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energy efficiency

OVERVIEW AND ANALYSIS OF PUBLIC AWARENESS RAISING STRATEGIES AND ACTIONS ON ENERGY SAVINGS

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1. Introduction

Dear reader,

With this paper we intend to shed some light onto actions to raise public awareness on energy saving and energy efficiency, and we invite you as a representative from a municipality or a NGO or other multiplier organisation to read this paper with an open mind. We want to encourage you to develop creative solutions to motivate local citizens to save energy. We will introduce efficient communication tools and different kinds of measures that have been tested in practice. These good examples will show you what you can do to approach your citizens and how it can be done.

Now, what does this paper offer you in detail?

- We will provide you with ***guidance*** to develop a local public awareness raising strategy on energy saving and energy efficiency. As a municipality you might ask yourself what you can do to promote energy savings. While we cannot offer you a completely ready programme, we will present you chosen communication tools and applicable measures, illustrated by good examples that can have a positive influence on the present unsustainable consumption patterns and facilitate the necessary change of the energy consumption habits. You will find more background information in chapter 2 and 3 and examples in chapter 4.
- We will show some ***success factors*** of the public awareness strategy and related actions, for example the participation of the interested stakeholders (municipality energy experts, energy service provider, NGOs, media, local business players), the selected tools and measures, and the financial conditions (energy costs, financial support/instruments of technological change, etc). See chapter 3 and the examples in chapter 4. Learning form other examples is vital, but it has to be combined with good adaptation to the local circumstances.
- Several ***good practice examples*** are presented in this paper. One set of examples focuses on tools and measures which can motivate the users to save energy and change the consumption patterns (chapter 4.3), another shows a more complex approach to sustainability (chapter 4.4). We encourage you to use these examples for your own – get inspired, copy them, adapt them to your local needs and circumstances.
- When assessing the ***general development path*** of the public awareness raising tools, we can see that measures that merely provide information (leaflets, web-sites, etc) and are applicable to larger target groups are gradually replaced by measures with social influence (social networks) including the use of groups and the use of commitment techniques. We will therefore not present any simple measures such as leaflets or brochures in detail. This does however not mean that you should not use them – be aware of their advantages (comparatively cheap, easy to spread) and disadvantages (usually little impact). Of course information dissemination (brochures, workshops) can always be used as a complementary tool with other combined approaches. You can read about these different approaches in chapter 4.

- Our chosen examples will show that the involvement of various ***stakeholder groups*** (e.g., citizens, local authorities, environmental NGOs, energy agencies) is increasing along the application of measures with social influence. You as a local authority or an NGO play an important role in some of the measures, e.g. participating of energy neighborhoods groups' activities.
- We will talk about ***financial aspects*** as well, as they are of high importance. Both, the initial investments which lead to substantial savings and the day by day visible energy savings (measured) of the households. It is crucial in the local public awareness raising strategy on energy saving and energy efficiency to provide information (in the format of measures and figures) to citizens in order to encourage them to make such investments and thus to contribute to energy savings.
- Finally, we will offer you an overview over some of the most important ***sources for additional information*** (chapter 5 – references).

What is outside of the scope of this paper?

- We do not intend to give an overview on all existing approaches on public awareness raising on energy savings, we will rather present some carefully chosen examples that have been proven good and useful and which we would recommend to apply. This paper is also not a scientific paper; it addresses a specific target groups that is dealing with energy efficiency issues on a practical implementation level, namely municipalities, but can provide useful information also to other interested public stakeholders, scientific organisations, social groups, energy agencies and NGOs. If you are interested in scientific background, contact the authors; they might help you to find additional information.
- Finally, we cannot offer a ready-made solution. It would be nice if we could, but you as a representative from a municipality, a multiplier organisation, a state authority or a concerned citizen are in charge yourself and you need to act. Any measure needs local initiative and the engagement of locals. And of course, it always needs to be adjusted to your local circumstances.

Finally, we want say a few words about the background. This paper is connected to the 6th work package of the INTENSE (*From Estonia till Croatia: Intelligent Energy Saving Measures for municipal housing in Central and Eastern European countries*) project addressing the lack of demands for energy saving measures at housing of the general public in Central and Eastern Europe (CEEC) and aims at providing better information to the population. The goal in mind of this particular work package to change the consumption pattern is in a long-term perspective and to create a higher demand for low energy consuming houses and households. You will find more information about the INTENSE project at the website www.intense-energy.eu.

2. About energy saving

The following introductory sub-chapters are based on the outcome of the "Kyoto in the home project" (KITH, funded by Intelligent Energy Europe, website: http://www.kyotoinhome.info). They will provide you with some background information and arguments why energy saving measures are important and necessary.

2.1. Why do we need a sustainable use of energy?

Sustainable use of energy and public awareness raising should be a very important priority of municipalities all over Europe. There is an ever increasing need to adapt the ways in which energy is used in the home in order to reduce energy consumption and limit the pollution associated with the energy use.

The rising wealth of the world population and a higher individual use of energy have resulted in an increasing global demand for energy, particularly from fossil fuels such as oil and gas. This has led to global concerns which require actions local and national authorities as well as by individual persons. The fourth report by the Intergovernmental Panel on Climate Change (IPCC) issued in November 2007 concluded that there was only a period of seven years in which to stabilise the world's output of greenhouse gases. The European Union has responded to this challenge and has in turn set a target limit of 2º C rise in global temperature to prevent irreversible changes in climate.

These targets have an implication for each and every one of us. There is a need for every citizen of whatever their age to do something to reduce their energy consumption and to use the energy that he or she consumes in a more sustainable manner. Municipalities as the smallest political entity have the change to encourage and involve their citizens directly in energy saving measures, thus contributing actively to the reduction of energy use and to climate change mitigation.

2.2. Economic aspect of energy savings

Instead of generating more energy, it is almost always cheaper to apply energy saving measures - and this in turn will save resources and reduce pollution. Some methods are easy to apply, such as switching off the main household appliances that are not in use; others require additional investments such as buying an energy efficient appliance or fitting a new window. The major impact of rising energy prices is that it makes such investments more attractive as it reduces the time to recoup the investment cost from savings in the energy bill. Once purchased and installed, the savings will accrue throughout the life of the energy saving measure and will increase in value as energy prices continue to rise.

For household appliances, a typical life time is 15 years and improvements of the fabric of a house will last the life of the building which is likely to be at least 50 years. Such investments will also increase the value of the dwelling and the ease of selling. For houses that suffer from condensation, increasing the level of insulation will reduce the concentration of moisture as the house will become warmer and retain more heat.

