

Can energy utilities play a role in local political energy savings programs?

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Abstract

Danish municipalities are putting climate change high on the agenda with action plans and targets to cut greenhouse gas (GHG) emissions. To reach these targets the municipalities need to engage citizens and the local business sector. In order to find new routes on how to engage and motivate local businesses to achieve GHG reductions, seven Danish municipalities (Copenhagen, Albertslund, Allerød, Ballerup, Herning, Kolding and Næstved) have joined forces in an EU LIFE project “Carbon 20”. A key element in the Carbon 20 project is to offer an energy screening free of charge for the participating companies. The Carbon 20 project has entered agreements with different energy consultants to provide these screenings for little or no cost – utilising a national scheme obligating the Danish energy utilities to reduce energy use among customers. However, the energy consultants are rather reluctant to offer the screening to small companies since the savings are rather limited in absolute terms. This article will focus on the appropriateness of using energy utilities (or consultants working on their behalf) in a local political context of engaging the local business sector in achieving energy savings and GHG emission reductions. It concludes that all the actors seem interested in continuing expanding the cooperation, however all also stresses that the current set-up needs to be improved to secure a clear win-win-win situation for all parties.

Introduction

The intergovernmental Panel on Climate Change stated in their 2007 report that global warming is taking place, and that it very likely is caused by human activities resulting in the release of greenhouse gases (GHG) such as CO₂ (IPCC 2007). They further pointed to the reduction of energy consumption as one of the most effective ways to cut GHG, and further pointed at the industrial sector for having a big potential for improving their energy efficiency (IPCC 2007).

Several scholars have however concluded that a “gap” often exist between potential cost-effective energy efficiency measures and measures actually implemented in companies – also known as the energy efficiency gap or energy paradox (Thollander, Danestig & Rohdin 2007, Thollander, Dotzauer 2010, Rohdin, Thollander 2006, Paton 2001, Jaffe, Stavins 1994).

Such gaps relate to several different barriers, which for SME's among others relates to (Thollander, Danestig & Rohdin 2007, Lees 2012):

- Lack of time or other priorities (including for capital investment).
- Lack of access to capital/funding.
- Cost of production disruption.
- Lack of knowledge.
- Energy efficiency measures is, in contrast to renewable energy measures often unseen and rarely a conversation point for business and often not subsidised by governmental funding in same extend as renewables.
- Energy efficiency calls for a variety of different skills often not present in SME.

- Energy cost (although risen in recent years) is not a significant element of SME's expenditure.

The existences of these gaps and barriers makes Paton 2001 argue that regulation and policy driven voluntary agreements does play an important role for directing attention to these savings potential (Paton 2001). This especially applies for SME (Lees 2012).

Several countries have also applied political programmes targeted energy-efficiency improvement in industries often in the form of voluntary agreements either with single firms or branch organisations etc. (Krarup, Ramesohl 2002, Krarup, Ramesohl 1999).

However according to respectively Bradford (2008) and Thollander (2010) the majority of these programmes have targeted the big energy consumers such as large companies and industrial sites, while SME generally have been overlooked. However there often exist untapped potentials (Thollander, Dotzauer 2010, Bradford, Fraser 2008).

In Denmark energy-efficiency policies targeting both households and businesses have been in place since the seventies and reinforced during the nineties. The main approach for promoting energy efficiency in businesses has been the introduction of energy taxes, but providing the energy intensive companies an option to get rebates if they enter a voluntary agreement with Danish Energy Agency to cut energy use (Krarup, Ramesohl 2002, Krarup, Ramesohl 1999, Togeby et al. 2009, Ericsson 2006).

In recent years, the energy saving policy in Denmark has been added a policy mechanism that mandates the energy distributors to save energy among their customers (Togeby et al. 2009, Togeby et al 2012). While the distributors previously have been subject for internal efficiency targets, and requirement to provide information for customers about their general use, from 2006 they have to show specific involvement in reducing end-use energy consumption.

Denmark is thus following similar trends as in several other countries also applying obligations for energy utilities to save end-use energy as an important policy tool for achieving increased energy efficiency. Several different scholars/authors have addressed this policy tool from several perspectives dealing with both specific evaluations and more theoretical economic discussions (see among others Giraudet, Quirion 2008, Friedman, Bird & Barbose 2009, Moser 2011, Rezessy, Bertoldi, Giraudet, Bodineau & Finon 2011, Bertoldi et al. 2010, Child et al. 2008).

A preliminary assessment of the Danish implementation done by Togeby et al. in 2008, found that this approach seems to provide cost-efficient energy savings (Togeby et al. 2009), however a newly published evaluation also by Togeby et al. concludes that the approach has socioeconomic benefits when it comes to savings within the business sector, but fails to deliver socioeconomic benefits in relation to private housing (Togeby et al. 2012). It further emphasises that the actual net savings is below 50 % of the reported savings in the business sector and even below 20 % of reported savings in private housing. By net savings they refers to the actual achieved savings that can be ascribed this policy tool taking into account both additionality and inaccuracy in the reported savings. In other words only respective half and 1/5 of the reported savings under this schemes

can be ascribed to actual implemented savings because of the scheme (Togeby et al. 2012).

