatory is mainly to ensure a bigger scope of schemes, than if the schemes were voluntary, because all citizens are regulated on equal terms, irrespective of their interest in energy savings. All owners of oil boilers are to participate if they don't want

Table 1. A Characterization of State-Organized Consultancy Schemes

Criteria of Organizations	Intentions for the Organization
Statutory—all owners of oil boilers are to terms	Securing a high scope and regulating all on equal participate
Control of the consultant's service and pricing of consultancy	Securing the same standard of consultancy all over the country
Consumers pay all costs of a visit	Securing no socioeconomic costs
Educational tasks of the consultants	Incorporating energy awareness in daily behavior
Neutrality of the consultant	Confidence in the work of the consultant

to break the law. At the same time, the customers pay the full costs of the consultant's visit, which should result in zero socioeconomic costs. The inspection of the consultant's service and the price control ensure a uniform standard of consultancy all over the country. All customers are treated equally, which should also give a certain degree of confidence in the work of the consultant. The last two criteria are demands upon the role of the individual consultant. In addition to technical advice, the purpose of consultants is also to motivate and educate the consumers about energy use in their daily lives. The mechanism is that a positive attitude toward energy savings is necessary before a change in behaviour can occur resulting in energy savings. This mechanism also ensures that customers without substantial knowledge or interest in energy savings will be included in the schemes. Most of the Danish schemes are also carried out by neutral consultants who only give advice, letting other consultants or private companies carry out the advice. This is to ensure that the consultant is neutral when advising households and not bound to commercial interests.[1]

However, these consultancy schemes were originally implemented almost 15 years ago. At present they seem not to guarantee energy savings at low costs and they seem impossible to use, if all the indicators of success are to be reached at the same time. In this paper, a comparison will be made on the effectiveness of two consultancy schemes, which are organized to a high and low degree according to these criteria. I will argue that the scheme organized according to these criteria is the scheme with the lowest degree of success. I will also argue that by leaving out some of the characteristics of state-organized schemes, and by adapting new strategies more suited to customers and energy prices of today, the schemes will gain in the indicators of success, which are presented in the following section.

Description of the Two Schemes and Their Goals

Two Danish consultancy schemes are the basis of this discussion. The VKO-scheme from 1981 and the OR-scheme from 1978, both concerning inspection and maintenance schemes for heating equipment (Christensen et al., 1994 and Togeby et al., 1994).

The two schemes are chosen because they are both designed to cover the housing sector. In their basic organization, there are similarities because the two schemes are implemented by the Danish State.

Both the OR and the VKO-schemes are broad, designed to inspect oil boilers in Denmark once a year. They are obligatory schemes, according to law, but legal sanctions have never been enforced if the household or building do not participate.

The work of the consultants of the two types of schemes is inspected by a steering group to ensure a uniform standard of work all over the country. The consultants also have an educational aspect to their jobs. In addition to the technical inspection, the consultants are obligated to teach and advise their customers to pay more attention to the equipment in daily life. There are differences between the two schemes, however.

The OR-scheme involves about 500,000 small oil-fired furnaces-typically in single-family houses. Approximately 1,300 private companies with 2,300 consultants are registered to carry out the inspection of small furnaces. At least once a year, the owner must have the boiler cleaned and a chimney sweep or a registered firm must carry out a check measurement of the operational condition of the furnace. If the furnace does not function in an energy-economic way, the owner must bring it up to standards.

The consultant must inform the owner about the condition of the furnace and the benefits he will gain from a well-driven furnace. The price of the service is set between the customer and the company, depending on which kind of service the customer wants, in addition to the obligatory part-cleaning and checking measurements.

The VKO-scheme, also called the heat-consultancy scheme, is aimed at all heating plants in buildings larger than 1,500 m^2. Around 560 consultants are registered as VKO-consultants. The VKO-consuhant performs two roles as does the OR-consultant, acting as technician and educator in order to ensure energy savings. First, the heat consultant, usually an engineer, must support and motivate the plant personnel to be energy-efficient in their daily work at the heating plant, and second, to recommend technical improvements for the heating plant. Therefore, he checks the operational standard of the heating plant and the ordered operational journal once a year. After that, he delivers a report concerning this and possible technical recommendations and investments to the owner. Contrary to the OR-consultant, the VKO-consultant is not directly in contact with the individual owner of the oil plant. The consultant is not allowed to carry out service; he is a neutral consultant who can only give recommendations and has no interest in recommending expensive investments for his own sake. The price and amount of the consultant's service is fixed.

