

WP 3 Urban Development

Integrated Urban Development Concept

Seminari street area, Rakvere. Summary.

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Baltic Union of Cooperative Housing Associations



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Summary

Rakvere is a small town with a population of 17 000 in North-Eastern part of Estonia. 70 % of local population lives in multi-apartment buildings. Majority of the multi-apartment buildings are situated on Seminari street area.



Photo 1. Seminari Street in Rakvere

The aim of the project Urb. Energyin Rakvere is:

- Develop an urban area as a pilot area in Rakvere by creating a technical project with the aim to improve the living quality of the specific residential quarter
- Creating green space in the middle of the town instead outskirts of town
- Reducing of pollution and diminishing the possibility to use motor vehicles in the area
- Making of construction projects for different types of residential buildings in Seminari street area.

The current Integrated Urban Development Concept of Seminari street area in Rakvere was compiled based on two researches.

The first research “Concept for energy efficient renovation of buildings and modernisation of the supply infrastructure” was implemented during the years 2009-2011. Energy audits of different types of buildings in Seminari street area were made during the first phase of the research. Possible solutions for raising the energy efficiency in the target area were worked out. The solutions were based on the technical data which was received during the implementation of the energy audits.

The second research, “The research on residents’ dispositions and behaviour patterns in the neighbourhood of Seminari Street in Rakvere” was implemented in 2009-2011. This research gives an overview about the dispositions and value orientations of the residents of the target area.

As decisions made by the residents have an utmost impact on the future development of the target area, it is essential to analyse the current behaviour patterns of the residents and work out a list of solutions which enable to activate the will of the residents to implement the means of energy efficient refurbishment.

One of the main tasks fulfilled by Rakvere Town government during the Urb.Energy project was preparing preliminary design projects for Seminari street area as well as for the residential buildings in the above mentioned area with the aim to improve the living quality of the specific residential quarter.

For implementing this task an international idea competition was prepared. (Conditions of the competition are attached to the current document as Appendix 2). The winner of the competition, a company named Nu-Nu Project, has prepared the preliminary design project for the area and for the multi-apartment buildings. (The project is attached to the current document as Appendix 1):

Rakvere Town Government has organized several information days for the residents of the pilot area to introduce the projects. In May 2011 every week a special event for the residents of Seminari Street area was held. On last Friday of May an European Neighbours' Day was celebrated. An open air information day on a small green area on Seminari street was organised and specialists from Town Government and from different energy companies were present to answer the questions of the residents. Local companies supported the gatherings with snacks and beverages.

Housing associations in the target area can finance the renovation works with the help of support schemes of Kredex. KredEx was founded by the Estonian Ministry of Economic Affairs and Communications in year 2001 with a purpose to improve the financing possibilities of companies, to enable people to build or renovate a home and develop energy-efficient way of thinking.

In order to simplify the financing of reconstruction of apartment buildings, KredEx, together with a German development bank KfW Bankengruppe and Ministry of Economic Affairs and Communications, has developed a long-term renovation loan with preferential interest, to be issued by banks.

The purpose of renovation loans is to support the renovation of apartment buildings and to improve energy efficiency by at least 20% in apartment buildings of up to 2000 m² and by at least 30% in apartment buildings of over 3000 m².

In connection with financial resources obtained from European Union structural funds and borrowing of additional loan from The Council of Europe Development Bank, Kredex will be able to let the banks grant more favorable loans with longer repayment period (up to 20 years) with the intended purpose to achieve energy sustainability using reconstruction works.

In addition to the loan Kredex is offering housing associations grants for reconstruction of the buildings

The objective of the assistance is supporting the reconstruction and renovation of apartment buildings for achieving indoor climate and energy efficiency and improving the energy-performance label grade as well as using renewable energy in the existing apartment buildings by supporting the investment made for the reconstruction.

