

Energy Consultancy in a Cross-National Comparison: A central, additive or superfluous measure to promote energy savings in the housing sector?

Inger-Marie Christensen, Amternes og Kommunernes Forskningsinstitut
Stefan Rieder, Forschungsgesellschaft für umweltschonende Energieumwandlung
und -nutzung mbH

Klaus Wortmann, Forschungsgesellschaft für umweltschonende
Energieumwandlung und -nutzung mbH

1. SYNOPSIS

Based on existing studies as well as on additional investigations, experiences with energy consultancy as an energy policy instrument for the private household sector in Denmark and Schleswig-Holstein are evaluated and compared, which allow conclusions and recommendations regarding the future role of this instrument.

2. ABSTRACT

In a cross-national research project, the existing experiences with energy consultancy schemes in Denmark and Germany (especially the state of Schleswig-Holstein) were compared and evaluated regarding objective and organisation, process, product and effects of the schemes. Three different types of energy consultancy schemes in Denmark and Schleswig-Holstein could be distinguished: general advising in agencies (voluntary), voluntary specialised on-site audits and mandatory specialised on-site audits. The evaluation results showed that the effects of these schemes vary with the type of counselling. None of the existing consultancy schemes in both regions fulfils all needs regarding availability, saved energy per household, total saved energy, and-cost benefit ratios. Additionally, a clear lack of taking consumer's attitudes, behaviour and needs into consideration was obvious. Thus, the central role which energy consultancy can play within national or regional energy conservation scenarios as a means for the realisation of existing technical savings potentials in the housing sector was not reflected by the actual energy policies in both countries. Energy policy recommendations concern the top-down as well as the bottom-up perspective. From a top-down view, suggestions for the process of developing energy consultancy schemes could be derived. However, a bottom-up organisation of energy consultancy schemes should also be attempted, because it provides possibly a better chance for the creation of a more consumer-oriented form of counselling. A model for such bottom-up organisation is also described. In sum, many suggestions for improvements of the existing schemes could be derived, which may allow energy consultancy schemes to be a valuable additive measure to promote energy savings in the housing sector.

3. INTRODUCTION

Energy consultancy can be regarded as one of three types of measures within the energy policy "tool-kit" of public authorities to reach energy savings in the private household sector (see Vedung 1990): regulative means (like laws, norms and standards), economic means (like taxes, financial incentives or disincentives), and informative means (like mass media campaigns or, much more individualised and adjusted to the needs of specific consumers, consultancy). Consultancy can more exactly be defined as a type of expert assistance designed to increase the consumer's knowledge and understanding of energy savings, which is goal-oriented and adapted to the individual consumer. As many consumers in the household sector are unfamiliar with energy saving techniques, a method to improve energy-related knowledge adjusted to the specific situation of the given household will be very promising, and thus be an important policy instrument. Therefore, consultancy has been used for almost 20 years in different countries and in different ways: mandatory schemes ruled by a central governmental agency in Denmark, voluntary private schemes in Germany (realised by energy utilities and private organisations), and voluntary private schemes in Sweden (with strong support from the central and local government), to mention just a few different types. In Schleswig-Holstein, energy consultancy plays a central role in the energy conservation conception of the state government. Having many years of experience with this instrument, it is now time to evaluate the role and the effects of consultancy: how can the role of this instrument be described? Is it a central energy policy instrument?--What kind and amount of effects could be observed up to now?--In a cross-national comparison between Denmark and the state of Schleswig-Holstein in Germany, the existing experiences with different consultancy schemes regarding their organisation, process,

product, and effects should help answer this question. The purpose of this comparison was to check the different forms of consultancy in the two areas in more detail and to search for ways of organisational improvements. The main results from this evaluative comparison are described here as are the lessons learned from these results. In the final section, consequences of the results for the future development of energy consultancy schemes are discussed as well as the role of consultancy in comparison to other alternatives to promote energy savings in the housing sector.

4. EVALUATION OF CONSULTANCY-SCHEMES IN DENMARK AND SCHLESWIG-HOLSTEIN

4.1. The method

In each of the two countries, the existing consultancy-schemes were evaluated by the following three criteria:

- (1) Goals and Organisation: What are the goals behind the consultancy scheme? Who organises the schemes and what kinds of resources are available? Are the schemes voluntary or obligatory?
- (2) Process and Product: Is a scheme actively promoted? What happens during the consultant's visit? What is the output of the consultancy-process?
- (3) Effects: Which percentage of the target-group was reached (market penetration of the scheme)? Has energy been saved because of the schemes?