Explicit goals have never been formulated for a specific amount of energy savings to be reached through the two schemes. In the early 1980s, when the schemes had been working for a few years, figures worked out by the administration of the consultants indicated saving rates of more than 10% for both schemes. These figures are very likely true, but it is also likely that the saving rates are different today, because there is no energy crisis as in the late 1970s. Instead, energy prices have fallen in Denmark as in the rest of the world and the schemes are not novelties any more. Working routines and standard procedures have developed in the meantime. The schemes are part of the Danish energy policy, in which the most important aim is to reduce the total use of $C0_2$ by 20%, compared to the 1988 level, before the year 2005. The goal is supposed to be reached without burdening the taxpayers.[2] Given this goal, we designed four indicators of programme success:

- size of present energy savings due to the schemes
- present value of the savings compared to the costs and benefits of obtaining them, seen from a household and society perspective
- programme scope
- indices on customers' satisfaction with the schemes.[3]

The ideal programme will have a high saving rate at low cost, a big scope, and satisfied customers.

The Success of the Programmed on the Indicators

Energy Savings and Economic Benefits from the Two Schemes

Table 2 shows the effect of energy savings due to the two schemes. This table shows that regarding the OR-scheme, the 5% saved energy after 7 years is larger than the 2.3% effect of the VKO-scheme. Compared to the total energy use in Denmark, the O.61% saved energy after 7 years due to the OR-scheme is more than 3 times as large as 0.17% of the VKO-scheme. Quite a remarkable result, remembering that buildings participating in the VKO are

Table 2. Energy Savings Due to the Two Schemes

Scheme	Energy Savings Out of the Customers' Total Energy Use After 7 Years	Saved Energy After 7 Years of the Overall Energy Use (including heating and electricity)
OR	5.0%	0.63%
VKO	2.3%*	0.17%

* The savings due to the VKO-scheme are found as a means of the energy use in 7,100 buildings, which participated in the scheme for approximately 7 years. For buildings with oil boilers the savings are about 7.5% and for buildings with district heating about 1%. The figures are corrected for other energy-saving measures in the same period, such as new windows, insulation, etc.

large buildings where the potential for energy savings is supposed to be much larger than for buildings participating in the OR-scheme. However, compared to the 10% saving rate ten years ago, it might also be concluded that both schemes have lost effect over time, though both schemes actually result in energy savings, which is one of the indicators of success.

In Table 3, the savings are compared to both socioeconomic costs and private costs of obtaining them.

The OR-scheme is estimated to produce a small financial gain from the viewpoint of households, and to produce a modest socioeconomic loss. On the other hand, the VKO-scheme is running at a loss both in private and socioeconomic terms, but with a smaller socioeconomic loss than that of the OR.[4] This can be explained in the big scope of the OR-scheme; more customers tend to bring a higher socioeconomic loss because the energy prices are very low today, thus leading to low energy savings. It can be said that the more successful a scheme, the higher the socioeconomic costs, which thus leads to a contradiction between the two indicators.

Compared to the costs per kWh saved, it can be concluded that the OR-scheme seems to save more energy at a lower cost than the VKO-scheme and, therefore, seems to run more effectively than that of the VKO-scheme. It can be argued that the results, especially for the VKO-scheme, are not acceptable if the goal of reducing the amount of $C0_2$ is to be reached at the lowest cost possible.[5]

In the following, I will discuss why the OR-scheme seems to work better than the VKO-scheme concerning the concrete impact of the criteria on the indicators of success and what can be learned from this experience.

The Impact of the Mandatory Programme

Both schemes are organized according to law in order to inspect all oil boilers in Denmark once a year. Does this mechanism fulfil its intention and the indicator of success concerning a big scope?

Around 85,000 or 15% of the oil boilers are not inspected by the OR-scheme, even though the consultant has the right to inspect oil boilers which have never been inspected, or have not been inspected for a long period of time. However, this figure seems to be relatively successful compared to the VKO-scheme.

For the VKO-scheme, we have estimated that around 48% of the buildings that should participate do not do so. One of the main reasons for not following this law is simply the lack of interest in energy savings combined with the cost of the visit (both in money and time). Our results show that only those customers who are already interested in energy savings, but do not have much technical knowledge, are very satisfied with the VKO-scheme. This point will be discussed further later on.