In addition to the national political initiatives, the local political level is increasingly also addressing energy savings among its citizens and especially the local business sector with special emphasis on SME.

Also here there are plenty international experiences. Evaluations of some of these initiatives in the UK and Sweden by respectively Bradford and Fraser 2008 and Thollander and Dotzauer 2010 among others conclude that such schemes should provide a energy screening/audit free of charge or at least highly subsidized and engage in follow up facilitation to help implementation (Bradford, Fraser 2008, Thollander, Dotzauer 2010).

In Denmark, several different initiatives also exist. Among others have seven municipalities joint forces and formed the Carbon 20 project aiming at engaging 100 local companies, primarily SME, in reducing their GHG emissions by 20 % through e.g. energy savings.

The concept in the Carbon 20 project is to utilize the energy saving obligations of the energy utilities to get them to offer energy screenings/audits free of charge to business within these seven municipalities provided that the businesses enters a Voluntary Agreement with the municipality to cut their GHG emissions by 20 %.

This paper adds to research on energy saving obligations and municipal energy efficiency schemes by assessing specifically how such an energy obligation scheme can be activated in a municipal setting through engaging the local business sector.

The article is based on interviews with civil servants in the participating municipalities of the Carbon 20 project, some of the involved energy consultants and experts in the field as well as reviews of different evaluations and political documents.

Energy saving obligations for energy utilities

Several countries have established obligations for their energy utilities to save end-use energy as a central element in achieving national energy savings. In EU among others: UK, France, Italy and Belgium/Flanders (Lees 2012).

According to a resent study by ECEEE these energy saving obligation schemes (or EEO – Energy Efficiency Obligations – as Lees frame them) often consist of (Lees 2012, Bertoldi et al. 2010):

- Part of the energy utilities have an obligation to save energy in eligible end-use customer segments.
- This obligation can be allocated to either distributors or retailers. When allocated to retailers the cost of the saving is generally included as a normal part of general market price for energy, whereas the cost often is stated as a fix element of the energy bill when targets are allocated to distributors.
- If the Energy utility fails to deliver those energy savings, the company will incur financial penalties.
- Generally the energy utilities are not restricted to savings from own customers and the companies can shell and by earth others savings.

- The target for the particular energy company is related to its market share in the volume of energy supplied or distributed by it.

The study by ECEEE makes the overall conclusion that “*there is clear evidence that well designed EEOs (...) can overcome many of the barriers to energy efficiency which prevent the uptake (...) especially by households and small organisations*” (Lees 2012).

The argument is mainly that the schemes provide the energy utilities incentives to offers the end-users personalised advice about their energy use and thereby are capable of overcome some of the mentioned barriers. However, the report do also point out, that cost of measuring compared to savings achieved is better in bigger projects, where the actual measuring of savings from households would be relative expensive as little savings is achieve in each project. For this reason several schemes have introduced some “simple approach” calculations based on average figures in relation to households, while specific calculations based on specific applied solutions is generally used in the business sector (Lees 2012).

THE ENERGY SAVING OBLIGATION OF ENERGY UTILITIES IN DENMARK

As mentioned in the introduction, Denmark has been addressing energy efficiency since the mid seventies and reinforced during the nineties resulting in among others high energy prices due to energy- and CO₂ taxes and targeted contributions over tariff (Togebly et al. 2009, Togebly et al. 2008).

Part of the revenues from these “taxes” are reinvested in targeted initiatives to reduce the energy use in Denmark covering such activities as support for the different information campaigns, support for different knowledge and counselling centres as well as covering the cost of the energy saving obligations for energy utilities (Togebly et al. 2009, Togebly et al. 2008).

The energy utilities in Denmark have been obliged to realise energy savings since the 1990s covering own activities and information to own customers. However from 2006 they are now obliged to achieve savings in end-user segments (households as well as businesses and public sector but not restricted to their own customers) (Togebly et al. 2009, Togebly et al. 2012).

In contrast to e.g. UK and France, where the obligations are directly given the different energy retailers (suppliers/vendors), the obligation in the Danish scheme rest upon the distributors (grid companies) of respectively electricity, gas and heat. Furthermore, the actual targets are formulated in “voluntary agreements” between the Energy Agency and the different central business associations, who then distribute the commitments (Lees 2012, Bertoldi et al. 2010, Togebly et al. 2009, Togebly et al. 2012). As with the other schemes, there is a possibility for issuing penalties if targets are not achieved, however, at present, they are not defined (Moser 2011). Instead of penalties, the Danish schemes rest upon compensating the companies for their expenses from a part of the reinvested revenues from energy taxes mentioned above (Togebly et al. 2008).

In the latest political agreement on energy in Denmark, the savings that the energy utilities need to achieve has been increased significantly, while also reserving a larger proportion of the reinvested revenues to cover the energy utilities’ expenses including any subsidy for the end-users (Regeringen 2012).

At the same time, the new political agreement cut funding for the general knowledge distributing institution (Go’ Energi), that have been focusing on providing targeted information for especially SMEs, households and public institutions and internalising some of their general information aspect under Danish Energy Agency. (Regeringen 2012, Togebly et al. 2012).