To get answers on these questions, the research team was able to use existing studies, especially in Denmark. The Danish part of the paper is a meta-study drawing on results from an evaluation of three consultancy schemes carried out in 1993. Therefore, a good database concerning the market penetration and the effects of the Danish consultancy schemes was already available. Such a database did not exist in Schleswig-Holstein and, therefore, some (limited) primary analyses had to be carried out to estimate the effects of the schemes. The evaluation results of the schemes of both countries have been compared with each other to allow some general conclusions about the organisation of consultancy schemes, despite the methodological limitations.

4.2. Evaluation of the schemes in Schleswig-Holstein

The evaluation of the schemes in Schleswig-Holstein is primarily based on ca. 20 interviews with individuals responsible for these schemes. The description of the process and the estimation of the effects are additionally based on different evaluation studies in Germany². This was possible because most of the consultancy schemes provided in Schleswig-Holstein are the same as in other states of Germany. Nevertheless, it was not possible to get data as good and detailed as for the schemes in Denmark.

4.2.1. Organisation

Consultancy-schemes are provided by three organisations in Schleswig-Holstein: the electric utilities, the consumer organisation, and private engineers. The target groups of the consultancy schemes are all house-owners (single and multifamily-houses); in practise, most of the clients are owners of single family houses. Of these three organisations, the utilities have the largest financial and staffing resources: For example the regional energy utility, which counts for more than half of the electricity and one third of the gas in Schleswig-Holstein, owns 15 consultancy agencies. Every agency is managed by a fulltime employee. Altogether more than 30 employees work in these 15 agencies. But the consultancy of the utilities refers not only to energy conservation, but also to topics like tariff-structure, energy-bills etc. The consumer agency (Verbraucherzentrale, a part of the federal consumer organisation) provides energy consultancy through 18 agencies, but only 13 part-time employees are working there (some of them are responsible for more than one agency; the energy consultancy is provided in the same agency as all other consumer information provided by the Verbraucherzentrale). The consumer organisation financed largely by the state and national government is underfunded. The services of the utilities and the consumer agency are offered free of charge. The consultancy activities of the private engineers, however, are not co-ordinated by a special organisation, and in the private household sector are limited to a programme of the federal government with subsidies for standardised home energy audits in the households (where about 90 % of the costs are paid by the government; the maximum amount for an audit is 1.000 DM). Home owners interested in a home audit could get the addresses of private engineers from professional associations. In practise, it is hard to find an experienced engineer, because most of the engineers on the lists are not active as energy consultants. They regard the salaries for their work as not profitable enough.

Some interesting differences in the goals of the three different organisations could be found. The utilities provide consultancy more or less because of customer service reasons. The consultancy-service is a reaction to the rising environmental consciousness of the customers. The costs of the consultancy-service are included in the overall costs of the utility. The consumer agency has other goals: they work against a strong asymmetry of information in the

consumer market and want to provide objective and credible information to the consumers. The goal of the private engineers is to sell their service. But because of only a small profit for the private engineers, few of them are actually willing to provide a home energy audit service. For the federal government, their support for the audit-programme is seen as complementary to the financial support of the energy-consultancy by the consumer organisation.

The following table gives some more detailed information about the energy consultancy services of the three organisations. The first line indicates the type of energy, the specific consultancy scheme is related to. Heating means, for example, information about thermal insulation and the heating system, electricity means information about energy using appliances and their correct use. The market penetration figure shows the percentage of the target group reached by the scheme within two years. Not in every scheme information is included, how energy can be saved through change in behaviour, whereas technical saving measures are explained to the clients as a part of all schemes. None of the schemes include a control of daily energy use of the individual household. In each case the consultant is not charged with the realisation of the saving measures recommended. The term "periodic" in line eleven means, if the consultancy will be repeated for the same building in a certain period of time. The line "typical consultant" describes the profession of the consultant.

