Improving the Social Dialogue for Energy Efficient Social Housing – ISEES project

Supported by: Intelligent Energy Europe

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Introduction:

The purpose of this project is to examine the rationality behind the consumers' choices and the influence of the individual user behaviour on the energy demand in social housing. It will develop solutions to integrate RES and RUE measures in social housing based on a concept using "social dialogue", and protect the existing valuable infrastructure from obsolescence by developing options to improve efficient energy supply to these buildings (e.g. optimisation of existing heating systems).

The ISEES project wants to implement a "social dialogue" between users, housing associations, energy utilities (e.g. DH companies and energy supply companies) and municipalities, in order to:

- Identify the problems connected to energy use in social housing (from supply and demand side view);
- Provide the involved stakeholders with appropriate technical solutions and socio-economic tools to optimise the energy use in social housing (e.g. improving thermal quality of buildings, slowing down the disconnection process, increasing the use of RES, involving occupants into a constructive dialogue on energy optimisation, development of a user manual, implementation of actions to change user behaviour);
- Assess the quality of services provided by utilities and DH companies;
- Provide concrete solutions to overcome this barrier on the way to achieve energy efficient social housing.

The target group of the project is:

- Occupants: tenants and owners of dwellings in buildings classified as “social housing”, i.e. multi-family buildings;
- Decision-makers on the local level;
- Housing associations and their umbrella organizations;
- Local energy suppliers and utilities, in particular district heating companies;
- Architects, planners and equipment suppliers.

Partners in the project are:

Austria

- KWI Consultants & Engineers – coordinator
- Inter-university Research Centre for Technology, Work and Culture
- ACE Group

United Kingdom - Energy for Sustainable Development Ltd. (ESD)

Czech Republic - Cityplan spol. s.r.o.

Slovak Republic - Energy Centre Bratislava

Lithuania - Lithuanian Energy Institute

Bulgaria - Sofia Energy Centre

The duration of the project is from January 2006 to December 2007.

The project is carried out in the following steps:

Assessment of energy supply and demand in social housing in the participating countries

This is done in order to understand the present disconnection rates faced by many district heating systems, and to evaluate the social and economic costs of these disconnections.

The assessment of the quality of the energy services provided in 5 countries is carried out through interviews and questionnaires sent to utilities and district heating companies. These investigations are on the status quo, estimate the reasons and actual level of disconnection; estimate the social and economic costs of disconnection; what are necessary improvements from suppliers view, what are potentials for RES/RUE measures.

The demand side is assessed through interviews with occupants regarding their satisfaction with quality of energy services, prices, quality of

Selected building in Bulgaria

buildings, problems and major shortfalls encountered; interview them about their feeling on RUE measures and their level of acceptance to pay for energy services in an energetically optimised building. In 5 countries (BG, CZ, LT, SK, UK) 3 suitable panel buildings (social housing) per country are selected for the assessment. Qualitative interviews are conducted in 5 households in each country. In addition to the qualitative interviews a quantitative survey is conducted for all 3 selected panel buildings. The first results of the interviews show that:

- In all countries the tenants have been living for quite long time, up to ten years or longer in their present flats.
- Dissatisfying aspects of the living situation have been asked with regard to the exterior area of the building and the individual flat. A major problem that occurs in all countries is not airtight windows and insufficient insulation of the building.
- Regarding the individual flats poor sound isolation, poor thermal insulation, not airtight windows and draught are common problems.
- The satisfaction with the heating situation differs depending on the respective country: Bulgaria has the lowest level of satisfaction. An indicator for this dissatisfaction is also that 40% have an average temperature below 18 degrees during winter. Surprisingly, the majority is not using any supplementary heating. In Lithuania and UK the satisfaction level is similar (about 40%), but the same percentage is also unsatisfied with the heating. In both countries 17% have an average temperature below 16 degrees. Also in Czech Republic and Slovak Republic the situation is similar: here the majority is quite satisfied with the heating situation and do not use any supplementing heating.
- In all countries the tenants have the possibility to regulate the heat in the rooms. However not all rooms are heated, mostly because it is considered to be too expensive.
- Especially in Bulgaria a low level of satisfaction with the services of the district heating company is given. Most tenants think the service should be improved. Main reasons for dissatisfaction seems to be that billings are not comprehensive, but also response time, maintenance and repair and high frequency of breakdowns are criticised. Striking is, that half of the respondents didn't answer these questions. Also in UK and Slovak Republic the tenants see potential for improvement, but in general the tenants are more satisfied with different aspects of service than in Bulgaria. Main reasons for dissatisfaction also seems to be that billings are not comprehensive. On contrary to the above-mentioned countries in Czech Republic and Lithuania the majority of tenants don't have the feeling that the services need improvement. Most aspects of service are considered as rather satisfying.