The energy utilities must demonstrate that they, or the consultants working on their behalf, have been actively involved in a project in order to count the savings achieved as part of their obligations and get compensated their expenses. This involvement can consist of either (or a combination thereof): energy audits/screenings, targeted information, counselling or/and subsidies. However, there is (at the moment) no requirement that the identified savings need to be additional, meaning that there is no requirement to show that their involvement has been decisive for the realisation of the saving. The utilities documentations of their involvement and reported savings is not subject to any third party verification, but shall be kept for 5 years and subject for conformity samplings (Togebly et al. 2008, Togebly et al. 2012).

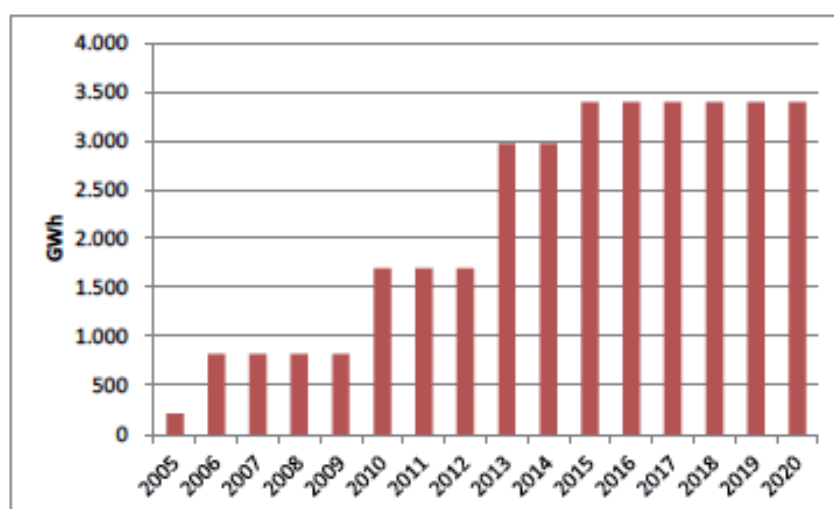


Figure 1. The obligations for the Energy Utilities savings in Denmark (Togebly et al. 2012).

A recent evaluation of this energy saving obligation scheme (Togebly et al. 2012) concludes that for the business sector only below 50 % of the achieved savings are considered as additional due to this policy tool, whereas it is even below 10 % for the private housing. It furthermore concludes and confirms earlier samplings of the scheme (Niras, ViegandMaagøe 2011) that several of the reported savings is overestimated. This means that the net-savings are below 50 % and 20 % of the reported savings for respectively companies and households. As mentioned in the introduction, net savings is here an estimation of the actual savings implemented due to this policy tools when adjusting the reported savings in respect to inaccuracies and additionality. Furthermore, both evaluations state that several procedural faults, inadequate- or incomplete data also has been found (Togebly et al. 2012, Niras, Viegand Maagøe 2011).

Despite this, the evaluation concludes that energy saving obligations on energy utilities contribute with socioeconomic efficient savings in relation to the business sector, but fail to do so in the residential sector (Togebly et al. 2012).

The evaluation also provides some recommendations – relevant for the business sector among other: that companies should not receive subsidy for projects with payback time below 1 year, and that the subsidy should account for a maximum of 30 % of the investment (Togebly et al. 2012).

Local political level focus on Climate Mitigation

Around the world several local authorities are putting climate on the agenda. For instance, the international initiatives “ICLEI - Local Governments for Sustainability” (formerly ‘International Council for Local Environmental Initiatives) and the C40 Cities Climate Leadership Group addressing climate mitigation. Likewise in EU, several municipalities are joining the Covenant of Mayors, among them 25 in Denmark, committing themselves to reach the EU 20 % reductions of GHG in 2020 within their local area¹.

The municipalities often only directly control a minor part of the emissions themselves, whereas the local business sector often control around one third, while private housing is responsible for a majority of the emissions. The municipalities will thus need to engage the local citizens and the local business sector in order to be able to reach their GHG reduction targets. While several municipalities are taking actions also in the private housing sector, this article focuses on efforts regarding the local business sector (Albertslund Kommune 2009, Ballerup Kommune 2010).

As mentioned in the introduction several different schemes for engaging the local business sector and SME have been conducted and evaluated. Some of the main conclusion in terms of reaching SME is: That specific consulting about potential savings are provided free-of charge or highly subsidized, and that there will be offered some followup guidance in terms of implementation of highlighted savings (Thollander, Dotzauer 2010, Bradford, Fraser 2008).

THE CARBON 20 PROJECT AND ENERGY EFFICIENCY OF BUSINESS

In Denmark, several municipalities have taken different initiatives to engage the local business sector in reducing their GHG emissions and energy efficiency and energy savings is often the starting point for this engagement.

Among them, the seven Danish municipalities (Copenhagen, Albertslund, Allerød, Ballerup, Herning, Kolding and Næstved) have joint forces in a EU LIFE project “Carbon 20” with the purpose of engaging 100 local businesses in achieving a 20 % reduction of their GHG emissions. The project aims to reach its targets through entering specific voluntary agreements with each where the company on the one hand “commit” to reduce emission by 20 %, and at the same time is provided some consulting from mainly energy consultants free of charge for the companies².

