

WP 4 Energy Supply

Energy efficient renovation of building stock of Jugla

Summary of document “Concept for energy
efficient renovation of the building stock of
Jugla”

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Rīgas dome
Riga City Council



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Concept for energy efficient renovation of the building stock of Jugla

The aim of the concept: to find a way to start a large-scale high quality energy efficient building renovation in Jugla and Riga while providing political, organizational and technical solutions.

The development process of the concept:

- a) The first step was to analyse the existing situation and find the reasons why in the situation when apartment owners can receive 50% co-financing for building renovation the activity of apartment owners is so low and in the cases when buildings are renovated the quality of construction works is poor.
- b) The second step was to find solutions for the problems mentioned.
- c) The third step was to do calculations and evaluations of the renovation costs and effect for the multi-apartment buildings in Jugla.

Results

The results of the concept include calculations, conclusions, and recommendations. It has been concluded that the existing building renovation organization process is ineffective due to the following three reasons:

- The multi-apartment building owners (apartment owners) lack the experience and knowledge how to manage their buildings and how to make decisions in apartment owners meeting;
- The multi-apartment building owners and the elected members of the board of the apartment owner association of the building lack the experience and knowledge in management, bookkeeping, and attraction of investments. To do these activities in a good quality it is necessary to buy this service from professionals.
- The multi-apartment building owners and the elected members of the board of the apartment owner association of the building lack the experience and knowledge in management and realization of construction works. To do these activities in a good quality it is necessary to buy this service from professionals.

Taking into account that it is not always possible to carry out a complex building renovation where all measures are applied, three different renovation programs were prepared consisting of measures that can not be divided in smaller groups or carried out separately:

- 1.program: insulation of outer constructions, replacement of the old windows with new ones, according to the requirements of the building code LBN002-01. The possible reduction of heat consumption for the 1.program is up to 50%.
- 2.program: all the measures of the first program and also reconstruction of the heating system, implementation of thermo regulators (gives additionally 10% savings) and implementation of an energy efficient ventilation system (gives additionally 10% savings). The possible reduction of heat consumption for the 2.program is up to 70%.
- 3.program: all the measures of the second program executed on the level that meets requirements of low energy buildings: insulation of outer constructions

app.25cm, renovation of the heating system, implementation of energy efficient ventilation systems. The possible reduction of heat consumption for the 3.program is up to 85%.

The average heat consumption of multi-apartment buildings in Jugla is 212 kWh/m² of heating space annually. The total heating space of multi-apartment buildings in Jugla is 458 200m². Calculations show that renovation of all multi-apartment buildings in Jugla (if the buildings are renovated individually, in a case of the 1.program would give **annual savings up to 41 GWh (1,8 mlj.LVL)**, in a case of the 2.program - up to **58 GWh (2,5 mlj.LVL)** and in a case of the 3.program - up to **70 GWh (3,1 mlj.LVL)**. If the price of the heat increases also the saved costs would increase.

Recommendations

The document “Concept for energy efficient renovation of the building stock of Jugla” includes many well-explained recommendations. Below all recommendations are listed; the most important ones are highlighted in bold.

Chapter “The costs of multi-apartment building renovation in Jugla and the saving potential”

Recommendation: To renovate buildings according to the 3.program to reach the maximum heat energy savings, thus helping to achieve the requirements of EC directive on energy performance of buildings and reducing renovation costs later.

Chapter “Realization of the multi-apartment building renovation on a high quality”

Recommendation: To change the Cabinet Regulation No.138 regarding the content of energy audit report and usage of the energy audit calculation program.

Recommendation: In the order of the renovation’s technical design the conclusions of the energy audit and the technical inspection should be included as binding.

Recommendation: For multi-apartment building renovation a common form for all orders of technical designs where all construction works to be designed are listed should be used.

Recommendation: To avoid any additional construction works the technical design must be developed very detailed.

Recommendation: To insulate the floor of the cellar instead of the cellar ceiling.

Recommendation: To insulate the roof of the building instead of the attic floor.

Recommendation: The installation of the new windows instead of the old ones should be done in the insulation area.

Recommendation: To prepare a detailed technical design of the ventilation system with heat recovery and realize it.

Recommendation: To elaborate fire security norms for glazing of loggias of 12storey multi-apartment buildings.

Recommendation: To dismount the balconies of the 5storey multi apartment buildings

Recommendation: To prepare a standardized renovation technical design for all series of buildings where glazing of all loggias is included.

Recommendation: To prepare a common visual image (visual identity) for the blocks or groups of multi-apartment buildings in Jugla.

Recommendation: In the contract between apartment owners and the company that realizes the renovation, a point should be included that the energy savings stated in energy audit must be reached in the result of renovation.

Recommendation: Only companies with established company's quality management system should be chosen for management of renovation and realization of the construction works.

Recommendation: To organize training courses for construction work supervisors and construction workers about the building renovation technologies and organizational issues.

Recommendation: During realization designer and field supervision should be ensured.

