

RESIDENTIAL ENERGY EFFICIENCY AS A DRIVER OF ECONOMIC GROWTH AND CARBON-INTENSITY REDUCTION IN THE RUSSIAN FEDERATION



Roundtable Discussion:
*“Socio-Economic Impact Assessment:
Apartment Building Renovations &
Energy-Efficiency Increases in Russia’s
Urban Housing Stock”*

October 5, 2021

Potential for reduction of construction and residential sector energy intensity through improvement of apartment building energy efficiency



New construction:

<50% of apartment buildings commissioned in 2019 did not have a specified energy efficiency class (all new apartment buildings constructed in the EU must have an energy efficiency class *)



Existing housing stock:

>60% of apartment buildings have a wear rate of over 30%**

1st place (among other sectors of the economy): Ranking of residential sector in terms of final energy consumption***

Investments in energy-efficient renovations (EER) in housing create significant macroeconomic impacts and lead to a substantial reduction in greenhouse gas emissions

* From 2019, all new construction in the EU must meet the net-zero energy balance (NZB) criteria

** Rosstat, YE 2018

*** International Energy Agency, YE 2018

Climate transition in the residential sector: From installation of metering devices to production of carbon units

2009

Federal Law: “On saving energy and increasing energy efficiency and on amendments to certain legislative acts of the Russian Federation”

Basic objective: Installation of metering devices in individual apartment buildings

2012

Package of amendments to Housing Code of Russia to create a system for financing residential renovations, including support for energy-efficiency measures

Basic objective: Creation of systemic sources of financing for residential renovation and modernization works

2017

Rules for the provision of financial support from the Housing & Communal Services Fund for apartment building renovations

Basic objective: To encourage homeowners to invest funds saved in special accounts in EER and, where possible, to attract bank credit for such projects

2021

Federal Law: “On limiting greenhouse gas emissions”

Basic objective: To use carbon regulation mechanisms for economic development and to reduce negative impacts on the natural environment

Current sources of financing for energy-efficient renovations of apartment buildings

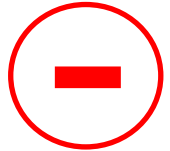
1. Investments in renovations (capital repairs) amount to 200 billion rubles annually; funds are mainly sourced from the mandatory contributions of private homeowners.
2. At the regional level, restrictions exist on the use of homeowners' mandatory contributions to finance EER works.
3. There are practically no additional sources of targeted financing for EER, except for small loan programs offered by one or two banks and a federal subsidy from the Housing & Communal Services Fund for EE measures (about 0.05-0.1% of renovation capital costs, amounting to 132 million rubles in 2020 and 236 million rubles in 2021).
4. The existing system of apartment building renovations has significant positive impacts on the economy and negative impacts on the climate.
5. In cases where EER works are carried out (outside the framework of the Housing and Communal Services Fund program), their positive additional impacts (e.g., resource savings, reduction of climate impact) are not considered. As a result, appropriate operation is not ensured, thereby negating the additional impacts derived from these projects.

Per-unit impacts of residential EER in Russia*

EER activities have high per-unit economic impacts on the following (cumulative over 10 years):



- ✓ **Gross output:** RUB 2.34 per ruble of spending
- ✓ **GDP:** RUB 1.33 per ruble of spending
- ✓ **budget revenues:** RUB 0.22 per ruble of spending
- ✓ **Greenhouse gas emissions:** Reduction of 203.4 tonnes CO₂e annually per million rubles of spending



The main barrier to the realization of the potential benefits of residential energy efficiency programs is the lack at the policy strategy level of a systematic approach to the stimulation and targeted financing of such activities.

* Calculations were carried out by the Institute of Economic Forecasting of the Russian Academy of Sciences based on data from 30 apartment buildings in different regions of the Russian Federation. Presented estimates are based on following assumptions (under other assumptions, estimates should be updated):

- Annual EER spending of RUB 40 billion (2021 prices); this is roughly 20% of the total spending on capital repairs/renovations (200 billion rubles annually)
- EER cost structure corresponds to that of the 30 multifamily apartment buildings sampled
- General level of EER cost localization (considering cost of equipment and materials) is assumed to be 85%

Need for a strategic resolution for targeted financing of EER works at the industry level to mitigate climate impacts

Additional targeted investments in EER will:

- ✓ **Increase the cumulative economic impacts of renovation works,**
- ✓ **Fully offset the negative carbon impacts of renovation, and**
- ✓ **Provide further reductions in carbon emissions** (by reducing consumption of energy resources, assuming proper operation and monitoring of the resulting impacts).