To perform these energy screenings the project have entered agreement with several different energy consultancies. This include both internal consultancies under the energy utilities subject for the national savings obligations, but also other consultancies that uses the energy screening as platform to promote and sell hardware solutions. The general agreed concept is that the consultants provide the screening free-of-charge for companies. However, the consultants can be compensated by the project with approximately 700 Euro given that e.g. the company doesn't chose to report the saving through the given consultant/Energy utility.

Experiences with the combination of obligation to energy utilities for energy savings and municipal schemes for engaging the local business sector

In the Carbon 20 project, the 7 municipalities have made general agreements with 8 energy consultants. At this point in the project there is mainly experiences from involving half of them covering both the energy utilities (electricity) (SEAS-NVE and TRE-FOR), district heat producers/distributors (Vestforbrændingen and Albertslund forsyning) as well as a consultancy also selling hardware solutions to achieve savings (Schneider Electric). This subsection is based on interviews with energy consultants working at 4 of these (SEAS-NVE, TRE-FOR, Vestforbrændingen and Schneider), as well as interviews with civil servants at the 7 municipalities.

The majority of the interviewed energy consultants do to varying degree pay some attention to the national energy savings obligation scheme mentioned above, however, for several of them, the obligations seems only to play a minor role for their participation in Carbon 20.

ENERGY UTILITIES (ELECTRICITY) EXPERIENCES FROM THE CARBON 20

Several of the electricity utilities have established specific units focused on providing consultancy as an effort to achieve energy savings that can count as part of their savings obligations.

In the beginning of the scheme, they generally offered the energy audit free of charge, but with a restraint that any subsidy (applicable due to the energy saving obligations scheme) for the identified savings would be kept by the energy utilities. However, as the scheme developed, a market for energy savings have

1. http://www.borgmesterpagten.eu/about/signatories_da.html?q=S%C3%B8g+efter+en+underskriver%E2%80%A6&country_search=dk&population=&date_of_adhesion=&status= (the 20th June 2012)

2. www.carbon20.dk (the 20th June 2012)

developed, where companies can sell their savings not only to energy utilities, but also different installers, electricians and other intermediaries etc. The offering of these free audits with restraints attached has therefore become counterproductive as they became subject for disputes about the “ownership” of the saving.

Today, the majority of the energy utilities do not perform their own consulting services any longer, but are instead relying on fulfilling their obligations through “buying” savings from installers, insulators, electricians etc. Those who still have kept their internal energy consultancy unit also only achieve a minor part of their obligations through this direct consulting. Tøgeby et al. 2012, as well as Lees 2012, confirms this trend of relying on 3rd parties.

Furthermore, they have changed the approach. Instead of providing the audit free of charge, such audits now cost from around 1,000-2,500 Euro, but with no restrictions in terms of possibilities for “selling” the identified savings subsequently. The upfront payment is however only to cover the cost of performing the audit, and not as such something that the energy utilities earn money on. The focus of the audits and reports are still to be used as a platform for identifying savings. The energy utilities then enter specific agreements about the implementation of the identified saving, including subsidising them given that they can attribute the saving to their savings obligation.

In contrast to the earlier approach of providing the audits free of charge, both interviewed electricity utilities stress, that this upfront payment for the audit actually provides a better success rates. The companies have already taken the decision to use resources on the first audit, and thus need to continue with the implementation to get the first expenses covered.

Both interviewed utilities acknowledge that this up-front payment restrains some companies, especially smaller ones, from getting involved as they are uncertain about their savings potential and thus if this preliminary expenses can be recovered through savings. However, they stress that they prefer to work with a smaller number of companies with better likelihoods of realization of identified savings, rather than having a bigger pool of somewhat interested companies, with lower potential of actual implementation.

In the Carbon 20, the energy screening is as mentioned offered free of charge to the companies, but on the same conditions in terms of no restrictions on selling the identified savings. Based on their previous experiences, the two Electricity utilities are a bit sceptical that the companies also will follow up, but do hope that the companies “commitment” in the Carbon 20 agreement will compensate.

While both electricity utilities acknowledge that achieving savings in respect to fulfilling their obligations do play a part in their motivation for being involved in Carbon 20, both add, that a big motivation is also to improve the collaboration with the local authorities and show their presence in network activities among companies. Especially TRE-FOR stresses that their main reason to participate in Carbon 20 is to show their presence on the local green arena and take part in the local networking around energy efficiency, GHG mitigation etc., while the actual saving obligation is, of course, something they hope will follow as well.

TRE-FOR has for that reason also chosen not to be compensated the 700 Euro by the Carbon 20 project for screenings

within their main area of operation, but do ask for compensation if going to some of the other municipalities. Contrary to this, SEAS-NVE generally asks for compensation by the projects, unless the companies chose to get SEAS to implement the savings. The compensation is thus their safeguard to get their expenses partly covered even if no further agreements are made.