Recommendation: To establish Cabinet Regulations that states the procedure on how buildings after renovation are put into operation and states the guarantee period for construction works.

Chapter "Obtaining apartment owner support and organization of the renovation process"

Recommendation: To create a one, unified product "building's renovation" that can be easily understood by the apartment owners (see Picture 1).

Recommendation: When the decision to carry out renovation is made the apartment owners should make a mutual contract about the usage of the common property and register that in the Land book stating the monthly payments as an obligation

Recommendation: The construction works should be realized in such a way that monthly payment for the renovation would be less or equal with the monthly payment for the saved heating energy.

Recommendation: In the contract with apartment owners it should be guaranteed that a certain energy saving will be reached after renovation.

Recommendation: The monthly payments should be set the same each month over a period of one year and at the end of each heating season a recalculation of the new monthly payment should be done (to significantly save administration costs).

Recommendation: It should be emphasized that after renovation the visual quality of the building and facilitation of the area will be significantly higher.

Chapter "Organization of multi-apartment building renovation for groups of buildings"

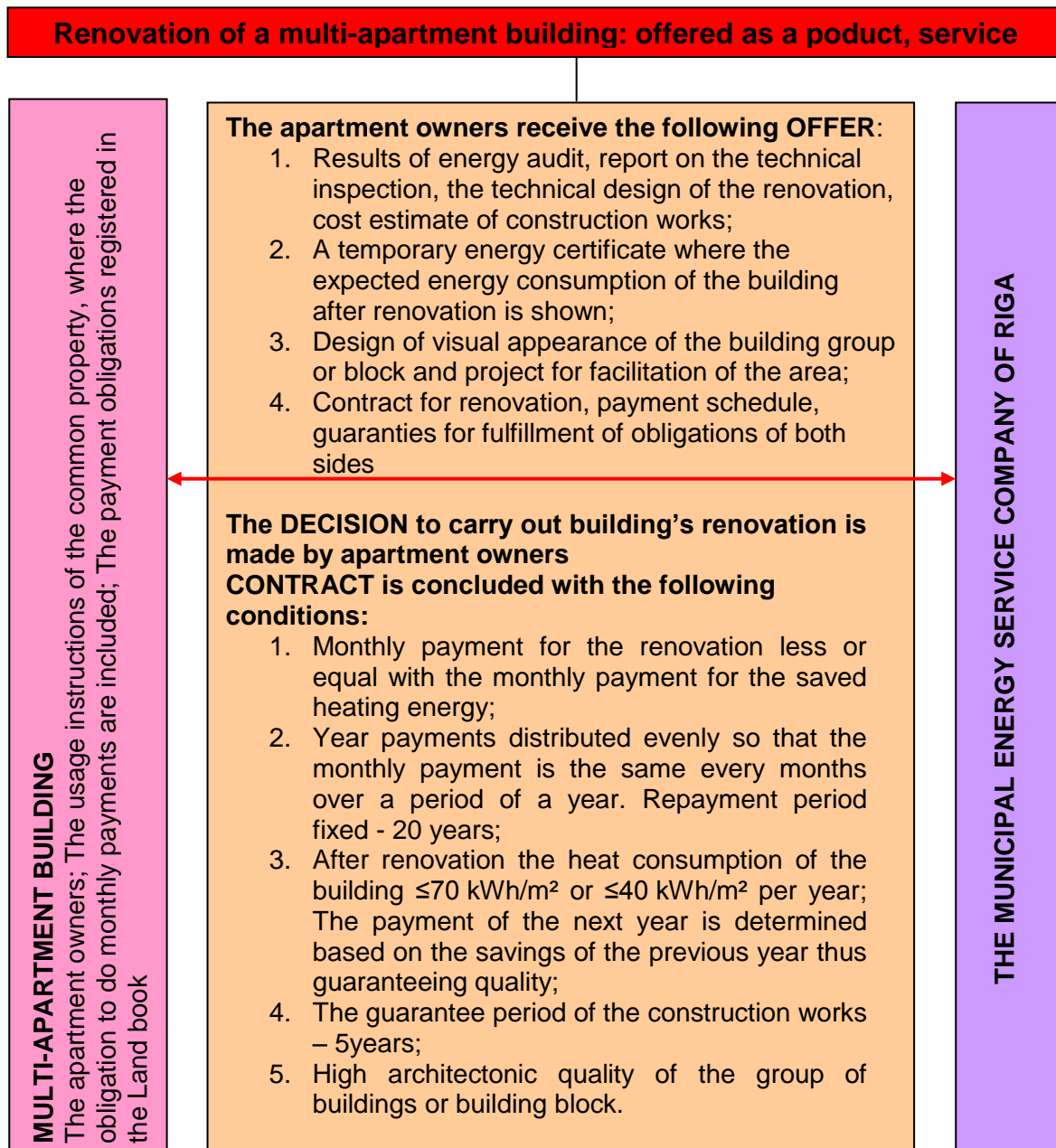
Recommendation: The renovation costs should be reduced by carrying out the renovation for groups of buildings.