Lessons Learned. The evidence shows that none of the schemes performed well on this indicator of success—large scope—though it can be questioned if it is possible to reach a 100% participation rate in practice. The participation rate can be explained by the fact that it does not seem sufficient to implement a law for consultancy schemes including all small oil boilers and large buildings when there are no sanctions if the potential customers do not want to participate or any positive inducement to join the schemes. From this experience, households tend not to pay for a consultant's visit unless it is profitable.

Table 3. Costs and Benefits of the Two Schemes

Scheme	Private economy per visit	Total private economy*	Total socio-economy	Costs per saved kWh ($/kWh)
OR	+17 US$	+10 mil. US$**	-15 mil. US$	-0.02
VKO	-480 US$	-4 mil. US$	-54 mil. US$	-0.13

* The private economy of the schemes is found by calculating the value of saved fuel and subtracting the price of the consultant's service. For VKO, a price for the suggested investments and extra time of the plant personnel is calculated and added to the costs of the consultant. When calculating the socioeconomy, the factor price of fuel is used, and in addition, a valuation of the reduction of emissions is added to the factor price. From this amount, the factor price of the consultant's service is subtracted.

** 1 US$ = 6 DKK

However, the OR-scheme is clearly better on this indicator than the VKO-scheme for reasons shown in the next section.

The Inspection of the Service Delivered by the Consultants

In order to ensure a uniform standard of service all over the country, the consultants' service is checked in different ways.

The procedure of inspection of the VKO-scheme is as follows: The VKO-consultants must fill out a report form concerning the yearly visit for each participating building and send it to the VKO-administration. The report and the building are then registered. The reports of the individual consultant are not directly evaluated or checked, but used for statistical purposes.

The service on oil boilers carried out by the OR-firms is sampled by spot tests once a year, where the test results of the consultant are compared to a control test. The results of the spot tests are published once a year in the OR-magazine. From time to time, the OR-administration has excluded firms from the schemes if they continued not to fulfill their obligations. This has never happened to the VKO-consultants.

It is evident that the inspection of the OR-consultant is much more effective than the inspection of the VKO-consultant. Some of the VKO-consultants stopped sending their reports to the administration, and over the years, they more or less developed their own consultancy system with their own procedures and working methods. The consultants explained their motivation by stating that the VKO-procedure was old-fashioned and time-consuming, and did not help them or the clients. They did not know why they had to send in reports to the administration or what those reports were used for. In 36% of all cases, we found that the reason for missing reports was due to the fact that the consultants had more or less built up their own system of inspecting the boilers. Some explanations were

- The report is only for statistics
- Instead, the clients get ad-hoc visits and monthly response by phone
- The paperwork is overwhelming, I have not got the time
- VKO is rubbish, the customers only get statistics for their money. Nobody knows the meaning of the figures in the report. Instead, I have developed my own consultancy system.

The VKO-administration did not know of these alternative consultants though, at a certain time, they stopped delivering reports for registration. This again might be explained by the fact that the registration process was complicated and thus incomplete.

The OR-consultant is inspected in a more direct and simple manner, as spot tests do not create much extra work for the consultant. The yearly publication of the results also puts pressure on the administration to ensure a proper and regular inspection of and for the consultants. There is no evidence that the OR-consultants are not satisfied with the inspection, and therefore, they do not develop other working methods.

Lessons Learned. First, effective and uniformed standards for the work of the consultants cannot be ensured if the consultants feel that these standards are useless or old--fashioned. Instead, they might, over time, develop their own methods, which are more in harmony with the needs of the customers. You might say that useless inspections or lack of inspections create diversified service. This is the opposite of the intended.

Second, in order to avoid the first situation, the inspection of the work must be organized and carried out as simply as possible, and it must be directly linked to the actual service delivered by the consultants. Procedures that appear to be simple at first sight are actually filled with weak links. The VKO-scheme demands that 1) the consultant must fill in a standard report for each building, 2) the consultant must fill it in correctly, 3) the consultant must send it to the administration, and 4) the administration must register the report and the building correctly into their data base.

Using four steps for each building, about 12,000 buildings were registered in 1991. The inspection implies a substantial work burden for the consultants and does not benefit them directly. The OR-scheme only demands that the selected consultants deliver the addresses of furnaces, which then get checked once again and the results get published.

