Action plan

Part I – General information

Project: Boosting low carbon innovative building rehabilitation in European regions

Partner organization: Public Investment Development Agency

Other partner organizations involved (if relevant): -

Country: Lithuania

NUTS2 region: Lietuva

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Part II – Policy context

The Action Plan aims to impact:

- • Investment for Growth and Jobs programme
- □ European Territorial Cooperation programme
- • Other regional development policy instrument

Name of the policy instrument addressed: Lithuanian operational programme for the European Union funds' investments in 2014-2020.

Lithuanian operational programme for the European Union funds' investments in 2014-2020. Priority axis 4 – Promoting energy efficiency and production and use of renewable energy. Specific objective 4.3.1 –Reduce energy consumption in public infrastructures and multi-apartment houses. One of the Council recommendations 2014 for Lithuania encourages stepping up measures to improve the energy efficiency of buildings through removing disincentives and rapid implementation of the holding fund measure. At the EU level special attention is given to the energy efficiency objective. The Energy Efficiency Directive adopted for this purpose provides for mandatory measures to implement this objective. The Commission's position paper notes that it is necessary to increase energy efficiency of residential buildings, puts an emphasis on the renovation of multi-apartment buildings. Renovation and modernisation of buildings used by state,

municipal authorities and institutions. Support will be provided for the renovation (repair and/or reconstruction of exterior walls and roofs, modernisation and/or reconstruction of engineering systems in buildings, other related measures) of buildings used by state, municipal authorities and institutions owned and/or managed on other legal grounds by state or municipal authorities and institutions, with the aim to improve energy characteristics of buildings to be classified at least as Class C in terms of energy performance (i.e. major renovation as defined by Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings) following the principle of energy performance agreements, as well as for the promotion of the use of RES for the production of energy in the buildings. Financing will be delivered through national legislation, such as Multi-apartment building modernization programme.

Multi-apartment building modernization programme (and related bylaws). The aim of the Programme is to create effective conditions for integrated modernisation of multi-apartment houses and residential areas seeking improved quality of life and rational use of energy resources. This Programme is financed from Lithuanian operational programme for the European Union funds' investments in 2014-2020.

The law on State Support for Housing enables financing shallow renovation from the OP 2014-2020 funds, national and other resources. In 2018 the law on State Support for Housing was discussed in Lithuanian Parliament.

Part III – Details of the actions envisaged

ACTION 1 – Implementation of the shallow renovation model in Lithuania

Action summary

Renovation of the multi-apartment buildings is defined in Lithuanian operational programme for the European Union funds' investments in 2014-2020, priority axis 4 – Promoting energy efficiency and production and use of renewable energy, specific objective 4.3.1 – Reduce energy consumption in public infrastructures and multi-apartment houses, but detail eligible energy efficiency measures and financing are defined in the national legislation:

- In Multi-apartment building modernization programme; and
- In Law on State Support for Housing

During the Build2LC project implementation, the Ministry of Finance as a Managing Authority and as a stakeholder identified that the shallow renovation itself could be implemented in the scope of the Operational programme 2014-2020, and will contribute to achieve Operational programme 2014-2020 indicators, but national legal acts (such as Multi-apartment building modernization programme and Law on State Support for Housing must) should be amended.

Amendments of the Multi-apartment building modernization programme would allow applying not only deep but also shallow renovation in the modernization of the multi-apartment buildings. In addition, improvements of the Law on State Support for Housing would enable final beneficiaries (dwellers) to receive state support (grant from state resources) for the shallow renovation measures.

The results of shallow renovation will contribute to increase the number of households with improved energy efficiency, so this action will improve the achievement of the indicators of the Operational programme 2014-2020.

1. The background (please describe the lessons learnt from the project that constitute the basis for the development of the present Action Plan)

Population of Lithuania

The consumption expenditures per household member per month on housing, water, electricity, gas, and other fuels accounted for 19.24% in 2012, a substantial increase compared to the ca. 13% in the years 2004 and 2008. Of the 43.74 EUR per month per household member spent on housing, water, electricity, gas and other fuels in 2012, the main expenditure is on heating with 12.91 EUR, followed by electricity (8.86 EUR). In absolute numbers, the average consumption expenditures per household member per month increased by 244% from the year 2004 to 2012.

Energy Sector in Lithuania

Increased dependence on imported energy having closed down the Ignalina nuclear power plant, soaring energy prices, obsolete and inefficient energy infrastructure (especially district heating systems), inefficient and aging buildings, old generation lighting systems have an adverse impact on the well-being of

population, exacerbate the country's energy independence and energy security problems.