Recommendation: The multi-apartment building renovation should be organized by the Municipality.

Recommendation: A specialized Municipal building renovation company (Municipal Energy service company) should be established that would cooperate with the municipal building management companies (see Picture 2).

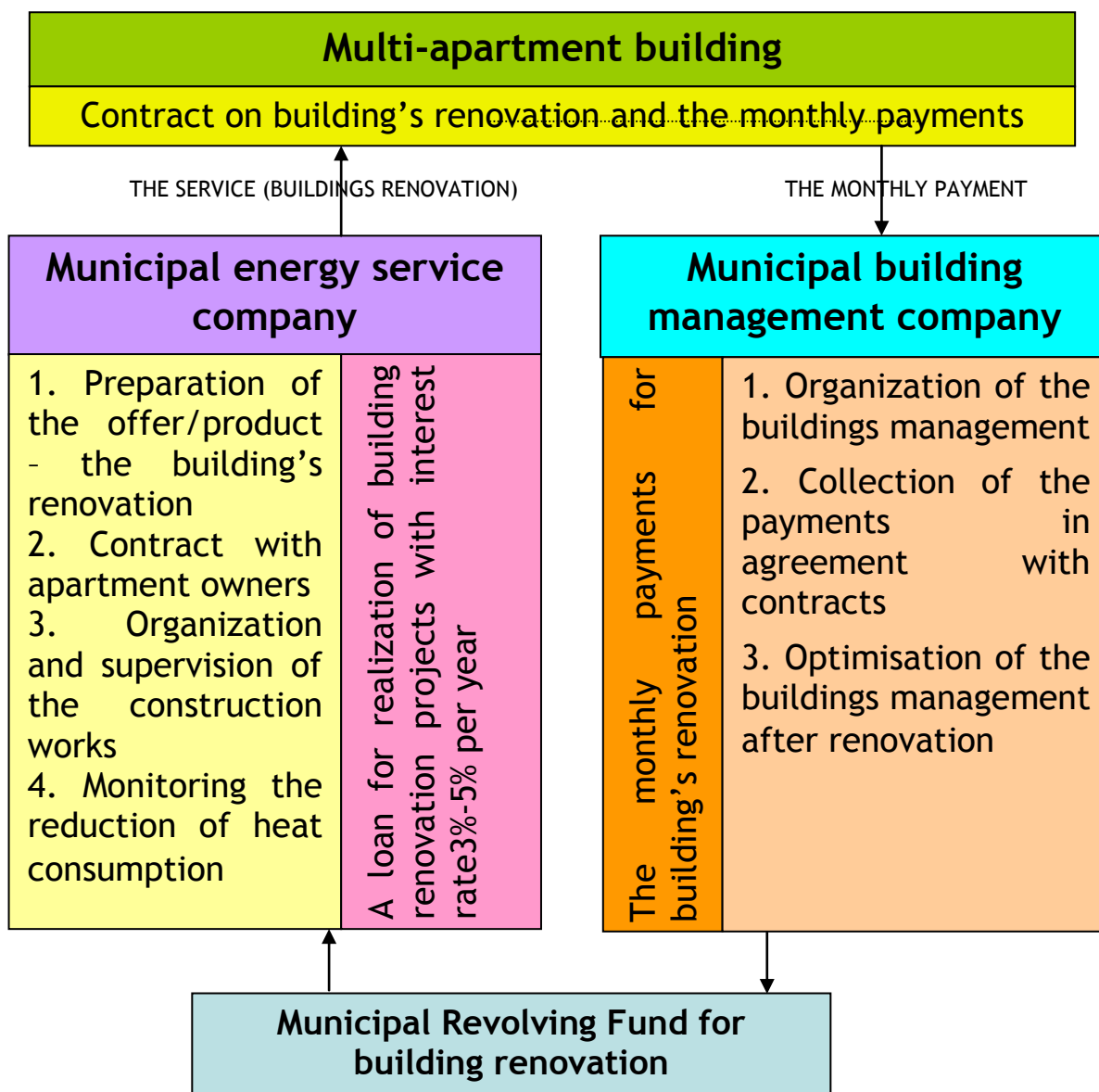
Recommendation: To finance large scale multi-apartment building renovation in Riga a financial instrument - Revolving Fund - should be established.

Conditions for making a positive decision on multi-apartment buildings renovation



Picture 1

Functional scheme of cooperation between Municipal Energy Service Company and Building management companies



Picture 2

Summary

This document contains English summaries of “Concept for energy efficient renovation of the building stock of Jugla“ and „Sample renovation design for a multi-apartment building of series no.464“ (a part of „Sample documentation for the first steps of energy efficient renovation of multi-apartment buildings“) which were elaborated in the frame of the project “Energy Efficient and Integrated Urban Development Action” (*Urb.Energy*) (Baltic Sea Region Program 2007-2013) by Riga City Council.

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