However, both stress that the cost of having this consultancy, and furthermore also providing it for no or reduced cost, means that they cannot offer the same subsidy for the savings as some of the other actors having abandoned such consultancy activities. They are both, and especially TRE-FOR, therefore somewhat sceptical of how many actual agreements on implementation they will manage to get through Carbon 20. TRE-FOR has experienced that a company, after their screenings, have “sold” the savings to someone else. This makes them emphasise that while they are very positive to the idea of having a closer collaboration between the municipalities and energy utilities, it is very important that the set-up is revised such that a much clearer business case for the consultancies is established. Even though TRE-FOR is mainly participating in Carbon 20 as a platform to promote itself and to network, they will not be able to continue the current set-up after Carbon 20 – there will be needed some kind of adaptation in order to secure their business models e.g. some kind of way to commit the companies to implement the savings identified in the screening.

During the project, one of the bigger energy utilities has chosen not to join because of such concern. Likewise one of the local energy utilities has withdrawn from the projects as they found it difficult to establish a business model on the given terms.

OTHER ENERGY CONSULTANTS' EXPERIENCES FROM CARBON 20

For the two other interviewed energy consultancies, respectively the district heating supplier, Vestforbrændingen, and the electrical equipment supplier, Schneider, the energy saving obligations do only play a minor role in their general business model for conducting their energy consultancy and is likewise of minor or even no importance for their motivation for participating in Carbon 20.

As a distributor of district heating Vestforbrændingen is very focused on the efficiency of the whole system, and can fulfil their energy savings obligations through such systems improvements. One of the crucial aspects is that the temperature of the water coming back from the customers is as low as possible. A low temperature here is furthermore correlating with an efficient heating utilisation at the customers. Vestforbrændingen has therefore established a internal consultancy focused on providing counselling to customers with a high temperature on water coming back providing both savings for the customers, but also optimising the whole system and thus providing Vestforbrændingen a better system.

Furthermore, Vestforbrændingen is trying to expand their covering and especially trying to get several of the business to convert to district heating.

Vestforbrændingen is mainly participating in Carbon 20 to get around to a broader pool of their customers and not just the one where they have identified the biggest improvement options. Furthermore they state, that it is important for a company like Vestforbrændingen to show their active commitment

towards a transition towards a fossil free energy sector, and support the work for reducing GHG emissions. Vestforbrændingens district heating is based on the incineration of waste and as such counting almost as GHG neutral. A converting from a normal gas fired heating system to a district heating based on waste incineration is according to Vestforbrændingen equal to a 24 % reduction in GHG emission from the company. Without actually being an explicit target of participating in Carbon 20, the involvement has resulted in several new customers.

For Vestforbrændingen the energy saving obligation is not considered having any direct influences in their motivation. Their interest is however restricted to those areas where they physically are present with infrastructure or plan to be in near future as their main focus is existing customers or potential new ones.

For Schneider the saving obligation is also playing a minor role in their business models and none for their involvement in the Carbon 20 project. Schneider is generally a producers and vendor of hardware solutions for the management and distribution of electricity, and thus not obliged to the energy savings.

During the past couple of years, Schneider is trying to move from being supplier of components to be an energy (electricity) optimisation company. Schneider is e.g. very active in finding ESCO (Energy Service Company) models for the public sector. However, for the business sector they find that the fluctuations in the energy use due to fluctuating orders is generally too high and the investment horizons too low with payback times maximum of 3 years to manage such ESCO models. Instead of ESCO models, their general concept for businesses looks similar to the ones of energy utilities.

Schneider also conducts a preliminary energy screening for around 1,500 Euro as a platform for identifying further projects. But where the energy utilities are interested in the savings as part of their obligations, Schneider is focused on the potential selling of the hardware and solutions necessary to implement the savings.

Schneider includes the possibility to receive subsidy for some savings, but mainly as an extra argument in their dialogue with companies for them so continue with the savings and e.g. show a better payback time than without the subsidy. However the interviewee also stresses, that it is generally not the subsidy that makes the big difference as it often only reduces the payback time negligible, put in some business with a very high focus on specific payback time no longer than e.g. 2 years they can make a difference.

Schneider sees the Carbon 20 project as an opportunity to expand their platform for talking energy savings with potential customers. As the Carbon 20 project provide Schneider the opportunity to get a focussed talk with potential customers, the Carbon 20 project actually saves Schneider some of the preliminary efforts of establishing the first contacts. For that reason Schneider do only ask for compensation from the projects where they up front considered the company as too small or out of scope to actually be a potential customer for Schneider's main products. In general meaning that for companies having less than 50,000/100,000 KWh Schneider ask for the 700 Euro compensation.

In terms of experiences, Schneider supplement the energy utilities in terms of their experiences of the value of the up front payment contra free of charge. The interviewee further

echoed the energy utilities in their concern about the business outcome, but emphasis that there is a longer decision process for the companies in Carbon 20 as several actors are involved. This does however also blur the picture in terms of who is actually in charge of what especially in terms of follow up to secure implementation.

The interviewee stresses however that, the Carbon 20 project should be seen as a pilot project, which naturally has some preliminary difficulties and room for improvement, but the concept of greater cooperation is generally by all interviewees supported.

LOCAL MUNICIPALITIES IN CARBON 20 EXPERIENCES OF USING ENERGY CONSULTANTS

The majority of municipalities emphasise that the use of Energy Consultants has mainly functioned well, and that it has been informative and useful for the civil servants to follow the specific energy screenings and gain more practical experiences of what can be done in business. Several also highlight that the delivered screenings report have been of good quality and pointed at relevant savings.