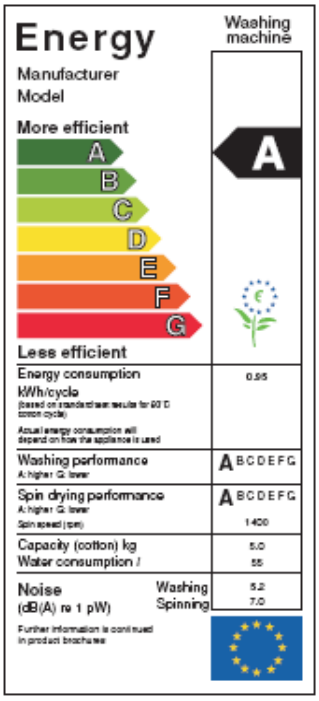
2.3. Saving energy at home

As mentioned, it is always more economic to use less energy than generate it even from renewable sources, therefore a household should always start by saving energy.

Ever increasing energy prices provide an economic incentive whilst limiting climate change provides a societal incentive. Saving energy at home comprises the following fields of activity: using less electricity, reducing heat losses and – especially in Southern Europe – reducing the solar gains in summer.

Using less electricity

The principal uses are for lighting, appliances, electronic equipment and cooking. The increasing use of appliances and electronic equipment has been mainly responsible for the increasing demand for electricity. Primary legislation in the European Union has resulted in all the major household appliances now being *energy labelled* (see illustration) and minimum efficiency standards will result in the least efficient appliances no longer being sold. The EU eco label is an environmental label which also requires minimum standards of performance and efficiency.



Energy label for a washing machine

Substantial amounts of energy are consumed by appliances which are left on stand-by rather than being switched off at the mains. The total stand-by power for the appliances listed in the table below suggests a consumption of up to 1 kWh per day which could be as much 7 to 10 % of the electricity bill.

Typical stand-by losses in the home (source - www.homepower.com)

Appliance	Standby power (watts)	Energy use per day (watt hours)
Large TV	10	240
Desktop computer	7	168
Cable TV modem	5	120
Video recorder	5	120
Small TV	4	96
Wireless router	3	72
DVD player	3	72
Cordless tool battery charger	2	48
Electric toothbrush	1	24
Microwave	1	24
total	**41**	**984**

Reducing heat losses

For most of Europe, heating requires the largest amount of energy. Consequently reducing the heat loss will result in a significant decrease in the energy bill. Older buildings tend to have higher heat losses than buildings built more recently as changes to the building regulations have resulted in successively higher levels of insulation.

In almost all buildings it should be possible to improve the insulation level or to undertake technical improvements which will keep the building warmer and reduce the likelihood of condensation of water vapour which can lead to health problems.

Reducing the solar gain in summer

In southern Europe, it is essential to reduce the solar gain during the summer months to prevent the building getting too hot. Passive solar techniques shutters, blinds and external overhangs are relatively easy to install and cost effective. Together with encouraging natural ventilation it should be possible to reduce the need for electronic summer cooling. Conversely in the winter months, the solar gain should be maximised to reduce the need for heating. Shutters, for example, can be used to keep the heat out in summer and retain the heat in winter.

You will find more information about technical possibilities from other work packages of the INTENSE project that are designed to help you with technical options. Check our INTENSE homepage from time to time (www.intense-energy.eu).

3. Realising energy savings

3.1. The role of information, education and awareness raising

The reasons for saving energy at a local and global scale are now apparent. There is just not sufficient oil and gas at our current rate of usage to supply everyone for even one more generation and the by-product of this energy usage is resulting in global warming.

The potential for reducing the energy demand from every home is very large and so substantial savings are possible which will be cost effective and reduce carbon emissions. Whether this goal can be realised will depend upon individual understanding of why it is necessary and how it can be achieved.

Education and awareness raising for citizens and municipal employees therefore play a key role in understanding why it is necessary to act locally and what can be done by individuals in their homes. Municipalities can take a leading role here. With a municipal communication strategy on sustainable energy use they can encourage local actions as described in the good practice examples in section three.

When the municipalities develop the public awareness raising strategy on energy savings they should keep in mind that consumption patterns of citizens are habitual and it takes time and efforts to overcome old patterns and change towards the new paths. In order to induce a change of consumption patterns, the habitual character of people's actions must be questioned. This can be done by information, education and awareness raising measures with the final goal to:

- Remove incentives that support the old consumption patterns,
- Make consumers aware of their behaviour and consumption patterns by tools and measures,
- Enable them to avoid or control the negative outcomes and provide positive alternatives.

Most selected cases in chapter 4 will deal with point number two and three.

3.2 Financial aspects

Financial aspects are an important question of energy saving measures. Principally the costs fall into three categories (all require personal concern and concrete actions):

Cost category	Examples
zero initial cost	switching off lights when leaving the room or washing a full rather than part load
low initial cost	buying a more energy efficient appliance when the existing appliance needs to be replaced, for example compact fluorescent light bulbs that have the shortest payback time
investment cost	improving the building fabric and the level of insulation

However, investment costs do not always mirror the savings directly. Initial investment can lead to substantial savings in the long-run after a certain payback

period. It is crucial to provide such information to your citizens to encourage them to make such investments and thus to contribute to energy savings.

The tools of the public awareness raising strategy and efficient communication can provide information for individual citizens and households that explain how such savings can be realised together with practical advice wherever possible. The municipalities/the local authorities have to realise the need for information, education and awareness raising at local level and can take over the role of educating citizens and providing such information.

3.3. Barriers when realizing energy savings

When realising energy savings certain additional barriers can occur that need to be taken into account. For example, if a campaign to promote an improvement of insulation for existing houses is planned, it needs to be ensured, that sufficiently qualified craftsmen are available. If this is not checked beforehand, the objective of awareness raising might be achieved, but the final goal to save energy will not be met.

The table and the categorization below show typical barriers and possible solution to overcome the barriers. This table is based on an outcome of the Kyoto in the home project (KITH, IEE, 2006-2008). One important part of the KITH project was to develop a platform for the families and discuss the realization of energy savings and the use of renewable energy sources.

Barrier for realising energy savings	Recommendation for overcoming the barriers
Little appealing information is available that addresses, educates and encourages citizens to save energy.	Inform the public by examples of typical households that have managed to lower their use of energy while maintaining a high level of comfort. Make available electricity meters that can inform owners of the actual electricity use such as refrigerators and other appliances. This may form a incentive to replace these appliances or to use them more wisely
Citizens with very little income suffer from increasing energy prices.	Using energy more efficient can relieve the financial burden. This requires the appropriate organisations to inform and educate how energy can be saved and to make funding available to purchase energy efficient appliances to reduce energy consumption. Additionally, energy advisors can visit home owners for a free evaluation of their building's energy.
Installers need sufficient training to able to identify opportunities for saving energy first before thinking about using renewable energy sources	Ensure the quality of the installers by accreditation schemes and offer training.