Table 1: Information about the three energy-consultancy schemes in Schleswig-Holstein

	Utility-Scheme	Scheme of the consumer-organisation	Audit-scheme of private engineers
Type of energy	Heating and electricity	Heating and electricity	Heating
Obligatory	No	No	No
Market penetration (percentage of target group reached)	6-12% in two years	ca. 1% in two years	much less than 1% in total
Contribution ratio of the households for the consultancy	free of charge	free of charge	10 % (= ca. 100 ECU per case)
Fixed Payment for every consultancy	no	no	yes (fixed by government)
Energy savings due to behaviour	Yes	Yes	No
Technical energy savings	Yes	Yes	Yes
Control of daily energy use	No	No	No
Consultant implements own advises	No	No	No
Initial year	since middle of 1970s	1978	1991
Periodic	No	No	No
Typical consultant	Okothrophologe/engineers	consulting engineer	consulting engineer

4.2.2. Process and Product

The utilities provide two types of consultancy: The first takes place in the agencies of the utilities, where the customers obtain some general information about energy savings (saving-tips, information about electricity consuming appliances etc.) in well equipped show-rooms. The second form of consultancy (perhaps a quarter of all cases) takes place in the home, when questions regarding a new heating system or new insulation are concerned. Here, the consultancy process includes a written report. The consumer organisation provides consultancy only in its offices. Because of the limited resources, no on site-audits are provided. In the offices, general information as well as individual counselling is provided in response to all kinds of energy-questions with respect to households. There is no written report as a result of the process. The private engineers, however, only provide on-site-audits in a standardised form including written reports, which are also verbally explained to the customers.

None of the three schemes is actively promoted. In all of the cases, the customers have to take the initiative to get the service. Therefore, it is no surprise, that none of the schemes has a well defined target group. The motivation for the

customers to use the consultancy-service is twofold³. First, there is a general motivation: people want to implement conservation measures because they can save money and/or they want to do something to protect the environment. But this general motivation is not enough. In most cases, the decision to visit an agency is motivated by a well-defined problem (for example, the break-down of the heating system). These two motivations are more or less the same for all customers of the three schemes.

4.2.3. *Effects*

One indicator of the effect is the market penetration of the scheme. The utilities reach a high penetration because of their financial and personal resources: the regional energy utility in Schleswig-Holstein (Schleswig AG) reached more than 30.000 customers every year, which is 11 % of the target group within two years (the whole target group is the number of all households in the supply area). In contrast, the consumer organisation had an average of only 4.000 consultancy cases per year, a penetration rate of about 1 % in two years (the target group includes again all households in Schleswig-Holstein). The reason for this low penetration rate is the lack of money for the staff and the lack of promotion of the service. Market penetration by private engineers was very small (only 4.700 audits for whole of Germany in 1991/1992, far less than 1 % penetration in two years). The reason here is the small amount of advertising by the federal programme and the fact that engineers in Germany are generally not allowed to advertise for their service.

The effect on energy-savings depends on the form of the consultancy-process (see table 2, which gives an overview of the effects of the three schemes in Schleswig-Holstein): In those cases where only general information is provided (by the utilities and the consumer agency), the saving effect per customer is low. The costs per household, however, are also very low. The reason is, that only few of the measures recommended by the consultant are directly carried out by the households. With this form of consultancy only between 0 and 5 % of the total household energy consumption can be reduced⁴. The saving effect is much higher in those cases, where the consultancy is carried out on-site and when a written report is a result of the consultancy process. The reason is, that between 30 and 50 % of the measures of audit-reports have been carried out⁵, resulting in a saving effect of 10-20 % of the energy consumption of a household. The disadvantage of the on-site schemes are the high costs (between 0,27-2,07 ECU/kWh)⁶. Column three in table 2 indicates for each of the schemes the cost-benefit-ratio for the households. They have always a (sometimes only small) positive cost-benefit-outcome, because they have almost no money to spend for the consultancy service. The providers of the schemes bear almost all costs.

Table 2: Effects and costs of the schemes in Schleswig-Holstein (estimations)

Scheme of	Saved energy in percent of consumption		Cost-benefit-ratio for the consumer (per visit)
	in agency	on-site	
Utility	0-5%	10-20%	positive
consumer-organisation	0-5%	-	positive
private engineers	-	10-20%	positive

4.3. **Evaluation of Consultancy Schemes in Denmark**

4.3.1. *Organisation*

Denmark has three major energy-audit schemes concerning the standard of residential buildings and heating systems. The schemes are all around 15 years old. The OR-scheme is a yearly inspection of small oil fired heating systems, the target group is mainly the group of owners of single family houses. The VKO-scheme has the objectives to recommend investments that will improve the energy efficiency regarding large heating systems and in addition an education on motivation for energy efficient use of the heating system. Included are all heating systems with more than 120 kW. The scheme is thus covering buildings which vary from multi-family-buildings to factories. Finally, the EK-scheme is a technical examination of all buildings to determine their energy standard. The purpose of the scheme is to help bringing all existing old buildings up to the energy standard of today. The inspection is supposed to be carried out when a building is for sale.

