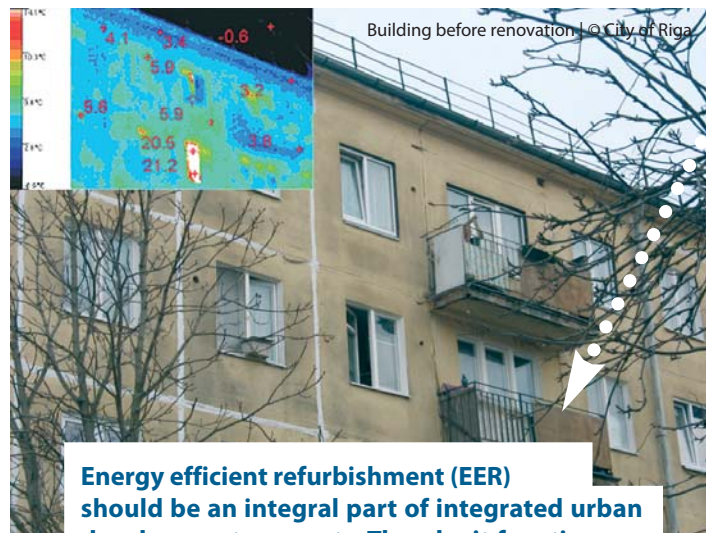


Background

There is an ongoing and urgent need to improve the structural and thermal efficiency of the multi-family housing stock constructed between 1950 and 1990 in Europe. This is particularly the case in the new EU Member States where there is still a large backlog of repairs and renovation of the existing residential building stock. There is a huge potential for energy saving and the reduction of CO₂ emissions through energy efficient refurbishment (EER) in existing housing stock. Furthermore, the EER of buildings is a multi-purpose instrument to achieve important environmental targets, create economic and political benefits as well as social improvements.

The EU has responded to this situation and adopted high energy and climate goals for the building stock. They have been integrated into various plans, directives and regulations, including the climate and energy strategy "Europe 2020", the "Energy Efficiency Plan 2011", the recast of the Energy Performance of Buildings Directive (EPBD) and the Structural Funds. EU Member States now need to take action to make their residential areas and housing stock more energy efficient and to make use of the European support available.



Energy efficient refurbishment (EER) should be an integral part of integrated urban development concepts. Thereby it functions as cross-cutting and integrating theme to reduce energy consumption and adapt to the consequences of climate change within the process of upgrading the neighbourhood.



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Work package 4 (WP 4) focused on the conception and implementation of energy efficient refurbishment (EER) of residential buildings, including the renewal of the supply infrastructure. Within WP 4, the activities focused on the development of such EER concepts embedded in a holistic energy strategy on neighbourhood level for selected target areas. High importance was attached to involving affected stakeholders, such as residents, home owners associations, municipal departments and energy suppliers. The results of the work package are summarised in this leaflet.



Energy Efficient Refurbishment – Improvement of Buildings and Energy Supply Infrastructure

The project Urb.Energy aimed to develop integrated concepts and strategies for the energy efficient renewal of residential areas in the Baltic Sea Region (BSR).

To reach this target, the project focused on three main topics: integrated urban development, energy efficient building renewal and innovative financing schemes.

The project covered the countries Estonia, Latvia, Lithuania, Poland, Germany and the non-EU Member State Belarus. The project duration was 3 years (01/2009 – 01/2012).

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument).





Project Work

Comprehensive approaches to the energy efficient refurbishment (EER) of residential buildings, which include the renewal of the energy supply infrastructure, are rarely to be found in urban areas in the new EU Member States. The Urb.Energy partners developed energy efficiency refurbishment concepts for the building stock in selected urban areas, the so called “target areas”. The concepts consist of a coordinated package of refurbishment measures and new conceptions for the district heat energy supply and the use of renewable energy.

Another focus was the evaluation of already implemented renovation projects: The link between improved energy performance leading to less energy consumption and the need for adapted energy supply systems as well as a change in user behaviour was examined.