Utility companies are not sufficiently involved in energy-saving measures.	Utility companies should consider investing in reducing the demand rather than increasing the supply. They could finance the replacement of appliances with low energy appliances and energy saving light bulbs. The investment costs can be retrieved from the savings on the energy bill.

3.4. Partnership and collaboration

Good partnerships and intensive collaboration with stakeholders are a key factor of a successful implementation of energy saving measures. It means involving citizens, environmental/ energy/ educational organisations as well the local authorities, energy companies and the media. The partnerships and collaboration partners can be very diverse in the Central and Eastern European Region and should be tailored to the particular needs. Energy agencies can provide advice on a large range of topics. Local initiatives and non-governmental organisations have good contacts to the public and know how to address them effectively. Public utility companies and service providers are a target group that can help distributing information, e.g. by printing information on the energy bill. Cooperation with housing associations and associations of house owners can be a door-opener to address citizens directly and to have a partner that represents the citizens' interests directly. Furthermore, there are different forms of associations/agencies that provide energy services for households. These agents have the role to inform the households about the energy use and energy savings and can provide concrete measures for more efficient energy consumption.

Mapping the collaboration possibilities is a key step for municipalities in the preparation of the communication strategy on energy savings. Any tools or measures for the change of the energy consumption patterns need to be matched to the local situation and partnership at municipal level.

Experience shows, that the majority of municipalities that have dealt with energy saving initiatives find the interaction with the local and national media a positive experience. Journalists are usually extremely interested in coming and reporting on the energy issues, especially about the economic aspects. However, where partners struggled to gain the interest of the media, a different approach was taken to raise awareness of the projects aims (see in the cases).

The following chapter will present some approaches that have been made in Europe to initiate energy saving of citizens – at home or in office. They offer a variety of possibilities to communicate with citizens, to develop win-win-solutions and to follow the ultimate goal of saving energy.

4. Good examples: cases, tools and measures

The following section will present selected examples which will demonstrate how different kinds of energy saving measures can be applied, what needs to be taken into account and to which result they may lead.

4.1. Typology of measures

This chapter will briefly outline a possibility to roughly classify measures into three different categories: antecedent measures (based on information delivery), consequence measures (interactive, based on measures) and social influence. The concept is based on the desk research of MARTISKAINEN, 2007[1], on affecting consumer behaviour on energy demand. The main ideas of the categorisation of the measures came from the research of ABRAHAMSE, 2005[2], DE YOUNG, 1993[3], KATZEV & JOHNSON, 1987[4]. This typology will serve as a guide for the presented examples and also for possible development and application of own measures to save energy. The following table gives an overview on main advantages and disadvantages of the different types of measures.

Type of measure	Advantage(s)	Disadvantage(s)
Antecedent measures • Without any feedback	• easy to distribute to large groups • comparatively cheap and quick to implement • Little to no effort for the target group	• Usually no direct feedback about the individual behaviour and therefore often little to no impact • input only • the trustworthiness of the information that is provided cannot be guaranteed
Antecedent measures • Consultancy/ Audit	• Personalised information • Little to no effort for the target group	• Often personnel-intensive and therefore rather costly • needs trained experts • No direct result from a change in behaviour visible
Consequence measure	• Personalised information • Direct result from a change in behaviour visible	• Can be costly, needs the metering devices • Barrier of interpreting the

[1] MARTISKAINEN, M. (2007): Affecting consumer behaviour on energy demand. Final report to EdF Energy. Sussex.
[2] ABRAHAMSE W., STEG L., VLEK C. & ROTHENGATTER T. (2005): A review of intervention studies aimed at household energy conservation. Journal of Environmental Psychology 25: 273–291. *Used in:* MARTISKAINEN, M. (2007): 33ff.
[3] DE YOUNG R. (1993): Changing Behavior and Making it Stick - The Conceptualization and Management of Conservation Behavior. Environment and Behavior Vol. 25: 485-505. *Used in:* MARTISKAINEN, M. (2007): 33ff.
[4] KATZEV R. D. & JOHNSON T. R. (1987): Promoting Energy Conservation: An Analysis of Behavioural Research. Westview Press, Boulder and London. *Used in:* MARTISKAINEN, M. (2007): 33ff.

		measurements and drawing conclusions
Social influence	• usually good results leading to permanent change of consumption patterns • Method can be adjusted once started	• needs thorough preparation phase • limited number of involved citizens • needs usually supervision or monitoring • Higher efforts for the target group

4.2 Conditions for selected examples

The examples for this paper were selected on certain criteria. It is worthwhile to think about these criteria, as they are also helpful for developing own measures.

- All measures should relate to *energy saving* and target at local citizens.
- Preferably, the number of people reached should be high or at least a *large impact* should be foreseen. This could mean also a high rate inside a specific target group.
- As we are investigating on options for municipalities, the action and the co-ordination should be *lead by a municipality* itself or an energy agency. It is crucial, that the presented examples include sufficient information on the communication strategy and tools used.
- Regarding the involved stakeholders, it was preferred, when all related stakeholder were involved in the actions.

These basic criteria should be true for all examples. Furthermore two additional criteria were used, which would be good to be fulfilled when we are talking about a "best practice" public awareness raising campaign / strategy.

- The first one is *clear targets*. In a best practice example these need be set – as concrete as possible, e.g. energy savings in kWh or a reduction of energy use, reduction of CO_2-emissions. The targets can also refer to the dissemination volume of the measure, i.e. how many people were reached or how many people have changed their behaviour permanently. The latter figure needs an assessment after the end of the measure or constant measure during a long-term project.
- Finally, in order to verify the targets, the second criterion is *monitoring* the measure and *evaluating* it. This criterion was not applied to exclude examples since experience tells that a lot of projects and measures are not consequently monitored and evaluated yet. However, we would recommend this to anyone developing and applying own measures and strategies.

4.3. Selected tools

The following chapter will show some instruments that have been used to address the public. All of these instruments have in common that they motivate the user to save

energy, ideally leading to a change in consumption patterns. They will be sorted according to the type of measure.

4.3.1 Antecedent measures: Educative-informative measures

Measures that merely provide information are called *antecedent measures.* These measures can be furthermore divided into those that do not give any feedback to the consumer or his behaviour (leaflets, film clips) and those where the consumer receives feedback on his consumption (audits, advice). In both cases these measures are ***not interactive*** and do not monitor if the behaviour/consumption patter has been changed throughout the implementation of the measure or not.