In spite of this overall picture, the majority also emphasise that it has been a rather blurred process both to understand the concept of the energy savings obligations and its relation to the motivation of the energy consultants involvement in Carbon 20 as well as to get a clear and joint understanding of the different agreements interred and what this means in terms of compensation, cooperation and responsibilities.

This blurred process and lack of common understanding has been experienced by the municipalities as a rather frustrating process where some have experiences that the energy consultants have withhold some of audit report without informing the municipalities about it. Especially Herning have experienced difficulties with their communication with the local energy utility feeling that they went behind the back of the municipality. Herning have thus chosen to stop the cooperation, and plan to use some of the other consultants.

On the other hand, Ballerup emphasises that they have had a good cooperation with especially Schneider and Vestforbrændingen, who both are local actors within Ballerup. Using local actors do in Ballerup's opinion provide better room for network cooperation and point out that Schneider e.g. have arranged some pre-screening meeting with several companies that have been very informative.

All of the municipalities further emphasise that after Carbon 20, the municipalities will most likely not have the funding for using 700 Euro per company, so alone for that reasons a changed praxis needs to be established.

This will especially be a challenge in respect to find a model targeting the smaller firms. Especially Copenhagen emphasises that the majorities of companies belong to the category of small companies. By themselves these smaller companies often poses rather low saving potential, but in the overall picture it adds up to actually constitute a major part of the actual used energy in the business sector.

The municipality of Copenhagen has generally experienced, that most energy consultants are reluctant to work with the smaller companies. According to the interviewees from Copenhagen this relates both to the fact that there is little actual potentials, whereas the cost of screening and measure of such

might outweigh the actual savings identified, but further that smaller companies often also lack the motivation as the energy bill only count as a minor expenses, whereas other aspects is prioritised. Even for those smaller companies committing themselves in the Carbon 20 projects, the smaller companies often have difficulties finding the necessary resources to implement savings.

Copenhagen has for that reasons hired a student employ to actually help the SME implement the savings. So even though they find the report quite good and informative, these are often not enough to make the SME actually implement them.

The interviewees emphasises that the consultants in the Carbon 20 projects do perform screenings of the smaller companies, but do believe that it is solely because of the established agreement and that most of them would not continue their activities under these terms after Carbon 20.

Copenhagen have also tried several other schemes and consultant, but have had difficulties finding a set-up that all actors find attractive. One of the more promising approaches have been to engage local smaller electricians and other craftsman to do the screenings, however only one seems to manage to actually get a business models that works. However several other municipalities e.g. Allerød, Frederikshavn and Middelfart/Odense, Sønderborg are also trying to organise their local craftsman and upgrade their knowledge in respect to energy and climate, but these seems mainly to be targeted the household, but could eventually also functioning in respect to smaller companies.

Conclusion

During the last couple of years, the obligations for energy utilities to save end-use energy have become an important policy tool for achieving increased energy efficiency in society. Several authors have addressed this policy tool from several perspectives and several evaluations of especially the 4 European schemes in UK, France, Belgium/Flanders and Denmark has been carried out. This paper has supplemented these by investigating specifically how such schemes might be activated in a municipal setting of engaging the local business sector.

In a specific Danish project, Carbon 20, the main concept is to engage energy consultants in reducing CO₂ emissions from small companies, and several interviews have been made with both the municipalities and the energy consultants involved in order to investigate these potentials and barriers.

Concluding on the findings, both municipalities, energy consultants and especially small and medium-sized companies have a profound and shared interest in collaboration and development of a common approaches since the single actor can not alone realize the potentials for reduction of CO₂ emissions. However, the current agreements do not quite seem to induce the full potentials.

First of all, the specific set-up with the no payment from the companies makes the energy utilities fear that companies will not be committed to the implementations fulfilling their needs in respect to reporting the savings and thus their possible gains from the involvement.

Secondly, there have been quite some misunderstandings about how to interpret the agreements and some feelings of withholding information in that respect.

Finally, it has been a challenge to engage consultant in providing audits for the smaller companies that only have little energy saving potentials as well as limited interest and capabilities for using time and man-power resources.

In contrast to several of the different evaluations (among other Lees 2012), who specifically point at the specific counselling of SMEs as one of the attributes of these energy saving obligations, this investigation shows that the scheme in Denmark fails to address the smallest companies with solutions that fit their needs and constraints. Such small companies have difficulties paying for a screening up front, since the payment is relatively a larger cost especially compared to their general energy expenses, why potential payback periods are also expected quite long. A further challenge is that even when the small companies do commit to energy savings, they often do not possess the resources to actually implement the solutions.

As the scheme is now, focus is generally on achieving cost effective savings meaning focussing on the bigger energy consumers. The latest political agreements decision to cut funding for the knowledge institution "GoEnergy", who among others specifically was targeting SME highlights a potential lack of suitable solutions for addressing SME.

To conclude on the question raised in the title: Can energy utilities play a role in local energy savings programs?

The simple answer is: YES, they can and seems willing to do so.

However, it does require a closer assessment of how to organise the arrangement in order to secure that the different interests are accommodated so win-win-win situations are established being both an active for the municipalities, the energy consultants as well as the companies.