Cost-effective and efficient use of energy, reduction of adverse energy impact on the environment are very important challenges and priorities of the country seeking for efficient and sustainable development of the economy.

Heating Energy Sector in Lithuania

District Heating Sector DH tariffs are not fully cost-reflective, as increases in fossil fuel prices are not passed on to the consumers, which makes many DH companies not financially viable. As far as heating sector is concerned, in Lithuania all cities have well developed DH systems, which are a heritage of planned economy times. Most of the systems are implemented more than 40 years ago and serve more than 50% of final heating demand in total, which has remained constant over the last years. Even though DH system offers several advantages over individual heating solutions, such as possibility to utilize waste heat, better environmental pollution control, higher efficiency, convenience for end-users, etc. Lithuania currently faces several issues:

1. Around 70% of DH production is based on natural gas, which is fully imported from the single country – Russia, threatening insecurity of supply. In relation to this, the current focal area is how to reduce the consumption of natural gas and thereby dependency on imports. It is restricted though by the biggest DH plants in Vilnius, Kaunas, etc., which operate natural gas combined heat and power (CHP) plants. In smaller cities though, biomass in DH production is the dominant fuel and its share is increasing constantly.

2. A significant part of district heat is produced in DH boilers, whereas the rest comes from CHP plants located in the main cities (43% and 56% of heat production in 2010 respectively). Thus, an increasing focus is being currently given to promotion of CHP plants, which produce both heat and electricity and provide substantial advantages in terms of efficiency, reduced pollution, etc.

3. An important issue in the DH sector is old and outdated distribution network, reaching the age of over 30 years. However, during the last decade modernization of DH distribution system has been carried out and heat losses have been reduced from 25.1% in 2000 down to 15.7% in 2010.

4. Too slow multi-apartment buildings renovation, residential, remains the core issue in the heating sector, which hinders improvements in energy efficiency, reduction in heat production as well as fuel dependency.

However, high energy consumption in the residential sector suggests that the energy subsidies are creating additional costs for the government. Implementing EE measures in buildings would reduce unnecessary energy consumption and help to reduce additional costs.

Lithuania is also making progress with respect to energy efficiency in buildings, owing to funding schemes such as the Programme for the Renovation (Modernisation) of Multi-apartment Houses managed through the Multi-apartment building modernisation fund (DNMF), which provides soft loans through its 74 million EUR allocation. Moreover, the Energy Efficiency Fund (ENEF), funded by the ERDF with 79.6 million EUR, provides loans for the renovation of central government buildings and guarantees for street lighting

modernisation projects.

The Residential Housing Sector

Approximately 66% of the Lithuanian population lives in multi-apartment buildings built before 1993 (more than 800,000 apartments in 38,000 multi-apartment buildings). One of the main features of that period is massive low-quality constructions of brick built and concrete-block multi-apartment buildings, which are characterized as being energy inefficient and tend to have low energy performance category, due to low thermal resistance of envelopes, outdated inefficient one-pipe heating systems and lack of proper ventilation. In these buildings, annual heat consumption is twice as high as in multiapartment buildings built after 1993. Differences in values of heat transfer coefficient show the differences according to the building period of construction.

Table 1: Values of heat transfer coefficient per building codes in force

Category of multi-apartment buildings, rated by heat consumption	Average monthly heat consumption (for space heating)*	Heating bill of typical 60m2 apartment**	Share of all multiapartment buildings
I: Least (new and of high quality)	~10 kWh/m2	~600 kWh/60m2 (~35€)	4%
II: Low and moderate (new and with implemented heat saving measures)	~15kWh/m2	~900 kWh/60m2 (~65€)	16%
III: Substantial (old and renovated)	~25 kWh/m2	~1500kWh/60m2 (~91€)	60%
IV: Highest (old ad non-renovated)	~35kWh/m2	~2100 kWh/60m2 (~35€)	20%

*Average heat consumptions during heating season (October – April)

**Average heat price 0.072 €/kWh during 2014/2015 heating season is used (LDHA 2015)

Most buildings are in poor condition and lack proper management. They have inefficient heating systems. For the multi-apartment buildings built before 1993 it is 160-180 kWh/m^2 per year. These figures fall below the EU averages, there is still significant potential for energy savings due to Lithuania's lower per-capita energy use compared with EU levels. Before 2000, final energy consumption in households was decreasing by 3.5 percent each year, but it increased by 2.8 percent per year from 2000 to 2008. The total savings potential by 2020 (with 2009 as the reference year) is 17 percent of the final energy consumption. To achieve these targets will require investing approximately EUR 870 million to renovate the least efficient buildings, which consume about 200 kWh/m^2 per year.