Antecedent measures assume that the provision of knowledge will lead to a change in consumption patterns. Typical antecedent measures are information materials in various forms (workshops, energy saving campaigns: leaflets, commercials etc) and modelling. Unfortunately an increased awareness does not always lead to a changed behaviour. This is also known as the environmental behaviour gap. Therefore these types of measures are the least effective ones; however, they are usually the cheapest, easy to apply in terms of range and amount of distribution. They do usually not approach a consumer individually and they are therefore often applicable for larger target groups. Typical antecedent measures are:

- Websites that provide information about energy saving aspects
- TV spots, cartoons that inform the viewer about energy efficiency
- Education materials for various target groups, e.g. for school children
- CD-ROM with little programmes on energy consumption
- Brochures and leaflets
- Posters, advertisements in public
- Self-try out materials: Energy savings box

Some more advanced measures are based on giving personalised information, but still do not indicate any change. The will provide the user with an indication of his behaviour so far. The personalisation of information requires more input than general information. Following measures would fit into this category

- Money/CO_2-savings calculator
- Ecological footprint calculator

The following section will present some selected antecedent measures in detail.

4.3.1.1 Energy savings box (Energiebespaarbox)

⇨ Type of tool

Antecedent measure

- Educative-informative measure
    - Self-try out informative materials
    - Brochures

⇨ Background facts

The tool was used in the city of Zoetermeer (NL) in 2006-2007. It was a cooperation project between the environmental department of the City of Zoetermeer, the social department of the City of Zoetermeer, The Energy Agency Zoetermeer and the organisations Twinstone and Ecoware.

⇨ Short description and implementation

The energy savings box is a box that contains several devices to save energy. In the case of Zoetermeer the box contained 3 compact fluorescent lights, a stand-by killer (a device that automatically disconnects a TV when it is switched off), radiator insulation, water savers, an insulation tape, a sticker for the heating that indicates the temperature, a shake lamp and a brochure with hints and tips on energy saving. It was calculated that each household could save 250 kWh electricity, 56m^3 gas and 16m^3 water, which accounts to a total saving potential of 104 EUR per year per household. The box was distributed among households with a minimum income by the organization Ecoware, which tries to re-integrate unemployed people into the labour market.

The distributed boxes had a modern and appealing design, the accompanying website as well. The website provided answers to frequently asked questions and contact information.

⇨ Financial information

The project had a budget of 250.000 EUR. The money was originally foreseen to compensate the rising energy prices for low-income households. It was dedicated to this project instead.

⇨ Target group

The target group was households with a minimum income (less than 14.000 EUR/year). In total 2.400 out of 3.200 households with minimum income were equipped with the energy box. A free-of-charge installation service was offered.

⇨ Main objectives

The main objective was the reduction of CO_2 through energy saving.

⇨ Results and evaluation

The box was distributed at 2,400 households. If all calculated savings were realized, in total, the savings have amounted to 600.000 kWh, 134.400 m^3 gas, 602.400 kg CO_2 and 38.400 m^3 water. If the change in behaviour of the households involved is set at 5%, according to the project evaluation, another 609.600 kg CO_2 was saved.

⇨ Advice for multiplication

The concept itself was multiplied and later on adopted also in other Dutch cities, e.g. Amersfoort (http://www.amersfoort.nl/smartsite.shtml?id=182394), Eindhoven, Veenendaal. The box was modified in other cities, e.g. a fridge thermometer was included in some boxes, water saving taps in others.

It is also recommended especially for those municipalities that think of a way to compensate the rising energy prices in low income households. However, thanks to the modern design it seems also feasible to give the box as a price in a local competition.

A precondition for distributing the box among low income households is the cooperation with several departments of the municipality. Clear emission reduction targets and financial savings should be set beforehand.

⇨ Links and contacts

Information on the web

- http://www.bespaarbox.nl (provides information in Dutch only)
- http://www.energie-cites.eu/db/zoetermeer_575_en.pdf

Contact data

Harry Meerwijk
First Regional Energy Agency (Zoetermeer and Delft)
www.stichtingerea.nl

- *Picture of an energy savings box (Source: http://www.energie-cites.eu/db/zoetermeer_575_en.pdf)*

4.3.1.2 Promoting energy-audits (warm and comfortable living, Amersfoort, NL)

⇨ Type of tool

Antecedent measure

- Educative-informative measure
  - Information campaign (brochures, info-meetings, information stands)

Consultancy

- Energy-audits

⇨ Background facts

The city of Amersfoort ran a campaign to encourage house-owners of houses built before 1985 to carry out an energy performance assessment for their house.

⇨ Short description and implementation

The campaign was organised using various media, such as TV broadcasts or the local radio, to encourage house owners to carry out an energy performance assessment (EPA). Additionally, owner-occupants were approached via mail in selected districts with the opportunity to order an assessment directly, to request further information or to sign-up for an information meeting in the district. A reminder was sent in case the owner did not respond.

Organised information meetings provided further details about the assessments themselves, their costs, existing subsidy programmes and the information pack that could be ordered.

If a house-owner decided to carry out an energy performance assessment and implement the recommended measures afterwards, the EPA was for free.

Several stakeholders were involved: the city of Amersfoort, the energy bureau, a technical implementer of the assessments and a coordination party that held contacts to market parties to carry out the energy-saving measures proposed in the assessments.

⇨ Financial information

The total costs of the campaign were 50.583 EUR.

⇨ Target group

Households and property owners

⇨ Main objectives

Energy-saving through encouraging house owners to apply saving measures

⇨ Results and evaluation

735 people responded to the campaign and 210 EPAs were carried-out subsequently. The following evaluation of the programme helped to identify success-factors. These were the district-based, not overly ambitious approach, the adaptation to local circumstances, the use of local media and the municipality as a reliable communicator. Available subsidies set additional incentives.

⇨ Advice for multiplication

Such a campaign is replicable, however, financial incentives, such as subsidies for energy-efficiency measures or a financial contribution to the EPA costs are very helpful. Of course, sufficient and well-trained auditors must be available to carry out these assessments.

⇨ Links and contacts

Organisation / Agency:

EnergieBureau Amersfoort
PO Box 92, 3800 AB Amersfoort
Tel: +31(0)33 4694740

E-mail: info@energie-amersfoort.nl
Web Site: www.energie-amersfoort.nl

Other contacts:

Municipality Amersfoort,
PO Box 4000, 3800 EA Amersfoort,
tel. +31(0)33 4694241

4.3.2 Consultancy and audits

Consultancy and energy audits are a special form of antecedent measures. They provide personalized information, or they answer directly to the consumers' questions. In the case of an audit they can provide information about the consumer's behaviour if the audit is based on real consumption. In contrast to metering however, it only evaluates the baseline situation and will not reflect a change in behaviour. Consultancy does also not monitor a change in consumption patterns and it is up to the customer to use the received information from the consultancy or the audit and to change his behaviour or to make an investment. Typical tools that fall under this category are:

- Energy audits
- Energy consultancy, consultancy-type services
- Energy advice through municipal offices
- Consumer advice centres

See the example of Amersfoort above (chapter 4.3.1.2).