Selected building in Slovakia

- The reasons why tenants still use district heating, although they are unsatisfied with the service are the same in all countries: no gas network exists, they lack money for system reconstruction or it is too complicated to disconnect.
- Main reasons for a disconnection in all countries would be that the heating is too expensive and that they want to know exactly what they pay for. Also poor service and the desire to be independent from the district heating company or that they want to be able to heat any time of the year were named. In fact only in Bulgaria 6 flats were disconnected from the district heating. In the other countries all tenants are using district heating.

Economic and financial aspects in social housing are examined through assessments of the current level of energy prices and level of costs compared to household income in the 5 countries; assessment of the competitiveness of district heating in a current market of distorted energy prices, and compare it with other countries.

Based on the results of the above-mentioned investigations will be defined major cornerstones for the inclusion of RUE and RES measures in housing.

Assessment of user behaviour in social housing

In order to receive as much as possible concrete information on the influence of individual occupants on the energy consumption we are assessing one out of three selected building in the 5 countries BG, CZ, LT, SK, UK to perform detailed measurements on the user behaviour of occupants.

Measuring equipment

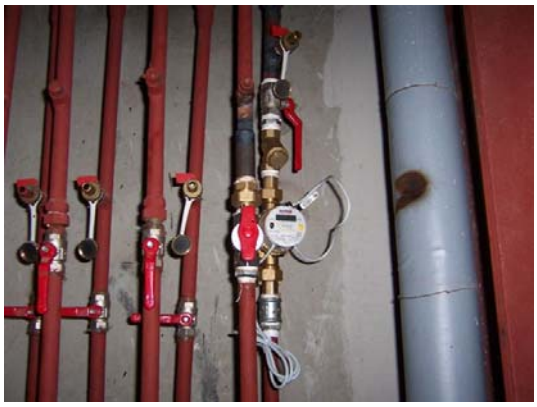
The main task is to assess the user's influence on the overall energy consumption of selected flats in the model buildings, and to compare results between countries to find out any similarities in the user behaviour. Result will be also compared to previous studies already conducted in Austria and other European countries.

In each model building per country 5 apartments were selected to reach a small, but realistic sample. Volunteering owners/tenants of flats were asked to get involved into measurement activities that will be conducted over one heating period.

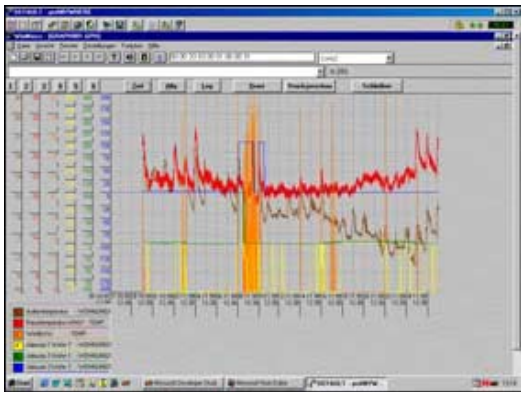
In each flat the following devices were installed: heat meters per each flat and one for the whole building (except in Bulgaria, where it was not technically possible), window contacts to measure the ventilation behaviour (opening/closing of windows), outside thermometers and thermostats in the rooms; every flat measured is connected to a central PC unit to register the data continuously over one heating period. This task is performed in collaboration with

DYNACIDE Engineering &
Software Planung GmbH

Data evaluation and conclusions: actual energy demand measured will be compared to a standardised demand (based on the available quality of the building); results will be given in kWh/m².a, and related to the actual outer/inner temperature, ventilation behaviour, and characterisation of the occupant for each apartment and type of building, generalised conclusions (country specific) will be drawn. Results of this assessment will be compared to other research projects in different countries and European funded projects, e.g. “Intelligent Metering” (IEE 2004-107).