The Indication of Satisfaction of the Target Group

Characterization of the Customers and their Degree of Satisfaction

One way of measuring the customers' satisfaction, besides looking at the scope, is to investigate how the consultant is carrying out the tasks he is supposed to do and how these tasks are experienced and valued by the customers.

As mentioned, the role of the two types of consultancy involves both a technical role concerning the standard of the equipment and an educational role teaching implementation of energy savings on heating as an attitude of daily life. How are these aims actually working in the interaction with the users of the schemes?

We have interviewed 50 of the present and former users of the VKO-scheme in order to measure the degree of satisfaction with the consultant. From the interviews, it is evident that the customers do have more energy consciousness than 20 years ago, where most households did not care much about energy savings. The last 15 years of consultancy and general information campaigns on energy savings seem to have had an impact. The plant personnel and households are more differentiated in their knowledge and attitude concerning energy savings.[6] Some know much about energy, others still don't.

The plant personnel who received a visit from the VKO-consultant can be divided into three groups:

- The not energy-minded and uninterested.
- The fairly energy-minded and interested.
- The very energy-minded and interested.

The first category of personnel, in most cases part-time employees, was not very interested in the advice of the consultant, nor in energy savings in general. Compared to the second group of personnel, fewer of the uninterested received advice from other firms, and fewer energy improvements had been made in these types of buildings, though many had old heating systems. Forty percent of the plant personnel did not follow the consultant's advice at all, 40% followed to a certain degree, and 20% followed all of it; 50% read the report containing the results and recommendations of the visit, and 70% made an operational journal of the equipment. Most of the buildings, which after some time had dropped out of the scheme, were of this type. The personnel were usually unable to state why they had dropped out.

The second category was, to a large extent, satisfied with the consultant. As reasons, they stated:

- It is easier to improve the heating system when the recommendations come from the consultant
- The work of the consultant is good though his recommendations are rarely economic
- Excellent scheme, but you could also include other equipment in the inspection.

Ninety-two percent of the plant personnel read the report of the consultant, 96% made an operational journal of the equipment; 5% did not follow the technical advice, 85% followed it to a certain degree, and 10% followed all of it. Some stated that the advice was not economically rational compared to achieved energy savings, and that was the reason they did not follow it. Generally, they were also interested in energy savings and received advice from other companies, which usually carried out service on the equipment. In the VKO-scheme, some of the buildings with this kind of personnel had actually dropped out legally, but they seemed to maintain the energy habits they learned from the consultant.

The last category were plant personnel with an extensive education in operating the equipment. In general, they were like the second category, interested in energy savings, and operated and maintained the equipment just as well. However, they felt that they knew more about heating than the consultant, and, as he is not allowed to carry out service on the equipment, they found his work useless as the following statements show:

- It is an inspection of the inspection, our own service company ought to inspect the boilers
- The consultants should be better educated, I have had consultants who knew less than me (who is educated as an engineer)
- The consultant earns his money easily, as we already have a lot of energy inspection.

Some had actually illegally dropped out of the scheme because of this dissatisfaction.

The second group of plant personnel is clearly the group most minded for the VKO-scheme. The process between consultant and client seems to follow the definition of the ideal consultancy process. However, it is likely that the first group has the highest potential for large energy savings, but from the interviews, the consultant looks unable to motivate and change the attitude of the uninterested and unaware. He is more a technician than a teacher. He is also unable to communicate with the last group, as his role as a technician tends to be questioned. However, this group does not seem to need substantial help from a consultant, but mainly participates because-as they rightly state–it is obligatory.

Among the households receiving a visit from an OR-consultant, there was little interest in knowing the results of the work of the consultant. Interviews with 123 owners of oil boilers showed that 25% of the customers were interested in or knew something about the condition of the oil boiler. Most simply stated that they had confidence in the consultant. From these statements, the OR-consultants' aim to inform about the importance of a well-driven

furnace and hereby changing the attitude of households does not seem to have much effect. The consultants are seen more as technicians.

Interviews with the head of the OR-consultants indicated that the OR-consultants were not very interested in seeking out the owners of oil boilers who were not participating in the scheme, even though they were allowed to find and check these boilers. One of the main reasons for leaving out these oil boilers was that the consultants felt uncomfortable dealing with this type of customer and they were, furthermore, not sure if they were going to pay for the inspection at all. Though we have not been in contact with households that do not participate in the OR, these statements give reason to argue that the OR-consultants—like the VKO-consultants-select the interested households as their target group and ignore the non-participants.