The support is aimed at apartment associations, building associations and communities of apartment owners and funded from trade in assigned amount units under article 17 of Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The renovation project must be in accordance with the results of the energy audit and leading to at least 20% of energy savings. The limit of financing of support is a percentage of the cost of the project, depending on the level of complexity of the reconstruction of the apartment building. The rates of support for project are 15%, 25% or 35% of the cost of the project

The current document presents the outcomes of the researches and gives expert suggestions for energy efficient development of the urban area in Seminari street in Rakvere.

Description of the target area

There are 4 main types of buildings in Rakvere.

1. Period 1971-1980 -Prefabricated small block apartment buildings.

- ❑ The exterior walls are made of prefabricated smaller blocks and the floors are made of concrete panels,
- ❑ Non-bearing walls are made of concrete blocks or silicate bricks,
- ❑ Buildings have mostly roofs with some insulation (5 cm of stone dust, sand).
- ❑ Buildings are without elevator with maximum 5 floors.



2. Period 1981-1990 - 3floors, small panel houses.

- ❑ The exterior walls and the floors are made of prefabricated smaller panels,
- ❑ Non-bearing walls are made of small blocks and brick,
- ❑ Buildings have flat roofs or roof terraces with insulation (5 cms of glas fiber or flat roof covered with hydroinsulation).
- ❑ Buildings are without elevator with maximum 3 floors.



3. Period 1960-1970 - Silicate brick houses.

- ❑ The exterior walls are made of silicate bricks and the floors are made of prefabricated concrete panels,
- ❑ Non-bearing walls are made of bricks with concrete elements,
- ❑ Buildings have roof terraces with some insulation (5 cm of sand or stone dust, some buildings have glass wool),
- ❑ Buildings are without elevator with maximum 3 floors.



4. Period 1981-1990 - large panel houses.

- ❑ The exterior walls are made of prefabricated panels,
- ❑ Non-bearing wall are made of smaller blocks,
- ❑ Buildings have flat roofs covered with 5 cm insulation and hydroisolation.
- ❑ Buildings are without elevator with maximum 5 floors.



Apartments in the buildings are owner occupied. Management of the buildings is organised by apartment associations. All the buildings are connected to the district heating. District heating system consist from 2 pipe network, total length 17 km, 6 km is pre-insulated and

renovated. 51% of the heating company shares are owned by Rakvere city government, 49% by private enterprise Fortum.

The specific space heat consumption for living area m^2 is about 170 - 180 kWh/ m^2 , electricity about 50 kWh/ m^2 .

An overview of the research “Concept for energy efficient renovation of buildings and modernisation of the supply infrastructure”

The current document gives an overview about the technical circumstances and energy saving potential of the buildings in Seminari street, Rakvere, which is the target area in project Urb.Energy.

The evaluation of the buildings has proved that the current technical situation of the buildings in the target area is not energy efficient and that the buildings contain a huge potential for reducing energy consumption using comprehensive refurbishment of the buildings.

Energy performance of multistore living houses in Estonia as well in Rakvere, taking into account the historical background, is on average level. Average space heat consumption is close to 180 kWh/m² heated area annually. After comprehensive renovation the achievable target is about 60 kWh/m² annually, it means that about 100 kWh/m² is the reasonable saving potential. Based on natural gas produced heat the CO₂ avoiding potential is 20 kg CO₂ m² heated area annually.

Total cost for comprehensive renovation is around 130 EUR/m² per heated area. With the use of long term renovation loan and maximum investment support the energy saving cost will cover the loan and interest cost - so the yearly payment before and after renovation is the same for loan period, but indoor air quality and standard of living comfort as well as the value of an apartment are much higher.

Seminari street locates in Rakvere city district heating area (DH area). DH area was set by Rakvere city government at the end of 2010. The aim of the DH area was to establish security for investments in DH systems and secure long term stability of heat MWh price.

Rakvere city as the signatory of Covenant of Mayors has set up plan how to increase the use renewable energy sources in the city area up to 20% from 2005 until 2020.