Installation of heat meters



Measurement

Socio-economic and behavioural analysis

The energy user behaviour of occupants is driven by individual strategies and approaches to cope with insufficient quality of energy services (of suppliers) and high energy demand based on inefficient building structures. However, extensive refurbishment and improvement processes are impossible without knowing the occupants needs and understanding their behaviour.

The aim of this work package is to assess the scope of user behaviour and individual approaches chosen by tenants/owners to cope with the existing situation of inefficient energy supply and demand. Different social conditions and country-specific circumstances in this regard are assessed together with innovative approaches to overcome the current situation. Innovative approaches to user participation and the chances for occupants to actively evaluate and influence their own residential environment will be developed and proposed at the end of this phase. Close co-operation will be sought with occupants and other local stakeholders (municipalities, housing associations, other interest groups).

Selected building in UK

- **The social impact of user behaviour will be assessed through:** A questionnaire and interviews conducted with occupants involved in field testing. The aim of the questionnaire and interviews is to analyse their social and economic rationality of decision-making.
- **The strategies and solutions chosen by occupants to cope with existing situation of inefficient energy use will be assessed through:** interpretation of the results of the interviews with occupants and assessment under which circumstances tenants cannot afford to adequately heat their homes; specific strategies and solutions chosen by occupants (e.g. disconnection from DH) will be summarised and suggestions will be made how to improve their current situation as energy user. One focus will be to see how the user behaviour can be possibly changed to optimise the energy demand without a necessity to make huge investments (low cost measures).
- **Identification of major steps to realise a social dialogue in social housing:** One aspect which will be the introduced is the concept of "co-operative refurbishment", a way to integrate occupants, house owners and housing associations into energy improvement and refurbishment processes. This will involve low-cost measures and as well further actions to improve the general quality of buildings through refurbishment.

  Evaluation of various models for participation in refurbishment processes: For each of the 5 countries assessed, individual approaches will be defined to realise the defined steps. They will take into account the country-specific situation e.g. in regard to legal conditions, ownership structures, available programmes supporting energy efficiency in social housing, etc.

Selected building in Lithuania

Development of solutions, tools and recommendations for improving the "social dialogue"

Based on the social impact assessment of the user behaviour and the strategies identified to cope with the unsatisfying situation in regard to energy use in social housing, the next step is dedicated to realise practical approaches as far as possible. In this phase the project will aim at realising the social dialogue in different pilot actions to be developed together with occupants and major stakeholders on the local level. The focus will be on the social aspects in realising energy efficient housing, only to a limited extent will technical measures be reflected and proposed as well. Furthermore, practical information tools will be developed.

The expected results of improving social dialogue for energy efficient social housing are:

- A better understanding of the users' behaviour, their motivation and their needs for energy services;
- Knowledge on the socio-economic rationality that lies behind individual decision-making processes;
- The outline of a model refurbishment process for each participating country where the needs of the occupants are being respected and where tenants/owners are actively involved in the development and realisation of improvement measures;
- A set of measures developed to improve the situation of tenants/owners regarding energy use, within the given limits, and raise their awareness for realisable measures;
- A set of tools for decision-makers in the housing sector (housing associations, municipalities, planners) and energy utilities (e.g. DH companies) to improve the quality of social housing on the one hand, and energy services on the other hand;
- Improved knowledge of problems associated with retrofitting of social houses, to provide more appropriate solutions;
- Country-specific recommendations for the dispersion of low-energy social housing concepts within existing buildings

Selected building in Czech Republic

Visit our project website at: http://www.isees.info