



Project Summary

The project RESHAPE is supported by Intelligent Energy-Europe programme of European Union. It started in January 2006, with duration of 30 months. The project is a common action of ten partnering organization, coordinated by Ecofys.

RESHAPE covers six pilot countries: The Netherlands, Belgium, Spain, Estonia, Czech Republic, and Bulgaria. Through dissemination activities the target area has been enlarged with Romania and Greece.

RESHAPE contributes to the implementation of the EU Directive on the Energy Performance of Buildings (EPBD) by the following activities:

- Demonstration of the preparation of social housing actors for implementation of the EPBD by planning and testing the integration of energy performance certification (EPC) in operational processes and services.
- Testing and demonstration of added-value opportunities of EPC.
- Development of support tools (guidelines, training materials, and best practice examples) for West-Europe, South-Europe, and East-Europe.
- Dissemination of the project outcomes to social housing actors in order to increase their awareness and change their attitude towards solutions for refurbishments.



Targeted groups and key actors

- Social Housing Stakeholders (housing associations, housing co-operatives, federations of social housing actors);
- National agencies, regional agencies, and municipalities;
- Building construction and financial sectors.

Consortium Partners

No	Participant name	Country
1.	Ecofys B.V.	Netherlands
2.	Woonstichting Etten-Leur (Woonwel)	Netherlands
3.	De Zonnige Kempen CV (DZK)	Belgium
4.	Vlaamse Huisvestingsmaatschappij (VHM)	Belgium
5.	3E nv	Belgium
6.	Estonian Union of Housing Co-operative Associations (EKYL)	Estonia
7.	Bulgarian Housing Association (BHA)	Bulgaria
8.	Black Sea Regional Energy Centre (BSREC)	Bulgaria
9.	Stredisko pro Efektivni Vyuzivani Energie (SEVEN)	Czech Republic
10	ADIGSA, empresa publica	Spain

Conclusions

At the last meeting of RESHAPE partners, some conclusions were drawn:

- Among the project countries, there are big differences in the social housing sector, the refurbishment processes, and the legislation related to EPBD.
- The building labelling system in the countries is much different. Adoption of uniform labels in EU can be considered.
- When making an audit of the energy performance of social houses, it is recommended to use a proven instrument with a balanced difficulty in handling, good presentation of results and thorough calculation.
- Many instruments are not designed for existing buildings, but only for new ones. Additionally, some instruments designed for new buildings are not applicable for continuous use (when these buildings become old).
- Energy consumption has a strong social dimension - a high proportion of the expenses of the low-income population goes for energy.
- It is crucial to involve the tenants in the building retrofitting process – they are the most important players. A tool to facilitate this is needed.

Results in RESHAPE countries

Belgium

Energy audits with the Flemish tool for EPBD have been completed. Calculations of the existing situation and simulation of the renovated building parameters were made. Also tenants were asked to monitor their energy-consumption in the previous winter.

After the audits, a decision to follow up the whole retrofitting project of 42 dwellings was taken.

The renovation began in November 2007 and will be finished before the end of this winter. The main energy-savings will come from roof-insulation, insulation of some facades, new windows, removal of cold bridges, and installation of a ventilation system.



One of the renovated buildings

After renovation a monitoring will be organised, again in cooperation with the tenants.

This example of renovation will be compared with the software calculations. A calculation tool capable to translate the database of the building stock in an



estimated energy consumption and energy saving potential will be developed.

An awareness campaign on the energy consumption has started within RESHAPE, with the help of the tenants from the Kabienstraat pilot neighbourhood in Veerle Laakdal. By making an attitude change without sacrificing the energy comfort, 8% drop in the energy consumption has been achieved.

Bulgaria

Draft training materials for Bulgaria have been developed in August 2007. These training materials are targeted at newly emerging homeowners unions in Bulgaria and are focused at the needs for renovation of existing condominium buildings. Energy efficiency is considered in the context of obtaining additional financial sources for implementation of renovation activities.

These training materials will be submitted for feedback to the 3 member associations of Union of Homeowners Associations – CAC.

The best practice example for Bulgaria has already been described. The best practice examples from other countries will also be collected and assessed in view of their applicability to the Eastern European Countries area.

The materials developed within RESHAPE will contribute to the improvement of the current audit methodology for certification of collective residential buildings. The set of data for the reference buildings audited under the project shall be incorporated in that audit methodology in order to simplify the procedure in terms of costs and time consumed.

Czech Republic

In 2006 and 2007, 41 energy audits have been made in a big condominium in Praha 8. The audits covered 3 438 flats with a total flat area 248 thousands m². The calculated thermal losses are 14.2 MW. All buildings were constructed in the period 1965-1987. The buildings constructed before 1970 are made of masonry and the ones after 1970 - of various kinds of panels (T08B up to VVÚ-ETA construction systems)

The development of the panel construction was accompanied by continuous improvement of the thermal insulation of the buildings. At the moment, the average energy consumption of all buildings is 47 %

higher than the accepted satisfactory levels today. The main thermal losses are caused by poorly insulated vertical wall panels. It is recommended to insulate these panels by adding polystyrene layer, 100–150 mm thick. Replacement of the old windows with new ones with $U = 1.4\text{--}1.5 \text{ W}/(\text{m}^2\text{K})$ is also necessary in most cases. More often than not, flat roofs have to further insulated.