4.3.3 Consequence measure

Consequence measures - in contrast to antecedent measures - give a ***direct feedback to the consumer*** and may include rewards or a system of incentives. They have a higher degree of interactivity. Usually these measures are more effective as the direct impact of the consumers' behaviour is evaluated. It is possible for the consumer to draw a direct line from changes in his behaviour to less consumption or less costs. However, as consumers must be approached individually these measures are more time-consuming and hence they tend to be more expensive. Typical consequence measures are:

- Competitions
- Individual metering
- Displays showing energy use or costs
- More frequent bills

4.3.3.1 Fifty-fifty: Energy saving in schools (Hamburg, Germany)

⇨ Type of tool

Antecedent measure

- Education materials for kids/ schools
- Metering: Pay-back

⇨ Background facts

The project idea that energy (and water) savings will partly paid back to the schools, was born in the first half of the 1990s and the first round was carried out in 1994/95. The initial success led to an extension of the programme to more and more schools in Hamburg in 1996 and since 2000/01 all schools took part in the programme. The programme ended more or less in 2007, since no further energy savings can be realised and the potential of savings has been exhausted.

⇨ Short description and implementation

50 per cent of energy savings that have been realised by changing behaviour will be given to the schools, 50 per cent will be used to consolidate the municipal household.

When entering the programme, some basic data on the current consumption of the school are provided which will form a baseline on which savings are later on calculated. Yearly, the realised savings are checked and if applicable, the fifty per cent of the savings are paid back to the school. These savings result from behavioural change of the teachers and the pupils, starting with such simple measure, such as turning off the light when leaving the room. Other stakeholders are involved as well and hard measures, such as exchanging windows, were undertaken in some cases. Hard measures did however not lead to a higher bonus, as only savings that resulted from a change in behaviour were awarded.

A newsletter and a web-page accompanied the project and provided new information, tips for saving energy and statistics on realised savings. The homepage provides also links to teaching materials for teachers and pupils.

⇨ Financial information

The financial investment was very little and mostly personnel costs. It was covered by the realised savings from the schools and was subtracted from the schools' bonus (10-12 per cent)

⇨ Target group

School children, teachers, care takers

⇨ Main objectives

Saving energy, water and reducing waste by changing behaviour, educating pupils to act responsibly and last but not least to reduce the municipal budgets required to provide electricity, water and to dispose waste.

⇨ Results and evaluation

The savings were monitored throughout the project and in 2004/05 alone, almost 4 million EUR (or 18.000 tons of CO_2) have been saved by changing behaviour regarding water and energy.

⇨ Advice for multiplication

The project has been further developed and multiplied in Germany already and it is also recommended to be multiplied elsewhere as the initial investment is very little and would mostly consist of personnel costs. The methodology could be adopted from the existing cases.

⇨ Links and contacts

Internet

- http://www.hamburger-bildungsserver.de/welcome.phtml?unten=/klima/fifty/ (in German, Hamburg case)
- http://www.ufu.de/de/fifty-fifty/fifty-fifty-home.html (in German, adapted project in Berlin)
- http://www.34plus.de/konzept.html (in German, adapted project in Bremen)

Address

fifty/fifty
Leitzahl: V5-F
Hamburger Str. 131
22081 Hamburg
fifty@bsb.hamburg.de

4.3.4 Social networks

Last but not least, *social influence* is the measure type which covers the issue most comprehensively, aiming at a profound impact on the consumers' behaviour. Such measures which work with social influence include the use of groups and the use of commitment techniques, such as energy neighbourhoods. There approach is highly ***interactive*** and communicative and is usually embedded in everyday settings. Some examples are:

- Good example of the municipality: Information, transparency
- Energy neighbourhoods (Eco teams)
- Energy passports for buildings (new, rental buildings)
- Experience reports from citizens
- Energy forums

4.3.4.1 Energy neighbourhoods

⇨ Type of tool

Social networks

- Energy neighbourhoods

⇨ Background facts

The idea of energy neighbourhoods was developed in Belgium and was transferred onto European scale in 2007 in the project which is presented here. It makes use of two main tools: a bet and an "energy master".

⇨ Short description of the tool and implementation

The project is based on the idea that a small group of households form one energy neighbourhood which actively saves energy. Each neighbourhood bets against their city, that they would save at least 8 percent energy within 6 months compared with the year before. A trip to Brussels as the first prize sets an additional incentive. The participation in the initiative was free of charge.

During the implementation phase "energy masters" are supporting and motivating the participants of the bet. They give practical tips and ensure experience exchange between the group members. The "energy masters" were trained at the beginning of the project.

In the beginning, initial info-days were organised in each participating municipality and a common web-interface was available for all participants. The actual energy consumption is entered into an online tool, available through the website.

⇨ Financial information

The implementation is financed by the European Commission, through the Intelligent Energy Europe programme with 1,2 million EUR. However, this sum is allocated for the simultaneous implementation in more than 100 municipalities in nine EU-countries.

⇨ Target group

Citizens

⇨ Main objectives

Climate protection through 8% energy saving

⇨ Results and evaluation

The project is monitoring the savings in terms of energy and money. By the time this brochure was elaborated, the project management was satisfied with the project. The recruitment of participants was more difficult in countries where the concept was new. In Belgium, approx. 5000 participants took place, in Germany for example much less.

⇨ Advice for multiplication

The project was also carried out in Central and Eastern Europe already, in Bulgaria. The idea can be replicated principally in all municipalities in CEEC, but we would recommend supervision by an expert and the approach is more suitable for middle-sized to big cities. The training of "energy masters" could be done in cooperation with NGOs, energy agencies and together with other municipalities.

⇨ Links and contacts

Information on the web

- http://www.energyneighbourhoods.eu

Contact data of the project management

Anke Merziger
B.&S.U. Beratungs- und Service Gesellschaft Umwelt mbH, Germany

E-mail: amerziger@bsu-berlin.de

4.3.4.2 Saving energy and water in municipal buildings (Tatort Büro, Hannover, DE)

⇨ Type of tool

Social networks

- Good example of the municipality

⇨ Background facts

The programme was run to save energy in the offices of the municipal administration.

⇨ Short description and implementation

As a first step, an eco-team of 10 voluntary employees was formed which should inform other employees about energy-saving measures and collect tips and hints. The project started with an initial meeting where the supervisors of the departments were invited. The project and the eco-team was introduced, further suggestions for energy and water saving were collected.