Conditions and criteria for a national program to improve residential energy efficiency via sustainable financing*

1. Compliance of EER parameters with the provisions of the draft “Comprehensive plan of measures to improve the energy efficiency of the Russian economy” (2020)
2. Compliance of financial products with the national taxonomy of sustainable finance (2021)
3. State funding, since beneficiary of the program is the state (increased tax revenues, positive climate impact)
4. Possibility of certification of financed EER program as a carbon project

- Reduction by 2030 of energy intensity of GDP by 20% from 2017 levels
- EER and sustainable finance are explicitly mentioned

- No. 3.2** (reduction of energy consumption by >20%)
- Allows for the placement of green bonds

- Requires high return multiplier for private capital
- Achievement of expected economic and climatic impacts

- Allows for partially reimbursement of expenses (upon sale)
- Allows for fulfillment of long-term climate impact planning for financing purposes and for national reporting on the reduction of the economy’s overall carbon intensity

* Within the framework of the law on carbon regulation

** Implementation of projects designed to improve the energy and thermal efficiency of existing facilities, contributing to a significant increase in their efficiency in the following areas:

Estimated investment volumes and time horizons of a national program to improve residential energy efficiency via sustainable financing*

1. At least 40% of apartments have the potential to increase energy efficiency by >20%**
2. Average cost of EER works: 2 million rubles (2017-2020)***

Estimated investment volume of ~ **40 billion rubles per year**, or 20% of the current funding for renovation works (modernization of 5,000-20,000 apartments per year, depending on the degree of renovation required)

- **Program implementation period: 10 years.** This reflects the emergence of cumulative economic and climate impacts (impacts are considered for a further 10 years after the end of the full investment cycle).
- A full-scale program is being prepared for implementation; this will also reflect the two- to three-year period of scaling up production of EE materials, work planning, and the training of personnel/contractors following project greenlighting and commencement of pilot testing of new mechanisms.
- **Pilot Program term: 2-3 years.** Implementation of the pilot program will commence following preparation of calculations for each economic region and a federal-level forecast. The pilot will be launched in one region, with consideration of the specific circumstances of its housing stock and necessary EER; it will allow for the testing of new instruments and mechanisms for project financing and effectiveness verification.

* Within the framework of the law on carbon regulation

** CENEF XXI data

*** Housing and Communal Services Fund

Elements of a national program to improve residential energy efficiency via sustainable financing

- Use of fixed-income instruments (issuance of 'green' sovereign bonds) and possible additional income from monetization of carbon certificates
- Allocation of funds to various types of financial support (subsidies, loans, credits, guarantees, etc.) and non-financial support (consulting, preparation and coordination of works, operational control, monitoring, verification and certification of projects) with adherence to principles of equal access

Features of financed activities:

- Improvements to energy efficiency in line with the taxonomy and certification requirements of climate-oriented projects
- Apartment management and climate reporting for the entire life cycle of energy efficiency improvements
- Implemented as part of the existing system of apartment renovation or energy services

Principles and elements of financing residential energy efficiency

RUB 40 bln – target volume of annual investment in EER at the federal level*

1. Well-formulated program for the deployment of federal and regional budgetary investments (direct subsidies and support for concessional lending) in residential energy efficiency with strong economic and social impacts**
2. Carbon units (certification of CO₂ emissions reduction from EERs works) to be traded on a domestic market and used to offset part of the cost of program financing
3. Budgetary funds for EER financing are used to certify the “green” status of sovereign bonds
4. High degree of planned investment in EER (as well as required goods and services) to allow for the successful formulation and implementation at the regional level of programs attractive to private capital, including funds from capital markets

* Reflecting the production deployment cycle (1-2 years), a plan for measures to improve residential energy efficiency should be formulated for a period of at least 10 years in terms of the expected climate impact. The plan of budget expenditures should be 10 years for indicative goals, 5 years for planning, 3 years for funding.

** The thesis about the need for direct public investment to obtain significant economic and climate impacts in this sector is confirmed by an analysis of the world's leading examples (e.g., those of Japan and Germany) for the stimulation of residential energy efficiency.

Timing and total cumulative impact of residential EER in Russia*

Investments in EER at the federal level of **40 billion rubles annually** (in addition to the current 200 billion rubles of homeowners' contributions) lead to the following cumulative full effects for 2021-2040:



- ✓ **Gross output: 6.46 trillion rubles**
- ✓ **GDP: 3.23 trillion rubles**
- ✓ **Budget revenues: 613 billion rubles**
- ✓ **Greenhouse gas emissions: 90 million tonnes CO₂e****

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- General level of EER cost localization (considering cost of equipment and materials) is assumed to be 85%

** Reflecting full repayment of the annual additional impact of construction on the climate of 4.07 million tonnes CO₂e per year.

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