As the project is still on-going, it is too early to conclude if the project will manage to find a suitable set-up accommodating such a win-win-win framework, but as one of the central recommendations from the first monitoring report (not yet published) of the Carbon 20 it was recommended specifically to address how to expand and consolidate the future cooperation also after the EU funding and currently initiatives is starting to be taking to discuss this.

Perspectives

It has been out of scope of this paper to specifically address how to strengthen the work and find options for addressing small companies. However, during the interviews several different perspectives for how to strengthen the cooperation and make a targeted solution for small companies were discussed.

Some ideas for further assessment and discussions among the involved actors include (some of the approaches presented could be complementary):

- **A closer cooperation and exchange of knowledge.** SEAS-NVE stresses, that they conceive that both the municipalities and energy consultants/energy utilities could gain in their dialogue with companies through a closer cooperation and exchange of knowledge in order to get a more complete picture of the company in question. From SEAS-NVE perspective it would be very valuable that the municipalities include energy efficiency in their dialogue with companies either as part of their general enforcement activities

or in other forums to identify saving potentials, and then point at different energy consultants to get further assistance to implement the savings. Furthermore, the municipalities themselves could contact the energy consultants to point at specific companies. Then the energy consultants can make an agreement regarding a screening etc. following similar models as applied generally, but potentially with rebates as municipalities have identified a certain potential and saved the consultants for the preliminary promotion activities and establishment of the contact. SEAS also believe that the energy utilities do possess a lot of knowledge about several of their customers e.g. related to the energy bill that could be of value for the municipalities in their communication with these companies where an improved dialog between all partners could be relevant

- **Re-inventing the “No-cure, no pay” scheme.** As mentioned earlier the energy utilities used to provide the screening free of charge, but with some clauses related to the realisation of the identified savings and subsidy. In many ways this approach could mirror similar approaches for a no-cure, no-pay counselling – practised earlier among others by the former Environwise in the UK in respect to resource efficiency and waste. While the approach have been abandoned again due to confusion and questions related to the possibility for receiving subsidy that exceed the value of the preliminary screenings, there might be some perspectives for reintroducing a similar mechanism targeted the small companies. TRE-FOR e.g. suggest that if the companies do make a “political” commitment to certain reductions as part of voluntary agreement with e.g. a municipality (like in Carbon 20), such commitment might be acknowledge to back up a reimplementation of such no-cure, no pay solutions, where the subsidy for the potential savings pays for the preliminary screenings. To secure that the approach doesn’t work counter-productively (give incentives for postponing savings until the agreement is not valid and then sell to others) there could be built in some upper limits or maximum level over which subsidy will get distributed back to the companies. Also SEAS seems very interested in discussing if there are possibilities for rethinking such no-cure, no pay models. The suggestions from the recent evaluation to cut the subsidy options for savings with short payback times might actually facilitate such as several of the savings will not be subject for subsidy.
- **Establish a total energy saving packet for SME including assistance for implementation.** As highlighted e.g. by Copenhagen one of the biggest constraint for SME is actually allocating resources (man power) for the actual implementation where e.g. Copenhagen in addition to the screenings report have hired a student employ working specifically with this. A further discussion with the energy utilities and other consultants should also address how it is secured that the implementation is covered in respect to SME. An idea while in a situation with high unemployment inspired by a Swedish municipality promoting EMS (Von Malmberg 2007) could be to make it a targeted part of the unemployment

ment policy to get re-educated and involved unemployed craftsmen, newly educated students etc. in offering targeted implementation guiding.

- **Applying the calculated average data for SME.** The earlier mentioned ECEEE evaluations of the 4 European Energy saving obligation schemes also highlight that several countries including Denmark has established some standard average data for the achieved savings by different specific solutions. The object of these is to lower the cost of measurement of especially households. In Denmark among others SEAS-NVE has developed a web application tool based on this, where preregistered craftsmen can report the savings they achieve at customers and TRE-FOR is also implementing similar platforms. The main target of the portal is craftsmen working at households, but it seems reasonable to expand to include craftsmen work in small companies as well. A role for the municipalities could thus be to engage the craftsmen and electricians to get involved with the business and use the portal (or similar) to report the savings and receive and distribute the subsidies.
- **Pooling of similar small companies.** Schneider does not see the small companies as potential customers in general and are thus not that interested in developing its activities in this segment. However, they did point out that if the company is part of a bigger chain or have a common ownership structure with other similar companies, they might still be of interest due to economics of scale. One of the civil servants in Copenhagen municipality mentioned the possibility of a similar model, where the municipalities could function as a pooling of similar small companies located close to each others in similar buildings etc. in order facilitate a economies of scale, “fast and dirty” screening of several similar companies utilising standard average data.

There might of course be several other supplementing suggestions and ideas, but these could function as a departure point for having a more in-depth discussion.