All schemes are governmental, obligatory and have a governing body appointed by the Danish Energy Agency. The governing body has a secretariat that takes care of the day-to-day administration, and the audits are carried out by private engineers or professionals with similar skills. The visits and the administration are paid by the participants. The schemes can be characterized as semi-governmental with a legal framework set up by the state on the one hand

and with an independent administration and consultants on the other hand. Table 3 gives some basic information about the formal contents of the three schemes.⁷

Table 3: Information about the Danish Energy Consultancy Schemes

	OR Scheme	VKO Scheme	EK Scheme
Target objects	Oil burners with a stoking effect under 120 kW	Oil and gas burners with a stoking effect over 120 kW	All heated buildings excl summer houses and owner-occupied flats
Type of energy	Oil	Oil, gas and district heating	All kinds of heating
Obligatory to use the scheme	Yes	Yes	Yes (when selling a building)
Coverage ratio of the audit in per cent out of total buildings	85%	50%	32%
Energy savings due to change in behaviour	Yes (cleaning, adjustment)	Yes	No
Technical energy savings	No	Only on a limited scale	Yes
Control of daily energy use	No	Yes (journal of operations)	No
Consultant implements own advice	Yes	No	No
Initial year	1980	1981 *	1981
Periodic	Yes	Yes	No
Typical consultant	Oil-burner fitter or chimney sweep	Consulting engineer	Consulting engineer or architect
Fixed payment of the audit	Chimney sweep: yes Fitter: no	Yes	Yes

4.3.2. Process and Product

The OR-scheme is a periodic measurement of the flue-gas temperature, content of CO₂, and soot factor. The consumer gets a short report with measured data. If the burner does not work properly, the owner is obliged to get it adjusted--usually this is also done by the consultant. The consultant must also inform the consumer about the benefits he/she will gain from a well-tuned boiler.

Concerning the VKO-scheme, the consultant examines the system's operating economy, often accompanied by the heating manager during the annual inspection. The consultant makes a VKO-report where defects and possible modifications of the system are mentioned. Economic consequences of the recommendations are not mentioned. The report is then sent to the owner of the building. Four times a year the heating manager fills out a working journal with weekly registrations of energy consumption, the system's working temperature etc.

The focus of the EK-scheme is energy savings through investments. The building is inspected according to various measures described in a check list. After the inspection, the consultant makes a cost-benefit estimate of work appropriate for the specific building. The results of the inspection, and recommendations are given to the owner. The scheme was established in connection with a subsidy scheme in the period 1978 to 1980. Subsidies were also granted from 1981 to 1984. Since 1985, it became mandatory to have a heating audit made when the building was sold. The intention of this certification process was that the value of the building would eventually reflect the amount of energy used in the building.

4.3.3. Effects

About 85% of all small burners are measured by OR-consultants, which is a relatively high number compared to the other two schemes. About 50% of the large buildings were covered by the VKO-scheme in 1993. A main reason for not participating has been the fact that many buildings have shifted from oil burners to district heating, where the regulation of the system is less complicated and not much can be done by the heating manager in the building. The subsidy scheme has had a substantial influence on the level of activity in the case of the EK-scheme. In 1993, 32% of all single-family houses, covered by the EK-scheme, had received a heating audit compared to more than 50% in the

years from 1981 to 1985. The number of consultants peaked with almost 1.300 consultants in 1984 compared with 500 consultants in 1993. The following table shows the effects of the Danish schemes measured in 1993 in terms of saved energy and financial costs and benefits.