This plan foresees to increase share of renewable energy sources and Rakvere DH Company has made agreement with two boiler houses to use supplied heat produced from wood. Those boiler houses are investing to install CHP technology and heat will be sold to the Rakvere DH system. Therefore Seminari Street is one of the areas who will benefit from this. Heat produced from renewable sources gives higher security of supply, because the dependence from natural gas (Russian source) decreases.

The general plan foresees that nearly 50% of the heat consumed in Rakvere DH area will be produced from wood based fuels. This target should be reached at 2013.

At the same there are available investment support schemes for the end users. Credit and Export Guarantee Fund (KredEx) gives financial support for those flat owners associations who have decided to make comprehensive renovation and reach the weighted energy label level 150 kWh/m² heated areas annually, corresponding the minimum requirements for energy performance of buildings. This target demands renovation of heating system, insulation of external walls and installation of heat recovered ventilation system. To design all this KredEx support is 90% of designing project cost and to ensure the quality of construction work under the designed renovation project, KredEx will support construction works technical inspection with the same share - 90% of inspection cost.

KredEx gives renovation investment support until 35% of investment cost for complex renovation. Own contribution from 65% of cost can be covered with special renovation loan up to 20 years with fixed maximum interest rate of 4,1%.

Comprehensive renovation means insulation of all external borders of building. Soviet time designed external borders heat transfer standard was about $U = 1 \text{ W}/(\text{m}^2\text{C})$.



1. Photos. Example of unrenovated panel building and another panel building where comprehensive renovation has been finished

With insulation the existing thermal bridges will be destroyed and the heat consumption of the building will decrease ($U = 0,2$).

To benefit from the heat consumption decrease the renovation or technical reconstruction of the existing heating system is relevant.



2. Photos. Examples of different types of radiators in the buildings on Seminari street.

All apartment radiators should be equipped with thermostatic valves to make possible individual regulation.

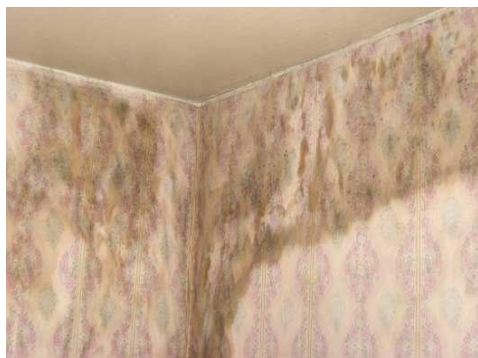
The existing heating system in Seminari street multistore apartment buildings is mostly 1-pipe system and needs technical renovation in most cases to 2-pipe system. To ensure the indoor comfort installing of thermostatic valves is preliminary.

Most of the flat owners have changed the old fashion wooden framed windows with plastic aluminium framed windows.



3. Photos. Examples of old wooden framed and new plastic windows.

This has lead to the lack of ventilation in rooms, because old fashioned windows have been designed as part of ventilation system and supplied the fresh air through the construction. New windows construction is fully tight and fresh air inflow is missing. This, together with thermal bridges, creates the indoor air quality problems.



3. *Photos. Examples of thermal bridges and low quality of indoor climate in Seminari street buildings.*

Renovation of the ventilation systems in these buildings is unavoidable. Modern technology gives opportunity to use equipment with heat exchange possibility. This technology enables 80 % of heat to stay in the room and at the same time air changes. Recommended technology for multiflat apartment houses, using hot tap water produced centrally in heat substation, is the ventilation system with heat recovery by using heat pump. Heat from exhaust air will be transferred to the hot tap water.

An important precondition for starting with comprehensive renovation project in a flat-owners association is the awareness of the residents. BUCHA in cooperation with Estonian Union of Cooperative Housing Associations and KredEx has organised several training courses, conferences and information events during last 12 years.



4. *Photo. Training session for managers of flat-owners associations in Rakvere*

There is a need for constant information activities and awareness raising events for managers of the apartment associations as well as for the apartment owners. The best solution for activating the renovation activities in a certain area is to create a best practice example. An existence of at least one nice, well renovated and cost-effectively managed apartment association causes a snowball effect in the neighbourhood. Residents of one living region communicate with each other and information about the costs on

heating and about living comfort will spread. This enables to explain the opportunities of comprehensive renovation in the most effective way.