The eco-team met several times during the implementation phase to exchange information, to collect places of consumption and to discuss measures. A promotion day was organised and approximately 200 persons took part. Practical experiments showed how energy is consumed (metres were used) and how savings can be realised. Furthermore, a presentation and posters with information about energy saving should encourage employees to change their behaviour. Finally, 400 power strips with switches including a manual were distributed.

To ensure a wide dissemination among the employees, some information was also put onto the local intranet.

The following incentives were set: 30% of the saved money was used to improve the working environment, 40% were used to carry-out retrofitting measure to improve the energy efficiency. The remaining 30% were direct savings that relieved the municipal household.

Concrete measures regarding electricity: Stand-by consumption was cut by using power-strips that can be switched on and off. Employees were asked to switch-of monitors when they left the workplace for more than 15 minutes. Laser printers should be switched on only when printing. Copy machines were shut down completely between 19 and 6 and on weekends.

Concrete measures regarding heating: The existing programming of the heating system was checked and - if possible - modified. Cooling down during the night started earlier and in some parts it was possible to lower the temperature stronger during the weekends and nights.

Local media were informed about the campaign.

⇨ Financial information

Small initial measures cost about 1.500 EUR, later measures were financed by the realised savings. Additionally light bulbs in the city hall were exchanged in the first year immediately.

⇨ Target group

Municipal employees

⇨ Main objectives

Reduce energy and water consumption

⇨ Results and evaluation

440 light bulbs were changed and it was calculated that this alone saves 42.000 kWh per year. Additionally it was calculated that by consequently applying all measures the daily consumption of office electricity can be reduced from 1039 to 430 kWh. In the first year 27.000 EUR were saved (included measures to save water and which are not described here).

⇨ Advice for multiplication

Such a programme is very recommendable, as the initial investments are small and the programme is further financed by the realised savings. However, there should be an eco team as in this example to coordinate and monitor the actions. Clear savings targets should be set in the beginning.

⇨ Links and contacts

Electronic brochure
http://www.display-campaign.org/IMG/pdf/dokutatortrathaus.pdf (in German)

Address:
City of Hannover
Leitstelle Energie und Klimaschutz
Prinzenstraße 4
30159 Hannover

4.3.4.3 A citizen pact for climate protection ("Münster packt's!", Münster, DE)

⇨ Type of tool

Social networks

- Self-commitment

⇨ Background facts

The city of Münster is very active in the field of energy efficiency and climate protection. The motivation for the presented idea is to carry the responsibility for emissions' reduction to the individual household level. At the same time participants shall convince others ("snowball effect"). The goal is to get 10.000 commitments

within one year and to take the commitments to the climate change conference in Copenhagen in December 2009. The action is part of a bigger energy and climate programme of Münster.

⇨ Short description and implementation

The basic idea is that Munsteranians sign a self-commitment to carry out simple, practical measures to protect the climate in their everyday life. The commitment can be downloaded from the Munster webpage and citizens are asked in the street if they would like to sign. The programme includes some measures that are binding, and others that should be chosen from a list.

The binding measures are:

- exchanging to common light bulbs with CFL bulbs or LED lamps
- shut-off devices from stand-by operation
- to use the bus or bike instead of the car at least once a week for a shorter trip
- to inform at least one relative, friend or acquaintance within the next four weeks about the pact

From the following list, two measures had to be chosen:

- The replace an older washing machine or fridge with a new device of the highest energy efficiency class
- To exchange a normal shower head against a water saving model
- To dry the laundry naturally instead of electrically.
- To lower the room temperature by one degree
- To lower the heating temperature by three degrees during the night and during absence from home
- Batch aeration instead of continuous aeration during the heating period
- Switch off computers, monitors and light
- Switch to an ecological electricity provider
- Abolish the car
- Check the own CO_2-emission for possible reduction
- As a owner-occupier: energy audit for the house

These commitments are not checked, they are based on trust to keep the promises. If a citizens signs up for the programme he receives a small package with give-aways, such as a writing pad, a fridge magnet, a brochure with energy saving tips, a checklist and a participation confirmation.

⇨ Financial information

Besides personnel costs, the costs for advertisement materials, give-aways and sending the packages summed up to 30.000 EUR by beginning of July. Further costs will arise with more participants.

⇨ Target group

Citizens, households.

⇨ Main objectives

Reduction of CO_2 emission on an individual basis to meet the city-wide goal of a reduction of 40 per cent CO_2 emissions until 2020 (compared to 1990).

⇨ Results and evaluation

The project is running and a final evaluation is not yet possible. However, in the end of June 2009 around 1.100 signatures have been collected.

⇨ Advice for multiplication

Similar projects have been developed also in other countries. The project "climate promise" in Southeast Sweden for example follows a similar approach (Klimatlöfte; contacts can be found here: http://www.klimatarena.se/lofteskampanj.html). Implementing such a project requires some working time to develop and promote the programme and some smaller financial means for marketing and if give-aways are planned; however other substantial financial investments are not necessary.

⇨ Links and contacts

Internet link

- http://www.muenster.de/stadt/umwelt/klimapakt.html (in German)

Contacts

Stadt Münster - Amt für Grünflächen und Umweltschutz
Umweltberatung
Albersloher Weg 33
48155 Münster
Tel. +49 (0) 251 492 6767
umwelt@stadt-muenster.de

4.4. Complex approaches

The following section will now present three more complex approaches.

Case Leicester, United Kingdon: Complex action on energy saving

⇨ Policy background

In 1990 Leicester became "Britain's first Environment City". Since then energy efficiency and energy saving are key elements in its strategies. This is also highlighted in the Local Agenda 21 "Blueprint for Leicester".

⇨ Main objective

To implement the Energy Action Plan of the City, which main target is: "to reduce energy consumption by the year 2025 by half that of 1990 and to ensure that 20% of all energy used is derived from renewable sources by 2020".

Focus topics are energy saving, energy efficiency and renewables.

⇨ Duration and when

Based on a long term strategy, since 1990 ongoing

⇨ Results, evaluation

Several projects – campaigns: "save energy at home", "plug into green energy", "home energy check

⇨ Target group

Citizens

⇨ Partnership, cooperation

Leicester Energy Agency; Energy Efficiency Centre; Leicester Energy Efficiency Advice Centre; Environ (CSO)

⇨ Clear targets

Yes, see at objectives

⇨ Monitoring, evaluation

Telephone survey; questionnaires

⇨ Tools and measures used

Antecedent measures (information delivery) • Without any feedback	- Website (www.energy-advice.co.uk) - Education materials for schools - Brochures - Info days - Self try-out informative materials
Antecedent measures (information delivery) • Consultancy/Audit	- Consultancy through municipal offices - Consumer info centres
Consequence measures (interactive learning)	- Metres - Energy audits - Individual measures and feedback on these
Social influence	- Municipality as "shining example"

⇨ Coordination and contact

Coordination of the action: Leicester City Council

Contact:
Leicester Energy Agency
Don Lack
2-4 Market Place South
UK-Leicester LE1 5HB
Tel: + 44 116 299 5133
Fax: + 44 116 299 5137
E-mail: Donlack@energy-advice.co.uk

Case Växjö, Sweden: "Stop the unnecessary!" (Stoppa onödan!)