Table 4: Effects and Costs of the Schemes in Denmark⁸

	Saved energy in percent of consumption	Cost-effectiveness for the consumer
	Percent	DKK per visit
OR	5,6	+100
EK--small buildings	4,0	-800
EK--large buildings	4,0	-88 000
VKO--fuel	7,7	-2 100
VKO--district heating	1,4	-3 700

The effects of the schemes vary between 1,4 and 7,7 % for the different schemes. The figures are measured as energy savings out of the customers' total energy use after 7 years.⁹ The economic consequences vary from a small surplus of 13 ECU for the OR-scheme to a loss of about 11 ECU per visit for the EK-scheme seen from the consumers' point of view. There may be other non-financial factors to justify the existence of the schemes, but from an isolated economic viewpoint where only the financial benefits of energy savings and the costs of investments and audits are considered, the outcome is negative for the consumers.

4.4. Comparison and Conclusions

The following table is a brief description of the very different characteristics of energy audits found in the two regions.

Table 5: Differences in the Organisation of Energy Consultancy in Denmark and Schleswig-Holstein

Object/organisation	Schleswig-Holstein	Denmark
Organisers and providers of energy audits	Mainly private organisations	Mainly organised by the Energy Agency, provided by private consultants
Legal status of the schemes	Voluntary	Mandatory, but without sanctions
Target groups	All consumers interested in getting advice	All house owners
Object	Information on all energy aspects	Information on special issues
Payment of the audit	Free of charge or subsidised	Consumer payment of all costs
Motivating factors besides energy savings	Free or partly free of charge	Obligatory schemes
The role of the consultant	Technical role covering many energy issues	Specialised technical role

The table indicates that there are great differences between the audits in the two regions. Compared to Schleswig-Holstein, the Danish audits are characterized by a relatively strong centralised organisation. The Danish audits have compared to the schemes in Schleswig Holstein secured a relatively high penetration rate and a relatively high effect as it is mandatory to participate. The schemes are reaching many consumers, who might have a large potential for energy savings, but would never participate if it was just an offer on a voluntary base. On the other hand, the costs are relatively high for the consumers compared to Schleswig Holstein, and the outcome of the Danish schemes seen from an isolated economic viewpoint is negative.

These differences in advantages and disadvantages of organising energy audits lead to different trade offs, when organising an audit, which will be presented in the next section. However, some possibilities for improvements of existing consultancy schemes can be derived from our analysis. Based on the comparison of the different consultancy schemes in the two countries, the following conclusions can be drawn:

- Every scheme has to be promoted. Without promotion, the scheme is not used, because the existing motivation by the households is not strong enough.
- The existing schemes must be co-ordinated, otherwise they compete against each other, thus lowering their efficiency.

- Every scheme must focus on special target groups and the households have to be segmented into different groups (type of building, sort of heating system, etc.)
- Consultancy-schemes should include a written report as a result of the consultancy-process.
- If possible, the process has to be carried out on-side.

4.5. The Dilemma of Organising Energy Audits

Based on the Danish and German schemes in the previous section we can now on a very general level identify effects of different organised schemes. Effects are here defined as impact on market penetration, energy saved per household, total saved energy, and cost-effectiveness for the government. The ratings low--high--zero just indicates if the effect is an advantage or disadvantage, and does not represent an exact number.

Table 6: Different Effects of Three Types of Energy Consultancy

Type of scheme	General advising in agencies--voluntary and free of charge	Specialized on-site audit--voluntary and nearly free of charge	Specialized on-site audit--mandatory and paid by the consumer
Extension	Low	Low	High
Saved Energy per household	Low	High	High
Total saved energy	Low	Low/medium	High
Cost-benefit-ratio (governmental perspective)	Close to zero	Zero/positive	Negative

The table indicates that the different types represent trade offs between disadvantages and advantages, as none of the types of schemes can be regarded as being the overall best on all the evaluation criteria.

General advising by agencies is of low cost and easy to implement. However, the penetration and amount of saved energy are low. From a governmental perspective, it is advantageous that the costs are beared by private companies. But regarding the overall low effect, general advising might need to be replaced or supplemented by other policy instruments operating on a larger scale.

A voluntary on-site audit even as a nearly free-of-charge-offer will also have a low market penetration and a low amount of energy saved in total, as it is voluntarily attracting the active and interested households. However, the amount of saved energy per household is high for the same reasons. The high costs per case, the high implementation rate of the suggested measures, and the limited number of participants lead to a cost-benefit-judgement for the state, which is moderately positive.