Lessons Learned. From experience, the following conclusions are drawn: Today, the target groups differ more in their interest and energy awareness than when the schemes were implemented. Some have become much more energy aware than others. The consultants tend not to know how to motivate the intelligible, unwilling households or plant personnel to save energy. None of the consultants of the two schemes seem to fulfill their role as educators of energy awareness, which should lead the unaware customers to start being in favour of energy savings. Consequently, customers who are not already interested in energy savings and willing to implement savings, tend not to participate, or drop out after a period. This problem especially hits the VKO-scheme. The consultants from both schemes tend to have the most effect on customers who seem to have a certain interest in the scheme, and it looks as if the consultants felt most comfortable with this type of customer as well, leaving the uninterested alone. This is a very normal and human way of coping with customers (see e.g., Lipsky, 1971) and is probably stemming from the fact that the consultants see themselves as private businessmen than state-organized consultants. These results might explain the small saving rates obtained especially by the VKO-scheme, because after some years, only small savings can be obtained in the buildings if the plant is well-maintained and most of the consultant's recommendations carried out.

The Effect and Extent of Neutrality

The discussion above raises the last criterion to be discussed: The idea of a neutral consultant, free from other commercial interests when giving advice. This should give the consultant more confidence and legality. This criterion lies behind the VKO-consultants who cannot implement their own advice. On the other hand, the OR-consultants are also in most cases carrying out the service and repair they recommend in the first place. In addition, the consultants are usually connected to the oil company that delivers oil to the furnace in the first place.

Generally, when asked, most OR-customers state that they prefer an independent consultant to a consultant connected with a firm. On the other hand, we find no signs that the OR-consultants are suspected to serve commercial interests of the oil company. On the contrary, when asked specifically the households had confidence in the work of the consultants, and it is also evident that the scheme has a much larger scope than the on of the VKO.

As seen before, some of the plant personnel found the VKO-scheme useless and time-wasting because the consultant could not implement his own ideas, but only give advice, which was then carried out by, for instance, the oil company's service section. Some of the VKO-consultants saw this as a problem, and some actually stated that they were only VKO-consultants because they were hoping to get orders due to their other role as private engineers.

The idea of neutrality seems not to guarantee more confidence in the consultant. On the contrary, it can obstruct energy savings because the visit of the consultant is seen as a waste of time. Moreover, it is doubtful whether the consultants, in reality, are neutral at all because they are private companies searching for new customers on other matters, too.

Lessons Learned. In general, from a users point of view, the idea of neutrality is seen as an advantage. But when it comes to their own consultant, the users seem to prefer a consultant who can implement his own recommendations. From these cases, it cannot be concluded that the neutral consultant is the best guarantee for obtaining large energy savings compared to the consultant who carries out his own advice.'

Strategy for a Future Scheme

The Danish energy schemes are characterized by a mixture of market and state mechanisms as a strategy to reach large energy-saving rates at low costs in as many households as possible. The schemes have had a certain degree of success during the past years-savings have been reached and the scope is relatively high.

However, in practice, the schemes have developed over time and the mechanisms behind the schemes originally developed to ensure overall programrne success have not been developed to the same degree.

The aim to ensure by law that all customers participate does not seem to attract those households who are not

already interested to some extent in energy savings, and are willing to pay the price of a visit. The compulsion of the schemes combined with consumer payment seem to contradict each other because only the interested customers are regulated on equal terms. This mechanism is further strengthened over time through the working methods of the consultants, who prefer to deal with the interested households and plant personnel and ignore the less interested customers. In some cases, they ignore the standard working procedure as well, and develop their own system to match the needs of their customers.

It can be argued that the schemes could have been based on voluntary or private basis as the uninterested, unwilling customers are not participating anyway.

The result is that none of the mechanisms seem to work as intended, and it is questionable if it is possible to fulfill all the indicators of success simultaneously if the characteristics of the organization of the schemes must be followed.

Consequently, the OR-scheme seems to be the best working of the two schemes because it is the scheme that is less organized according to the mechanisms in comparison to the VKO.

The results indicate a dilemma of strategy: Are energy savings to be reached through a relatively big scope with many small saving rates, or through a targeting of visits to the clusters of uninterested potential customers, where the savings potential is supposed to be higher than the group of interested and participating customers?