⇨ Policy background

The campaign is in line with the long-term goals of the Energy Agency for Southeast Sweden which are based on the regional energy targets. For Kalmar County, where the project took place, the target is set at 15% CO_2 reduction by 2010 (based on 1990).

⇨ Main objective

The main objectives were:

- dissemination of the three energy and water consumption related leaflets dealing with simple and applicable energy and water saving tips to all tenants,
- energy meetings for the tenants and training for the staff,
- and last but not least minor technical conversions.

Focus topics were energy and water saving.

⇨ Duration and when

Started with a project in January 2006 (36 months)

⇨ Target group

Citizens living in social housing

⇨ Partnership, cooperation

Municipality of Oskarshamn in the Southeast of Sweden; three housing companies (Byggebo AB, Mönsterås Bostäder AB and Högsby Bostads AB) and the tenants association in Oskarshamn

⇨ Clear targets

No clear targets in energy saving

⇨ Monitoring, evaluation

After the trainings directly + at a later stage by phone interviews

⇨ Tools and measures used

Antecedent measures (information delivery) • Without any feedback	- Website (http://www.socialhousingaction.com) - Brochures
Antecedent measures (information delivery) • Consultancy/Audit	- Consumer info centre
Consequence measures (interactive learning)	- Training
Social influence	

⇨ Coordination and contact

Coordination of the action: Energy Agency for Southeast Sweden

Contact:
Staffan Molin
Pg Vejdes väg 15
SE-35196 Växjö, Sweden
Tel: +46 470 72 33 20
Fax: +46 470 77 89 40
E-mail: info@energikontor-so.com
Web Site: www.energikontor-so.com

Case Braşov, Romania: Municipal energy strategy for energy saving

⇨ Policy background

The "Energy Policy of the Government of Romania for 2006-2009" highlighted the importance of energy saving. In line with this Municipality of Braşov decided to make its strategy.

⇨ Main objective

The main objective was to set up and implement the Energy Strategy of Braşov. The Strategy was done by 2006; the action plan on the implementation was set for 2006-2008. The focus topics were: Energy saving, energy efficiency, RES, transport.

⇨ Duration and when

Started with a project in 2003, ongoing

⇨ Target group

Citizens (as one of the target groups**)**

⇨ Partnership, cooperation

The ABMEE (Agency of Brasov for Energy Management and Environmental Protection) is set up by the municipality; local district heating company; electricity company; Romanian Agency for Energy Conservation; local NGO "EcoPlus"

⇨ Clear targets

No clear targets in energy saving

⇨ Monitoring, evaluation

No evaluation or monitoring is planned

⇨ Tools and measures used

Antecedent measures (information delivery) • Without any feedback	- Education materials for schools - Brochures - Info days
Antecedent measures (information delivery) • Consultancy/Audit	- Consumer info centre - Energy audits - Energy passports for buildings
Consequence measures (interactive learning)	- Training - Schools in focus

Social influence	- Municipality as “shining example” - Energy passports for buildings (good example, motivating neighbors)

⇨ Coordination and contact

Coordination of the action: Agency of Braşov for Energy Management and Environmental Protection

Contact:
Agency of Braşov for Energy Management and Environmental Protection - ABMEE
Main contact: Mrs. Camellia Rață
Nr.8, Eroilor Bdlv, room 12,
500007 Braşov, Romania
Tel: +40 268 474 209
E-mail: office@abmee.ro;
Web Site: www.abmee.ro

5. References

Following pages offer more information and provide plenty of best practice examples. The links were collected in spring 2009.

- **Energie-Cités**

http://www.energie-cites.eu/cities/case_studies_en.php
With more than 600 examples, the database of Energie-Cités provides a multitude of good practice examples which can be searched by various search criteria. It is highly recommended to have a look at the different ideas and projects that have been realised all over Europe and that can be found in their database now.

- **ManagEnergy Good Practice**

http://www.managenergy.net/gp.html
The web site ManagEnergy Good Practice on Local Action provides approximately 630 cases and around 80 good practice case studies. The database can be searched by certain criteria or by country. There is a 2-5 pages factsheet available for all cases.

- **BewareE-project: Energy services**

http://projekte.izt.de/bewaree/services/
The Intelligent Energy Europe-funded project called BewareE was collecting more than 100 cases of energy services in Europe. The examples are briefly described on the above mentioned web site and sorted by a classification. Unfortunately, no contact data are given on the webpage directly; however, it is still a very good collection of cases to get inspired for own municipal actions.

- **Display campaign**

http://www.display-campaign.org/rubrique41.html
The display campaign encourages local authorities to display the energy and environmental performances of their public buildings publicly. Apart from that, the accompanying homepage offers a collection of so-called “shining examples”.

- **Intelligent Energy Europe**

http://ieea.erba.hu/ieea/page/Page.jsp
The Intelligent Energy Europe programme funds frontrunner projects dealing with energy efficiency, transport, renewables and integrated approaches. Their database offers an overview on funded projects. You can find pilot actions there, but it is also worth having a look into that database when looking for expertise.

6. Recommendations and outlook – a word to the reader

The examples that are presented in this paper ("Overview and analysis of public awareness raising strategies and actions on energy savings") can provide you as a municipal representative (or NGO or similar) with some inspiration and we hope that you can find the most applicable tool for your own municipality – either easy to realize measures as in Münster or more complex approaches as in Leicester. However, we recommend you take some time to develop your own measures step by step and not rush things. Set a goal or ***targets*** first and try to be concrete. The appropriate scale should not be too small and not too ambitious – this is one of the key factors for success for later implementation. Take these guiding questions: What do you want to achieve in 10 years? How do you see your municipality in 20 years? Given your local situation, what are possible tools that you can apply to get there? We saw that the chances of impact increase with the degree of social interaction – commitment techniques as in the Munster case or in the energy neighborhoods are promising examples, but they are also time and personnel intensive. Such measures need a coordinating party that is taking care of developing, implementing and evaluating the measures to change the consumption patterns of your fellow citizens.

You might find that such projects are not so easy to implement yourself as municipalities, as municipal budgets are usually tight. What to do? First of all, we nevertheless recommend ***employing a professional*** to deal with energy efficiency issues. If financial means are the major concern, start with activities where you as a municipal benefit yourself financially. You will find two successful examples in this paper – saving energy in Hannover and fifty/fifty, dealing with savings in school. This will not only benefit the municipal wallet after some months but will also set a good example for the citizens to start acting. If you want to implement technical measures or try a new planning approach, have a look at the other activities of the INTENSE project, we will provide technical and planning solutions as well.