Consumer-paid mandatory audits lead to relatively high savings in many households, thus reaching the highest amount of participants and saved energy in the household sector of all three schemes. But as the scheme is mandatory, the consultant will keep visiting the building even when savings have already been introduced and implemented, and when the consumer is not willing to follow the suggested saving measures. The cost-benefit-ratio for the state is therefore negative, even when the consumer has to pay the consultant's work.

As a decision maker, one has to choose how much one is willing to pay in order to save a certain amount of energy, as none of the schemes fulfils both large total savings and a positive cost-benefit ratio.

5. CONCLUSIONS REGARDING CONSULTANCY AS AN ENERGY POLICY MEANS

These dilemmas seem impossible to overcome simultaneously. Are there alternatives to the present organisation of energy audits? How can policies be designed to reach energy savings in the housing sector? Different views from different perspectives need to be integrated to answer this question. As seen before, energy consultancy is sometimes an expensive measure and sometimes does not result in significant savings. Because of the characteristics of this policy instrument, high saving effects for the private household sector cannot be expected. Earlier studies with a more critical outcome regarding consultancy as an instrument to reach energy savings (for example, Peters 1986, Nielsen 1993) are obviously more supported by our evaluation than studies that come to more positive conclusions, especially

in the U.S. and Canada (Ridge 1986, Quimet and Weintrop 1993). Thus, one must ask if it is still reasonable to use consultancy as a policy instrument.

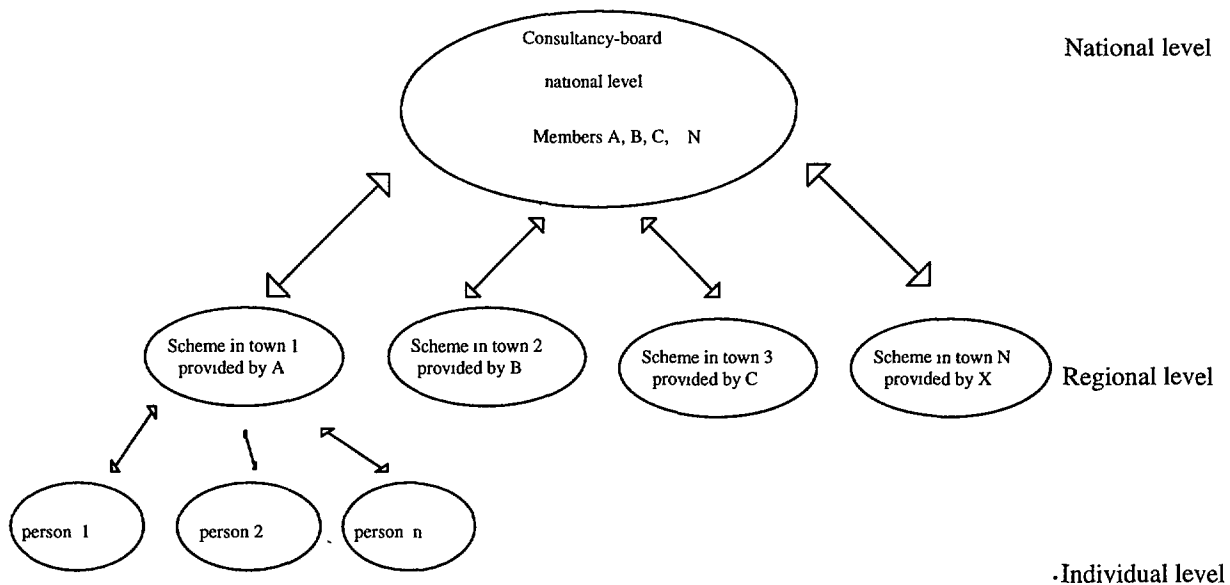
Looking at the alternatives, however, it will quickly become clear that this is not a question with a simple "yes" or "no" answer. Rather, all different kinds of instruments mentioned at the beginning of the paper have to be used to achieve energy savings in the household sector. Norms and standards, for example, might be part of the solution in specific cases (consumption standards for electric household appliances, thermal envelope standards for new buildings, retrofit standards for existing buildings, e. g. when the buildings change ownership). If financial incentives motivate consumers to save energy, additional consultancy would help the consumers determine what sort of measures will best fit their specific situation. Therefore, many energy-saving measures need at least some kind of specialised technical expertise. General information campaigns are normally without significant direct effects on energy savings when they do not follow a clear strategic approach. The most targeted way to disseminate information is consultancy. From a psychological perspective (Wortmann 1994), it is advantageous that consumer's motivation to save energy can be enhanced by consultancy, as it normally increases the freedom to act and, therefore, relies heavily on the "intrinsic" motivation of the consumers--opposite to financial incentives which are the classical extrinsic motivational factor (I do things because I am paid and not because I am convinced by myself I should do so). Consultancy will be a necessary complementary measure to other policy instruments, especially when specific knowledge, equipment or individual advice are necessary.