According to the research implemented during the current project it could be said that potential for energy efficiency in Rakver Seminari street region is huge. Investments made for comprehensive renovation would mostly be payed back by the saved energy. There are also financing shemes available via KredEx.

The most important topic which has to be handled for activating the energy efficient refurbishment in this region is raising the awareness of the residents.

An overview of the research on residents' dispositions and behaviour patterns in the area of Seminari Street in Rakvere.

The research on residents' dispositions and behaviour patterns in the neighbourhood of Seminari Street in Rakvere has been performed as part of the project Urb.Energy. The main objective was to analyse the capacity of households and flat owners association (FOA) to implement energy efficient renovation strategies in their buildings conceived in the context of the entire neighbourhood reconstruction initiated by Rakvere City Government. Within the conceptual approach linking individual, collective and institutional residential practices the qualitative research has been conducted on three interconnected scales of urban residential space: private space in the immediacy of a flat, semi-private space of blocks and the surroundings and the public space of the neighbourhood of Seminari Street.

Interviews with individual residents and focus group interviews with board members and executives of FOAs were conducted upon a sample of predominant and typical residential blocks in the neighbourhood (as well as in town) subject to distinct renovation demands: the 1960s' 'Hrushovka'- type blocks, the 1970s' 'Narva'-type blocks and the 1980s' 'Masso'- type blocks.

The qualitative research has been coordinated within the framework of other activities, in particular, the energy auditing of the apartment associations and the architectural competition on the complex reconstruction and redesigning of blocks and public space (Linear Park) in the neighbourhood of Seminari Street. Hence in-depth interviews were conducted in spring 2010 and focus group interviews (two sessions with representatives from eleven FOAs) in autumn 2010, respectively after the accomplishment of the tasks performed by other experts with the available information to be included into the qualitative research instrument.

The analysis of the qualitative data allows asserting that residents' as well as FOAs' dispositions towards acting at any of the interconnected spatial scales in current residential situation have been shaped within the entire earlier social and residential experience. One of the features distinguishing the ways residents relate to and act upon their residence or deal with the perceived problems on its different spatial scales connects to a sense of home. On the one hand, residents clearly display more sensitive attitudes towards issues on shared space of their block or courtyard at stronger sense of home. On the other hand, home identities are shaped by its social and physical qualities perceived in the collective cultural experience of residing in a particular block, which may provoke further self-initiated actions towards improvement of its quality, e. g. functional reorganisation of the courtyard as an attempt to secure the semi-private use of space in the interests of the residents of a block (children's play-grounds, car parking, places for relaxation etc).

FOA, however, might take a special role in mobilising residents into the empowerment of their residential position and relations by initiating knowledgeable collective actions towards securing sustainable futures of buildings, properties and homes. There is so far but little experience of applying renovation strategies both individually and collectively. Despite extended experience of redecoration/renovation of individual flats energy efficient approach has been mostly avoided for mainly because of insufficient information and scarce economic capital at the disposal of residents as well as the inability of FOAs to effectively take the initiative.

It is argued that despite efforts taken the reason for inefficiency of FOAs in Seminari Street area is related rather spontaneous and leader-centred non-democratic organisation culture. This practice of low inclusion of lay-members into the decision-making process has led to weak collective identities (the lack of a sense of 'we') and alienation from FOAs activities. The advanced organisation culture of FOAs could be achieved by introducing and learning from the best practice already present in the experience of some FOAs as well as by recruiting lay-members into active participation in different FOA activities. Dissemination of information on benefits and opportunities of applying energy efficient renovation strategies as well as seeking expert advice in order to choose the most feasible cost and quality efficient approach should be prioritised activities in FOAs agenda; the more that there is potential readiness amongst members of FOAs to be mobilised as is seen from individual interviewees' ordering of the benefits of renovation. By order of importance the first four benefits come as follows: energy efficiency (economising), healthy environment, durability of a building and aesthetical appearance of a building.