Rakvere (EE) The project in Rakvere addressed the poor energy performance of residential buildings constructed in various architectural styles that are situated along the main road “Semnari Street”. The refurbishment concept consists of insulation measures as well as actions to improve the appearance of the target area including a new colour scheme and design principles for the buildings.

Riga Jugla (LV) The partners in Riga Jugla tackled the problems of poor quality in existing refurbishment projects and the low interest of apartment owners in implementing housing refurbishment measures. Accordingly their EER concept provided political and technical recommendations on how to initiate large-scale and high quality renovation projects. Furthermore, strategies on how to motivate apartment owners were presented.

Jelgava (LV) The EER concept of Jelgava intended to change the traditional way of carrying out renovation projects in multi-apartment buildings. Instead a new professional service or “renovation product” is used to make the project implementation more attractive and easier to handle for the residents. The measures will be implemented in the city centre as part of the comprehensive urban development concept.

Siauliai (LT) The EER concept of Siauliai concentrated on two target areas that have building stock with a very low level of energy efficiency and poor structural conditions. It is intended that the EER of the building stock will be combined with measures to improve the residential environment. A special focus has been on the analysis of the heat supply network and alternative ways to heat buildings.

Piaseczno (PL) The concept of Piaseczno for the energy efficient upgrading of 26 buildings in the target area included new integrated solutions regarding combined heat, hot water and energy production. All of the buildings had an energy audit to find the optimal scope of action that decreases the energy needed for heating and domestic hot water production.

Lida (BY) Due to the very poor condition of the overall housing stock in Lida, the project partner chose three typical buildings and analysed their energy performance and general construction. Based on the results recommendations were given, which contain three options for EER, each with a different level of standards and effectiveness of the refurbishment measures.

Berlin (DE) As part of its comprehensive case study, Berlin carried out a retrospective analysis on energy-related modernisation in two residential areas “Frankfurter Allee Süd” and “Kaskelkiez” in the past 20 years. An innovative and transferable tool for calculating CO₂ emissions was developed as part of this project that can provide a foundation for the efficient implementation of EER.

Brandenburg (DE) The project partner in Brandenburg prepared two comprehensive reports containing activities, strategies and policies to increase the energy efficiency within the context of integrated urban development in Brandenburg. This was illustrated by ten exemplary projects in Brandenburg that were analysed and presented in the form of project profiles.

The concepts for the EER of residential building stock developed in this project provide the basis for the implementation of comprehensive EER measures in the participating residential areas. The first results demonstrate that measures need to focus on the building stock and the energy supply infrastructure in a joint approach. Areas particularly in need of special action were included in all of the concepts and possible solutions were discussed.

Rakvere: Seminari street perspective view
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Kai Süda, Diana Taalfeld and Risto Parve



Findings and Recommendations

- A comprehensive package of refurbishment measures provides the best energy efficiency results and is more economic. It eliminates general building damages and substantially improves the living quality and value of the flats as well as the overall building.
- Projects for the EER of the housing stock should cover several buildings in a residential area to enable a comprehensive design concept and the accompanying upgrading of the residential environment. Furthermore, such projects should be part of a municipal or neighbourhood energy concept.
- The involvement of stakeholders is of utmost importance to raise their awareness and mobilise them to apply energy efficiency and related modernisation measures, encouraging private investments.
- Lack of awareness of apartment owners and home owner associations and low motivation to implement renovation measures is an obstacle in most partner countries.
- To motivate and inform home owners about the benefits of EER, feasible energy efficiency measures and funding opportunities, local energy agencies should be established which actively try to raise awareness and serve as information points for individual owners, tenants and others.
- Apartment owners and owner associations often lack experience and knowledge on how to manage their buildings and to initiate investment processes. These activities should be contracted to professional organisations.
- In order to ensure professional implementation and to increase the quality of EER projects, housing renovation managers need to be trained to manage the planning, implementation and supervision of renovation measures.

Further recommendations can be found in the Urb.Energy Policy Recommendations.