Another argument to keep consultancy in the energy policy-"tool-kit" is the possibility for improvements of the existing schemes, which can be derived from the experiences described above. Energy consultancy not only means technical advice, but also persuasion of consumers to be more active energy conservers, with the consultant using communication techniques and even psychological knowledge (Gonzales, Aronson and Costanzo 1988). This implies that energy consultants are much more sellers or marketing experts promoting energy conservation than mere technical experts explaining their knowledge. Additionally, greater targeting of energy saving programmes and of consultancy programmes and more knowledge on energy related motives within the target groups (households) is necessary to reach less active and informed consumers. Segmentation studies (e. g. Prose and Wortmann 1991, and Lineweber and Henneberger 1992) should be used for the establishment of offers to the consumers, using environmental protection and other motives of the consumers for the marketing of energy savings. Existing schemes suffer from neglecting the consumer's perspective and can, therefore, be refined by taking the above considerations into account.

Regarding the organisation of consultancy, improvements can be reached first through more co-ordination between different actors in this field, which is clearly the case in Schleswig-Holstein. The lack of co-ordination there shows that improvements can be reached even without much financial effort (see section 4.4). Generalising the experiences in Schleswig-Holstein and Denmark to other countries, a two-step-process is suggested: a policy planner, who wants to implement new consultancy scheme, has to evaluate the existing situation: who provides consultancy now? What is missing? Which form of consultancy is adjusted to the needs of the different segments of consumers in a given country?--As a second step, existing schemes can be improved following this analysis and under consideration of the recommendations above (see 4.4.).

Furthermore, the traditional top-down implementation of the consultancy programmes (especially in Denmark with its mandatory schemes) could be replaced by a bottom-up approach with much more consumer-orientation. The formulation of general conceptions would still be the job of the politicians, but their implementation has to be discussed and negotiated with the different target groups concerned. The intention here is to provide consultancy as much as possible on a decentralized level, thus relying heavily on already existing activities of actors (e. g. utilities, consumer organisations and environmental groups) supporting and promoting them and at the same time providing an organisational framework for this support and the exchange of experiences. This procedure would allow the consultancy scheme to respond to the individual characteristics and needs of households in small areas like municipalities. Thus, existing actors in this field (especially non-governmental organisations), would work with groups at different levels of society: local, regional and national (figure 1).

Figure 1: A Bottom-up Organisation of Energy Savings



The Swedish information campaign, which included consultancy schemes at the local level, has proven the usefulness of such effort (see Vedung 1990). This approach would allow governmental agencies to support grass root developments and pay only for the co-ordination of existing activities instead of prescribing and controlling the goals and activities in a given policy field.

Finally, it will be of great importance to develop a strategic conception for a climate protection policy, where not only the role of consultancy is explicitly described, but where also additional measures like financial incentives and/or laws are taken into account and combined in a conclusive energy policy strategy. In the given situation the consumer still first has to learn that she/he has a problem and should be committed to do something to solve it. Therefore, an effective information dissemination has to be the first step, which can be accompanied by norms and standards showing, that the state is not interested in only symbolic efforts. After that problem awareness will increase which leads "automatically" to a higher need for special individualised (and consumer-paid) energy consultancy and thus to a market for such service. Such a conception is today unfortunately missing, perhaps not so much in Denmark, but certainly in Germany and Schleswig-Holstein, respectively.