The complexity of the project of reconstruction of the entire neighbourhood is hardly conceivable for residents and appears as partly stuck in their prejudiced dispositions emanating from habitual ways of perceiving and using the space on a wider scale. However, there are hopes that the redesigning of the public street space into a Linear Park for multiple use for different resident groups will be successful and provides new playgrounds, places for walking, cycling and sitting framed in the aesthetically enjoyable new landscape design with abundance of greenery. There is no doubt that residents are disposed towards constructing their identity on a wider scale of residence beyond the immediacy of their flats or blocks to the neighbourhood as is evident from their accounts on particular public places on a town scale, including the traditional favourites as well as the recently redesigned central areas, which they refer to with apparent pride. The reconstruction of the Seminari Street for the public use compensates for the limited space in the semi-private surroundings of blocks by increasing the opportunities for various activities in the neighbourhood. This endeavour might as well imply invention of a symbolic status of the neighbourhood enhancing the formation of positive identifications and consequentially concerned and caring behaviour of residents.

Conclusions

In order to achieve the complex and complicated objectives of the entire project of reconstruction of the Seminari Street neighbourhood - the modernisation of blocks and designing a Linear Park - the following suggestions are made:

- Residents are important actors in the creation of the quality of the residential space on all scales. No collective initiative on FOA level or institutional initiative on City Government level or mere physical change of a place is successful without resident consent. Therefore residents need to be recruited and involved into the decision-making process by initially providing sufficient information on the targeted changes in the residential quality. FOAs and City Government apparently need to explore various forms of cooperation.
- Expert knowledge and advice sought by FOAs need to be disseminated amongst the lay-members of FOAs by incorporating professional experts into interactive process with residents.
- Organisation culture of the FOAs needs advancement by making including basic lectures on organisation culture into the training courses organised by Estonian Union of Cooperative Housing Associations or any other agency. Seek for opportunities for providing the courses at the lowest possible price to evoke FOAs interest in participation. Any written information (booklets) on building democratic organisation will be helpful. EUCHA could be of assistance.
- The City Government could be helpful by collocating necessary information on the webpage for the daily use by FOAs as well as providing any kind of information on the reconstruction of the neighbourhood. The webpage could comprise links to different recently developed objects with available contacts. City Government could collaborate with boards of FOAs to bring this information to the members of FOAs.
- The City Government could consider hiring a consultant on FOA matters in cooperation with other institutions.
- FOA boards need to reconsider the FOA statutes and include special sanctions for passive residents in order to mobilise the members to participate at important meetings of decision making.
- The residents in the Seminari street area were not sufficiently informed by the results of the implementation of the comprehensive energy efficient refurbishment of the building stock. In order to increase the access and ability to interpreting the information the experts should be involved in the dissemination.
- Various rewards could be considered stimulating FOAs' activities, promoting best practices in different fields of accomplishing quality both in terms of technical solutions as well as recruiting members (e.g. best energy efficient project, best ways of incorporating members etc)
- In order to enhance residents' use of the public space in the neighbourhood, pet-culture should be changed by drafting regulations, zoning spaces and installing special garbage cans.

- Residents should be informed by applying ‘tailor-made’ approach in order to reach different resident groups to explain the City Government’s complex approach to reconstruction of the area. Direct contact is needed for inspiring the residents to participate at the discussions concerning the future developmental plans for the area. Residents need to be listened to while communicating their ideas, perceived problems and even their proposed solutions; not simply informed on the decisions already taken.
- Architects need to be present to introduce and teach reading part plans if necessary. To reach the complexity of the project simultaneously engineering and energy specialist could be incorporated into meetings with residents. Additional materials could be used from other countries’ practices by displaying photos, films at meetings.

City Government as the initiator of the project could consider repeated investigation of the dynamics of the residential processes and resident dispositions and actions along the phases of the realization of the changes.

Imprint

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