The cost analysis of the schemes indicates that the higher the scope, the higher the socioeconomic costs due to the small saving rates. This results in negative benefits calculated in current energy prices. If the schemes are also to be socioeconomically efficient today, it is a likely strategy to target the schemes in the direction of the uninterested households and plant personnel and paying the already active customers fewer visits, for instance, every second year or less. Experience from the VKO-scheme showed that the plant personnel interested in saving energy tends to keep the good habits learned from the consultants although they drop out of the scheme legally. There is no significant difference between this group and the group still participating. This is, therefore, another argument to start targeting the visits to uninterested households and plant personnel in order to ensure a larger amount of savings, because a relatively large scope is not in itself a guarantee for large savings. Compared to Table 1, it is suggested that everybody is still to participate, but on equal terms in the sense that those customers who, to a large extent, have well-driven plants, are not visited as frequently as those customers with a large potential for energy savings.

In any case, experience has shown that the indicators of success—big scope and low costs—cannot be reached at the same time, at least not as long as the energy prices are at the current level.

In order to reach the uninterested customers and to ensure that the potential for energy savings is implemented into actual energy-saving measurements, at least two changes are needed.

First, the consultants need a motive and a tool to reach those customers. Their present stage of education, mainly as technicians, does not give them much basis for directing and communicating their knowledge to the disinterested households and plant personnel. Therefore, the criterion of educational tasks of the consultant needs to be developed further in this direction.

Second, the mechanism of consumer payment might work against the strategy of targeting consultancy to the group of customers with the highest saving potentials because it is hardly to be expected that a person would want to pay a fixed price for a consultant's visit if he is not interested in the consultant's advice and adjustments in the first place, just as it is hardly to be expected that a consultant would spend time on customers who are unwilling to follow his advice and pay the costs. If the schemes are still to be paid by the customers in order to keep the costs down, the consultants should at least be allowed to differentiate the service and prices among the customers in order to match their current willingness to pay for certain services. Today the VKO-customers pay the visit, but without having any influence on the product or price. The OR-firms, on the other hand, decide the price and degree of service in agreement with the customer.

Another, or an additional strategy, could be to let the VKO-consultants carry out their own advice, since this apparently is the wish of the majority of both consultants and customers. These mechanisms should give the consultants an incentive to compete on the best service and give them more credibility in the eyes of some customers. If the mechanism of consumer payment is still to work, which is suggested here, the control of service and price, and the neutrality of the consultants, should be left more to the judgement and decision of the consumers.

Clearly, this strategy needs rethinking regarding the methods of state-controlled consultancy, but the evidence indicates that current consultancy schemes ought to work in this direction, as they seem to have fulfilled phase one: implementing energy savings in some households; and now must fulfill phase two: implementing energy savings in all households.

By following these changes, there is a good chance that future schemes might improve the current saving rates and costs .

Endnotes

1. This issue of neutrality is not strictly implemented. The utilities carry out most of the advising in the field of electricity savings as in most other western countries. The effectiveness of these consultants has never been evaluated; however, to the authors knowledge, there have never been complaints from the users on this issue, though experience from California has shown the conflicting incentives of utilities to spend money on conservation prograrnmes and at the same time not be too successful in reducing energy sales (see Messenger, 1990).

2. Energy 2000-action plan. Danish Ministry of Energy 1990.

3. The evaluation of all four consultancy schemes were carried out for the Danish Ministry of Energy in 1993-1994.

4. The question of whether energy saved and the costs of obtaining energy savings are looked upon as acceptable is very much a political question of how much the government is willing to spend on savings. However, the costs of the schemes have surely risen due to lower energy prices during the 1980s.

5. The VKO-scheme is not the Danish scheme showing the lowest performance on these indicators. Another scheme has saved O .005% of the total energy use after 7 years due to a very low scope. Compared to other countries, for instance, Germany, the Danish schemes are generally better than those on energy savings due to a relatively high scope, but worse on the socioeconomic dimension. For further information, see the work of Christensen et al. (1994).

6. Other studies have also confirmed that today's attitude on energy savings in Denmark has changed during the past 20 years due to especially massive information campaigns. See Mortensen et al. (1994).

7. French experience from energy consultancy in the industrial sector has the same conclusion. The energy-saving rate is larger if the consultant is allowed to implement his own advice. For further information, see Ceren (1991).

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