Remember: There is nothing what is impossible – it is just a question how to get there and how to ***adjust chosen measures to your individual circumstances***. If some the examples seem too ambitious or advanced, be pro-active and ask for support from NGOs, energy agencies or simply contact other municipalities and initiate cooperation – or consider starting actions on a smaller scale. Downsize measures to your local needs. A lot of measures have been developed and successfully implemented also in Central and Eastern Europe – just scan the databases that we provided you with in the reference section. Some of them might require additional efforts to apply them and to convince the target group, as the public awareness on energy efficiency questions is lower in Central and Eastern Europe. This is not referring to the willingness to save energy but often not knowing how to do it or simply not thinking about it. Furthermore, people may not be used that a municipality is ***acting pro-actively***. It is therefore indispensible to explaining to the people exactly what is done, why everybody needs to act and which benefits energy saving measures will bring to the citizens and the municipality.

If you are eager to participate in pilot actions, ***consider taking part in a project*** – either on regional, national or international scale. It offers the possibility to become a part of a frontrunner group and a good example for others. Usually, projects are funded and you will need to contribute with just a part of the costs. On the other hand, projects tend to be very work-intensive. Check for example the Intelligent Energy Europe database to get a clearer picture what international projects can look like.

In all demonstrated measures, it has proven beneficial to ***involve other stakeholder groups*** into the measures, especially if you want to do more than just spreading leaflets. Make use of the activities of NGOs, local associations and energy agencies. Possibilities for cooperation and synergies are not always fully made use of in Central and Eastern Europe. Make a change here. Exchange experience with representatives of your neighbor town, request information from ministries and expert groups. And, last but not least, ***do not forget the media***. Do good and talk about it. It helps keeping all stakeholders and the target group up to date and it will contribute to keep the topic on the public agenda.

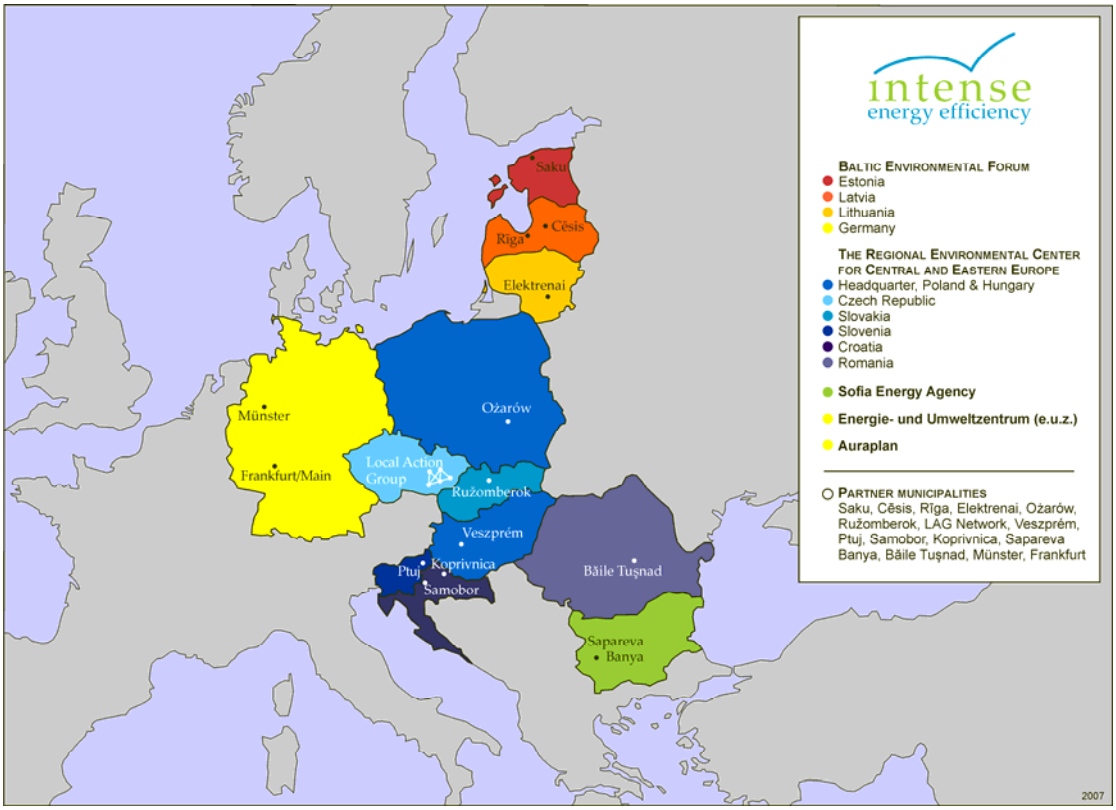
By demonstrating which benefits the selected energy saving measures will bring to each and every citizen, you address the target group – the citizens - directly. Show that energy efficient measures can be cost-effective and lead to savings in the long run – especially, if we keep in mind, that energy prices will increase continuously in the next decades. We know that rising energy prices and the dependency on foreign energy sources are of concern for many people in the countries of Central and Eastern Europe.

If you read this as an INTENSE partner municipality or an associated multiplier organization, we would like you to think about the following questions:

- What are possible energy saving measures in your municipality or partner municipality?
- What do you think is easy to implement and where do you see major obstacles?
- Who do you need to involve into the development of energy saving measures?
- How can you attract your citizens' attention?

In the frame of the INTENSE project all municipalities shall develop an own strategy to raise the public awareness and to realize energy savings in the long run. This paper will give you first ideas what you could do yourself within the frame of this strategy. In the following months we will furthermore run a survey in your municipality among the citizens to find out more about their habits, attitudes and readiness to participate in energy saving measures. The findings from the survey will assist you in selecting the right measure for your municipality. Some basic tools will be developed for all municipalities in the frame of the INTENSE project during the project. But they can only be a starting point and a motivation for you as a municipality to go further. Finally we want to assure you, that there will be support available during the process. The local multiplier organizations Baltic Environmental Forum, The Regional Environmental Center for Central and Eastern Europe and - in Bulgaria - SOFENA will assist all municipalities in developing this strategy. Nonetheless, it is you as the municipality that should be the driving force.

If you read this paper as an external municipality, we recommend you to visit the INTENSE homepage (www.intense-energy.eu) from time to time and to follow the development of the strategies in our project partner municipalities – maybe you will get inspired… You will find a map below indicating the INTENSE multiplier organizations and partner municipalities. If you plan to initiate energy saving measures, ask the INTENSE partners about their experience - they will gladly share it.



INTENSE consortium with partner municipalities