Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Methodological recommendations for the co-owners of apartment buildings:

elaboration of energy-efficient projects

Stage 1 - preparation: contents and specifics

On behalf of:

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

of the Federal Republic of Germany

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Preparation (1)

Goal – design of the general concept (vision) of the project for the increase of the building's energy efficiency and decision on the project's feasibility.

Key issues – how to identify the energy-saving potential of the building

- how to make a decision on the development of the energy-efficient project

Recommended – build-up of a working group for the preparation of project proposals

Preparation stage (2)

Contents

Design of the project concept:

- ✓ Pre-assessment of energy-saving potential including approx. calculation of:
  - Heating energy amount and costs;
  - Project price;
  - ROI term of the project;
- ✓ Checking possible funding solutions for the project;
- ✓ Presentation at the apartment owners' meeting, providing reasons for the project implementation.

Performance indicators

- ✓ Decision of the general meeting on the elaboration and implementation of the project including:
  - Assignment of responsible persons with appropriate powers;
  - Preliminary set-up of funding sources and terms;
  - Set-up of the procedure for the selection of contractors/suppliers;
  - Reporting procedures.

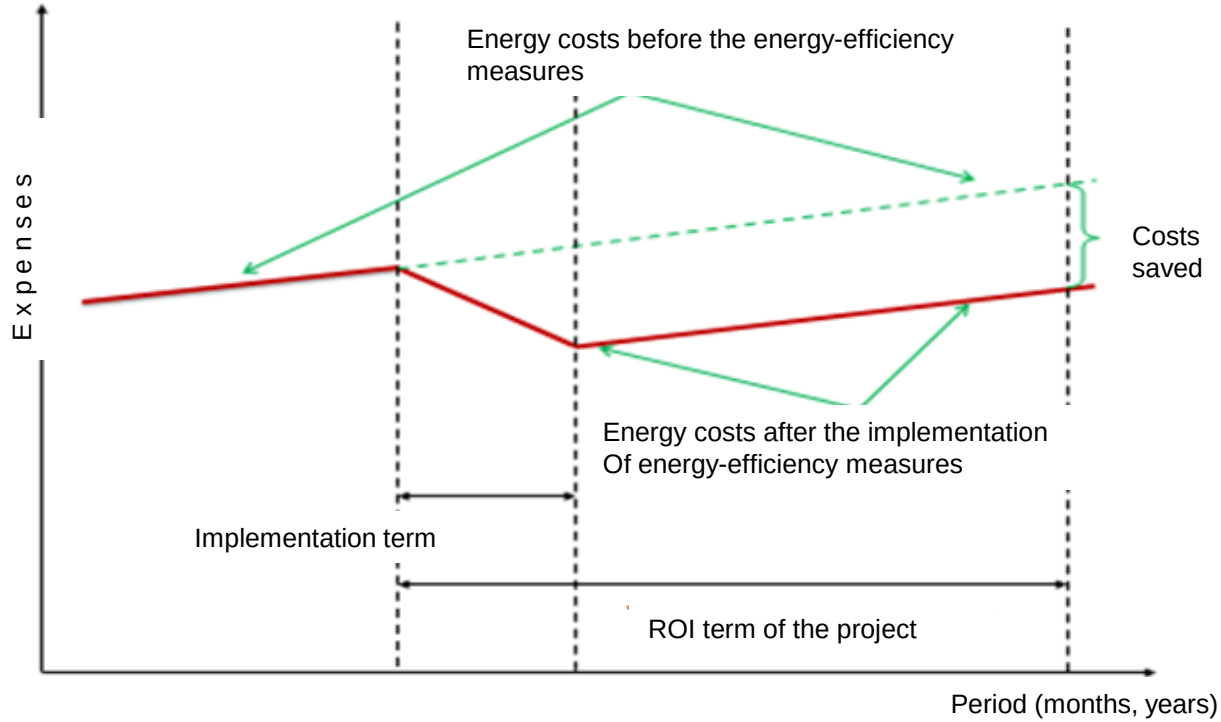
Identifying energy-saving potential

Element(s)	Solution	Potential for energy saving	Average ROI term (years)
Walls	Insulation	18-25%	7-10
Windows, entrance doors	Replacement	15-20%	15
Loft and loft dividing elements	Insulation	5-15%	10-12
Basement	Insulation	5-10%	7-10
Ventilation systems	Installation of air intake and outflow valves; Installation of recuperators; Use of forced outflow ventilation	5-35%	5-8
Joint house-heating systems	Installation of individual heating point with a weather regulator	15-20%	2-4
	Hydro-chemical cleaning and balancing 5-10%	1-2	
Joint in-house electricity supply systems	Replacement of light bulbs	5-7%	2-3
	Installation of light regulation devices	5%	2-3