Literature

- Albertslund Kommune 2009, Klimaplan 2009-2015 – Vision, mål og aktiviteter for CO₂ reduktioner 2009-2025.
- Ballerup Kommune 2010, Ballerup Grøn Kommune – Klimaplan for reduktion af CO₂-udledning i Ballerup, Ballerup.
- Bertoldi, P., Rezessy, S., Lees, E., Baudry, P., Jeandel, A. & Labanca, N. 2010, “Energy supplier obligations and white certificate schemes: Comparative analysis of experiences in the European Union”, Energy Policy, vol. 38, no. 3, pp. 1455-1469.
- Bradford, J. & Fraser, E.D.G. 2008, “Local authorities, climate change and small and medium enterprises: identifying effective policy instruments to reduce energy use and carbon emissions”, Corporate Social Responsibility and Environmental Management, vol. 15, no. 3, pp. 156-172.
- Child, R., Langniss, O., Klink, J. & Gaudioso, D. 2008, “Interactions of white certificates with other policy instruments in Europe”, Energy Efficiency, vol. 1, no. 4, pp. 283-295.
- Lees, E. 2012, Energy efficiency obligations – the EU experience, ECEEE.

- Ericsson, K. 2006, "Evaluation of the Danish voluntary agreements on energy efficiency in trade and Industry", AIDEE report. Environmental and Energy Systems Studies, Lund University, Lund, Sweden.
- Friedman, B., Bird, L. & Barbose, G. 2009, Energy Savings Certificate Markets: Opportunities and Implementation Barriers, National Renewable Energy Laboratory.
- Giraudet, L.G., Bodineau, L. & Finon, D. 2011, "The costs and benefits of white certificates schemes", *Energy Efficiency*, pp. 1-21.
- Giraudet, L.G. & Quirion, P. 2008, "Efficiency and distributional impacts of tradable white certificates compared to taxes, subsidies and regulations", *Revue d'économie politique*, vol. 118, no. 6, pp. 885-914.
- IPCC 2007, Climate Change 2007: The Physical Science Basis: Summary for Policymakers, Geneva : Intergovernmental Panel on Climate Change (IPCC), Geneva.
- Jaffe, A.B. & Stavins, R.N. 1994, "The energy-efficiency gap. What does it mean?", *Energy Policy*, vol. 22, no. 10, pp. 804-810.
- Krarup, S. & Ramesohl, S. 2002, "Voluntary agreements on energy efficiency in industry – not a golden key, but another contribution to improve climate policy mixes", *Journal of Cleaner Production*, vol. 10, no. 2, pp. 109-120.
- Krarup, S. & Ramesohl, S. 1999, "Voluntary agreements in energy policy", *European Environment*, vol. 9, no. 3, pp. 109-117.
- Moser, S. 2011, "Efficiency impacts of utility obligation scheme design elements", Proceedings at 7. Internationale Energiewirtschaftstagung an der TU Wien (IEWT 2011)
- Niras & ViegandMaagøe 2011, Stikprøvekontrol af energiselskabernes energispareindsats 2010 – Evaluerings- og datarapport, Energistyrelsen.
- Paton, B. 2001, "Efficiency gains within firms under voluntary environmental initiatives", *Journal of Cleaner Production*, vol. 9, no. 2, pp. 167-178.
- Regeringen 2012, Aftale mellem regeringen (Socialdemokraterne, Det radikale, Socialistisk Folkeparti) og Venstre, Dansk Folkeparti, Enhedslisten og Det Konservative Folkeparti om den danske energipolitik 2012-2020, Regeringen.
- Rezessy, S. & Bertoldi, P. "Energy Supplier Obligations and White Certificate Schemes: Comparative Analysis of Results in the European Union", .
- Rohdin, P. & Thollander, P. 2006, "Barriers to and driving forces for energy efficiency in the non-energy intensive manufacturing industry in Sweden", *Energy*, vol. 31, no. 12, pp. 1836-1844.
- Thollander, P., Danestig, M. & Rohdin, P. 2007, "Energy policies for increased industrial energy efficiency: Evaluation of a local energy programme for manufacturing SMEs", *Energy Policy*, vol. 35, no. 11, pp. 5774-5783.
- Thollander, P. & Dotzauer, E. 2010, "An energy efficiency program for Swedish industrial small- and medium-sized enterprises", *Journal of Cleaner Production*, vol. 18, no. 13, pp. 1339-1346.
- Togebj, M. et. All. 2012. "Evaluering af energiselskabernes aktiviteter for at fremme energibesparelser", Energistyrelsen.
- Togebj, M., Dyhr-Mikkelsen, K., Larsen, A., Hansen, M.J. & Bach, P. 2009, "Danish energy efficiency policy: revisited and future improvements", Proceedings of the ECEEE Summer Study, pp. 299.
- Togebj, M., Dyhr-Mikkelsen, K., Damgaard, C.k., Petersen, T.H., Larsen, A., Nilsson, H., James-Smith, E., Hay, C., Bentzen, P., Pedersen, H.Ø., Bahnsen, N., Dahl, P.S., Noyé, P., Jespersen, J., Jensen, H. & Hansen, M.J. 2008, En vej til flere og billigere energibesparelser – Evaluering af samtlige danske energispareaktiviteter, Energistyrelsen.
- Von Malmborg, F. 2007, "Stimulating learning and innovation in networks for regional sustainable development: the role of local authorities", *Journal of Cleaner Production*, vol. 15, no. 17, pp. 1730-1741.