6. REFERENCES

- Gonzales, M.H., Aronson, E. and Costanzo, M. 1988. "Using social cognition and persuasion to promote energy conservation: A quasi-experiment." *Journal of Applied Social Psychology*, 18, 1049-1066.
- Katzev, R.D. and Johnson, T.R. 1987. *Promoting Energy Conservation. An Analysis of Behavioural Research*. Boulder: Westview Press.
- Lineweber, D. and Henneberger, T. 1993. "Improving marketing effectiveness by integrating customer needs into residential DSM program designs." Paper, presented at the 2nd international conference on energy efficiency and DSM, Stockholm, September 21-23.
- Nielsen, L. 1993. "How to get the birds in the bush into your hand." *Energy Policy*, 21, 1133-1144.
- Peters, M. (Ed.) 1986. *Energiesparen unter der Lupe*. Zürich: IPSO - Sozial- und Umfrageforschung.
- Prose, F. and Wortmann, K. 1991. *Energiesparen: Verbraucheranalyse und Marktsegmentierung der Kieler Haushalte*. Kiel: Christian-Albrechts-Universität.

Quimet, J. and Weintrop, R. 1993. "Achieving a market transformation with a large-scale residential mail-back audit program." Paper, presented at the 2nd international conference on energy efficiency and DSM, Stockholm, September 21-23.

Ridge, R.S. 1986. "An Analysis of various types of home energy audits." *Evaluation Review*, 10, 1986, 385-395.

Vedung, E. 1990. "Governing through information. The Swedish energy conservation program." Paper, submitted for publication in the *Journal of Peace Studies*, Seoul, Korea.

Wortmann, K. 1994. *Psychologische Determinanten des Energiesparens*. Weinheim: Psychologie Verlags Union.

7. ENDNOTES

1. Stefan Rieder is now with Interface, Institut für Politikstudien, Luzern, Switzerland.
2. Verbraucherzentrale Nordrhein-Westfalen 1993. Projekt "Erweiterter Energieberatung", Zwischenbericht 1990-1992. Düsseldorf. Ifo-Institut 1994: Wirksamkeit von Maßnahmen zur Energiesparberatung. München. G.I.S. 1990. Vor-Ort-Beratung zur Energieeinsparung im Wohngebäudebereich. Hamburg Prose, F. and Wortmann, K. 1991. Energiesparen: Verbraucheranalyse und Marktsegmentierung der Kieler Haushalte. Kiel: Christian-Albrechts-Universität. Wortmann, K. Herbert, W. and Klitzke, M. 1994. Akzeptanz des neuen Stromtarifs der Schleswig AG bei privaten Haushalten - Bestandsaufnahme und Möglichkeiten der Akzeptanzverbesserung. Kiel: Forschungsgesellschaft für umweltschonende Energieumwandlung und -nutzung mbH.
3. These results are based on interviews with energy consultants and on the study Herbert, W. and Lörx, S. 1994. Der Einfluß des Umweltbonus der Stadtwerke Kiel auf den Stromverbrauch der Haushaltskunden und das Image der Stadtwerke als Energiedienstleistungspartner. Kiel: Forschungsgesellschaft für umweltschonende Energieumwandlung und -nutzung mbH.
4. These figures are estimations based on a comparison of the existing schemes in Schleswig-Holstein with similar forms of energy-saving measures, which have been evaluated in Europe, for example:
Peters, M. 1986. *Energiesparen unter der Lupe*. Zürich.
Ester, P. 1985. *Consumer Behaviour and Energy Consumption*. Dordrecht.
InnoTec Systemanalyse 1991. *Least-Cost Planning für Schleswig-Holstein*. Berlin/Kiel.
5. Estimations on the basis of the different reports mentioned in endnote 2.
6. See Bremer Energie-Institut 1994. *Erfolgskontrolle hessischer Energieberatungsprogramme*. Bremen.
7. The information is based on:
Christensen, I.M et al. 1994. *Konsulentordninger i enfamilieshuse*. Copenhagen: AKF Forlaget.
Togeby, M. et al. 1994: *Konsulentordninger i større bygninger*. Copenhagen: AKF Forlaget.
Larsen, A. and M. Togeby 1994. *Konsulentordninger og energibesparelser* Copenhagen: AKF Forlaget.
8. The private economy is found by calculating the value of saved fuel and subtracting the price of the consultant's service and the necessary investments. For VKO, a price for the suggested investments and an extra tie of the plant personnel are calculated and added to the costs of the consultant.
9. Energy savings might stem from other factors than consultancy, e. g. new windows. The effects shown in the table are savings, which can be directly attributed to the consultancy.
10. It should be noticed here, that carefully considered standards and campaigns may be a good precondition to enhance the use of consultancy.