Impact of the combination of energy-saving measures

Solution for thermo-modernization	Potential for energy saving	Average ROI term (years)
Wall insulation, replacement of windows, roof insulation without modernizing and automating heating systems	10-35%	7-10
Modernization of the heating system (purging, automatic hydraulic balancing, automated regulation)	10-25%	2-5
Modernization of the heating system (purging, automatic hydraulic balancing, automated regulation) + wall insulation and replacement of windows	35-45%	7-10
Modernization of the heating system (purging, automatic hydraulic balancing, automated regulation) + wall, basement floor, roof (ceiling) insulation	35-45%	5-8
Wall insulation, replacement of windows, roof (ceiling) insulation + individual heating point with a weather regulator + automatic hydraulic balancing	35-50%	6-9
Heating system modernization (purging, automated hydraulic balancing, individual heating point with a weather regulator) + wall insulation and replacement of windows + ventilation with a humidity regulator	45-60%	7-10
Substitution of the heating system for a two-pipe system with an individual heating point with a weather regulator + wall and roof (ceiling) insulation, basement floor (ceiling) insulation, replacement of windows + ventilation with recuperation (individual recuperators with the efficiency of at least 75%)	65-85%	10-12
Substitution of the heating system for a two-pipe system with an individual heating point with a weather regulator + wall and roof (ceiling) insulation, basement floor (ceiling) insulation, replacement of windows + ventilation with recuperation (individual recuperators with the efficiency of at least 75%) + renewable energy sources (solar collectors, solar batteries etc.)	70-100%	10-15

Assessment of the energy-saving potential



The assessment is based on the comparison of energy consumption in the baseline period (BEFORE) and expected energy consumption after the implementation of energy-efficient measures (AFTER).

Impact of energy-efficiency measures

Reduction of energy consumption (**ΔQ**)

$\Delta Q = Q_{before} - Q_{after}$,

ΔQ - heating energy saving effect, GCal

Q_{before} – heating energy consumption in the building before the implementation of energy-saving measures, GCal

Q_{after} - heating energy consumption in the building after the implementation of energy-saving measures, GCal.

Cost saving (**ΔE**)

$\Delta E = \Delta Q \times T$,

ΔE – annual cost saving resulting from the reduction of heating energy consumption, UAH;

T – heating energy tariff, UAH/GCal

Approximate project costs

$$VP = C_{technicalinspection} + C_{audit} + C_{project} + \sum_{j=1}^{k} VZ_j$$

$C_{technical\ inspection}$ – costs of the technical inspection of a house;

C_{audit} – costs of the energy audit of a house;

$C_{project}$ – costs of the project documents;

VZj – costs of the j measure for the upgrade of the energy efficiency, UAH;

k – number of measures.

Additional project costs:

- Examination of the project documents 0.5-1.0%
- Technical (up to 2.5%) and individual (up to 2.5%) supervision.

The loan interest rates must be considered as well.

Approximate ROI term

$$T_{ok} = \frac{VP}{\Delta E}$$

VP – total project costs;

Δ**E** – annual cost savings.

Factors impacting ROI:

- ✓ Access to financial support from the state budget / local budgets and grants;
- ✓ Rising tariffs / energy prices.

Contents of the presentation of the project relevance

- ✓ Technical condition of the building (taking into account its age and previous repairs and overhauls);
- ✓ Current energy consumption (heating and electricity) for the previous 3 years and their costs;
- ✓ Objective and contents of the energy-efficiency measures, positive examples and economic effect;
- ✓ Preliminary list of proposed energy-saving measures for the building and expected energy-saving effect;
- ✓ Expected cost reduction due to lower energy consumption;
- ✓ Approx. project price and ROI term;
- ✓ Impact of the project on the financial contributions of apartment owners for building maintenance and on utility fees;
- ✓ Reasons for the project development and implementation given the above factors.