Refurbishment of a building constructed in 1973

Only nine buildings have their own boiler house, while the others are heated by a district heating plant. The quality of the boiler houses is good, because they are new. The supplier of the district heating has reconstructed the heat exchangers and the system for hot water preparation in the individual houses and this reduced the heat losses.

The annual heat consumption is 132 thousand GJ and the calculated annual savings are 39 thousand GJ. The calculated investment costs are 11.3 mil. € with an average simple payback of 27 years.

The audit results were discussed with the committees of all buildings, in order to identify the optimal reconstruction process. Some local committees accepted a more complex solution, including wall thermal insulation, replacement of windows, and (in some cases) thermal insulation of the roof. These investments were funded by a building credit and its monthly repayment is included in the tenants rent.

Some building committees decided to make a partial reconstruction, consisting of replacement of windows and installation of thermostatic valves. Its financing was made either by an advance payment or by monthly repayment together with the rent.

Estonia

The Estonian Union of Co-operative Housing Associations (EKYL) has performed 14 pilot audits in social houses. The analysis of the results and conclusions have been made and introduced at several conferences in Estonia and Poland.

The development of the training materials based on the audits and other results is ongoing. The first draft is ready and it was presented on 6th December 2007 at a meeting organized by EKYL. This meeting also aimed to introduce the audit results and collect feedback from representatives of the target groups in Tallinn.

To offer its members current relevant information, EKYL publishes the magazine ELAMU. The activities of RESHAPE project and the results of the pilot audits are described in the November 2007 issue.

Spain

On 15th November 2007, Adigsa and social housing promoters' association in Spain (AVS), organized a second workshop within RESHAPE. The workshop, named *Barriers and best practices for energy refurbishment in social housing*, has been attended by 20 representatives of social housing companies (state owned) around 7 different regional administrations.

The workshop has been divided into three main parts. The first one, dedicated to the certification implementation at regional level, has shown that a lot of work has still to be done by the regional administration although the energy certification of new buildings is required to building promoters since 1st November 2007.



In the second part, some experiences (best practices) on energy refurbishment and energy savings evaluation tools (E-tool) have been presented.

Finally, during the afternoon, all participants made an attempt to formulate the main barriers in social housing energy refurbishment practices and to propose measures to overcome these barriers. All participants pointed out the importance to manage well the energy refurbishment activities and that energy technician formation and communication with tenants are needed. Lack of maintenance practices in Spain has been stood out too.

The workshop conclusions will be available soon at Adigsa's RESHAPE website and later will be disseminated to Greece.

The Netherlands

In the framework of RESHAPE, Woonstichting Etten-Leur (WEL, a Dutch social housing association) has decided to investigate the energy performance of all of its dwellings, in order to know how this performance can be improved at reasonable costs. The results will be used for:

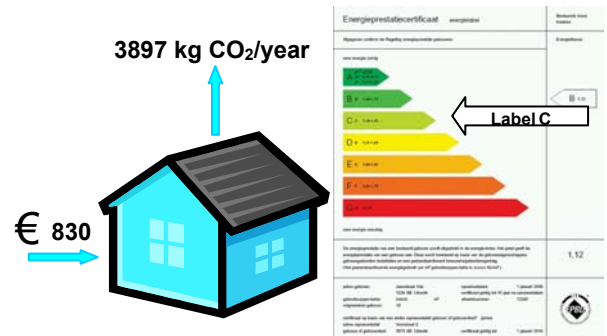
- communication with the tenants about the energy label and the impact on the total living costs (i.e. rent + energy costs).
- implementation of energy labeling in all work processes at the company. This policy has to be based on the total living costs instead of just the rental price.

At the 16th of August the results were presented at a workshop, meant for employees of (WEL), managers of the city council of Etten-Leur, and some coordinators of the Dutch Energy Agency (Senter-Novem) and the Organisation of Social Housing Associations.

The outcome of the investigation to the energy performance of 4300 dwellings based on reference buildings/blocks is the following:

- the mean CO2 emissions are about 3900 kg/year,
- the mean dwelling has label C.
- the yearly dwelling-bound energy-costs are about € 830.

Potential tenants can see the energy-performance of a house they want to rent on WEL's website, so that they can make a well-considered decision, not only based on the lowest rent.



Two examples of investigated complexes:

Rochussenlaan is a couple of single-family dwellings, built at the end of the fifties. No improvements have been taken since then. This results in poor energy performance and the mean energy label of the dwellings is label F.

A	0,0%
B	0,0%
C	0,0%
D	0,0%
E	24,1%
F	39,2%
G	36,7%

Kerkwerve is an apartment building, including 45 dwellings and built in 1962. Later, some improvements have been introduced and this results in reasonable energy-performance. The mean energy-label of the apartments is label C.

A	0,0%
B	0,0%
C	62,2%
D	37,8%
E	0,0%
F	0,0%
G	0,0%