Legal and economic aspects of the decision-making

Art. 360 of the Civil Code of Ukraine

Co-owners are obliged to bear a part of the costs for the management, maintenance and preservation of the joint property according to their share in the joint property.

Art. 7 of the Law of Ukraine "On the Specifics of the Property Right in Apartment Buildings" stipulates the following obligations:

- ✓ proper maintenance and proper sanitary, fire-protection and technical condition of an apartment building;
- ✓ technical maintenance and, if necessary, repair and overhaul of the joint property of an apartment building;
- ✓ execution of the decisions of the co-owners' meeting;
- ✓ compliance with housing and construction legal regulations regarding the renovation, repair and overhaul, technical revamp of the building space or its parts;
- ✓ refund of damage caused to the property of other co-owners and the joint property of an apartment building.

Powers of co-owners

- ✓ Co-owners can order works regarding the overhaul and renovation of an apartment building including the implementation of energy-efficient measures;
- ✓ Co-owners can approve the cost plant of energy-efficient measures, identify funding sources;
- ✓ Co-owners can set procedures regarding payments, type and amount of contributions and fees to the reserve and repair funds;
- ✓ Co-owners can assign a contractor, sign contracts with any private person or legal entity about renovation, repair and overhaul, technical revamp including energy-efficient measures;
- ✓ Co-owners can control the execution of signed contracts.

Types of apartment buildings

Depending on the specifics of the property rights, apartment buildings are divided into:

- Apartment buildings with house owners' associations (OSBB);
- Apartment buildings built or purchased by housing cooperatives (ZhBK);
- Apartment buildings without OSBB (non-united co-owners of an apartment building, NSBB).

Decision-making procedure

OSBB – art. 10 of the Law of Ukraine "On house owners' associations in apartment buildings":

- general meeting;
- decision's validity – 2/3 and more votes.

ZhBK – clause 60 of the Standard ZhBK Charter (decree of the Ministers' Council of the Ukrainian SSR No. 186 dated April 30, 1985):

- general meeting of the members or meeting of authorized representatives (meeting is valid, if at least 2/3 of the members (representatives) attend);
- decision's validity – 3/4 and more votes.

NSBB – art. 10 of the Law of Ukraine "On the specifics of property rights in apartment buildings":

- co-owners' meeting;
- decision's validity – supported by owners of more than 75% of the square footage of the residential and non-residential space or more than 75% of the owners.

Decisions of the owners' meeting in apartment buildings

- ✓ Selection of co-owners who will be in charge for the project organization and implementation;
- ✓ Selected persons are granted powers to select contractors and providers (consulting, technical inspection and energy audit, preparation of project documents, construction works, procurement/supply of materials and equipment etc.);
- ✓ Preliminary set-up of funding sources and terms for the project preparation;
- ✓ Approval of the procedure for the designation of contractors;
- ✓ Set-up of the reporting procedures for the persons in charge (*it is recommended to present reports after each stage, but at least once a month; reports can be presented at the co-owners' meetings or by distributing report information among co-owners including information on the completed works, costs, next steps/project stages*).

Records keeping for the project

Project documents are divided as follows:

- Decisions on project preparation;
- Preliminary technical assessment of the building and its energy-saving potential;
- Assignment of contractors;
- Purchase of equipment and materials;
- Completion of the respective project stage;
- Financial issues etc.

Conclusions

No.	Stage/measure	Goal	Executed by	Final documents
1	**Preparation**			
1.1	Preliminary assessment of energy-saving potential	Assessment of the approximate energy and cost savings	Co-owners	Presentation materials with the assessment of the approximate energy and cost savings and with the approximate project price and project's ROI term.
1.2	Preliminary assessment of the costs of energy-saving measures	Assessment of the approximate project price and project's ROI term		
1.3	Analysis of possible funding options	Preliminary set-up of funding sources and terms		
1.4	Presentation of project relevance at the general meeting	Informing co-owners about project's advantages		Protocol of the general meeting with the decision on project implementation including: - Selection and empowerment of persons in charge; - Preliminary funding sources and terms; - Procedure for the selection of contractors; - Reports on project progress.

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