DH covers 63 percent of the total heated area in Lithuanian cities. 57 percent of DH companies are fully owned by the municipalities. The remaining 43 percent of DH companies operate under various public-private partnership arrangements. Heat supplied by DH accounts for 51 percent of the housing stock. 26,636 buildings receive DH heat, of which 73 percent (19,357) are multi-apartment buildings. The number of DH consumers increased from 477,462 to 657,818 (73 percent) in the period 2001 to 2012. Compared with other Nordic countries, Lithuania has very high heat consumption for all buildings.

The main problems these buildings are facing are old and **inefficient heating systems and engineering equipment** and related big energy losses. From a recently published survey, it showed that more than 57 percent of Lithuanian households are not satisfied with their houses, mainly because of expensive heating and insufficient comfort level. The urgent need for upgrading and modernization of especially multi-apartment buildings, including the rational use of energy resources has been acknowledged by the Lithuanian government by approving the Lithuanian Housing Strategy and Multi-apartment building modernization programme. The Programme aimed to increase energy efficiency in no less than 4000 multi-apartment buildings by 2023. The Programme aimed to:

1. increase energy efficiency in multi-apartment buildings;
2. ensure that cumulative annual heating costs and return on investment cost after the renovation do not exceed the heating costs, which was before renovation.

Multi-apartment buildings modernization programme is being coordinated by the Ministry of Environment with the support from Housing Energy Efficiency Agency (HESA). In line with this programme, Deep renovation model (windows, building envelopes, ventilation and other EE measures are compulsory for current model) is implemented in Lithuania.

In order to achieve EE in multi-apartment buildings it is very important to give an opportunity for the final beneficiaries to install not only deep renovation measures but also the other measures such as Shallow renovation including Smart metering system.

Shallow renovation model can reduce heat consumption up to 20-25 percent. Following measures are envisaged in the model:

1. to balance the internal heating system.
2. to balance the hot water system.
3. to install the thermostatic valves on heating devices.
4. to install the heat cost allocators for each apartment (heat exchangers).
5. to install Smart metering system for the simultaneous display scanning from dividers and hot water meters apartment (according to 2012/27 / EU Efficiency requirements of the Energy Efficiency Directive (2012/27/EC)).

The exchange of experience among regions - lessons learnt from the project

Bi-lateral meeting in Spain. During the project, bi-lateral meetings Lithuania learned from different partners practices, including Andalusia Energy Agency (Spain) and Eco Fund (Slovenia). The aim of the Incentives Programme for Sustainable Construction in Andalusia managed by the Andalusian Energy Agency was to facilitate the rehabilitation of existing buildings through energy saving and efficiency and renewable energy measures and to promote a culture based on the sustainable energy rehabilitation of buildings. The Incentives Programme for Sustainable Construction in Andalusia was fully developed with the collaboration of 8.300 private companies, "collaborating partner companies" liaising in integrative public-private collaboration with the Agency in the management and processing of incentives, which facilitated the

administrative procedures, to request incentives by end users. During bi-lateral meeting in Spain Energy Efficiency Companies Association (A3e) Representative presented their experience and benefits in Smart metering implementation.

During the bi-lateral meeting in Spain VIPA took smart metering measure as a good practise, which was integrated in VIPA's action plan as the part of shallow renovation. The optimization of the smart systems for energy efficiency, diagnostic, monitoring, metering and the installation of related technologies can quite significantly contribute to raising public awareness of the energy that they use and increase energy related behaviour.

Bi-lateral meeting in Slovenia. As well, VIPA analysed Slovenian good practices and the activity of Eco Fund. Eco Fund is a public fund (100 % state owned) and the biggest specialized institution providing financial incentives for environmental investments in Slovenia. The majority of investments eligible for Eco Fund's subsidies are currently in the building sector, which has the biggest potential for delivering significant and cost-effective emissions reductions (proven policies, technologies and knowledge already exist on the market). Eco Fund provides non-repayable subsidies (grants), soft loans with favourable interest rates, financing and coordination of Energy Advisory Network ENSVET, financing of awareness-raising activities. Financial incentives are disbursed based on public calls. Subject of the relevant Public Call for loans for environmental investments citizens receive favourable loans for environmental investments to be carried out in the territory of the Republic of Slovenia and covering measures such as:

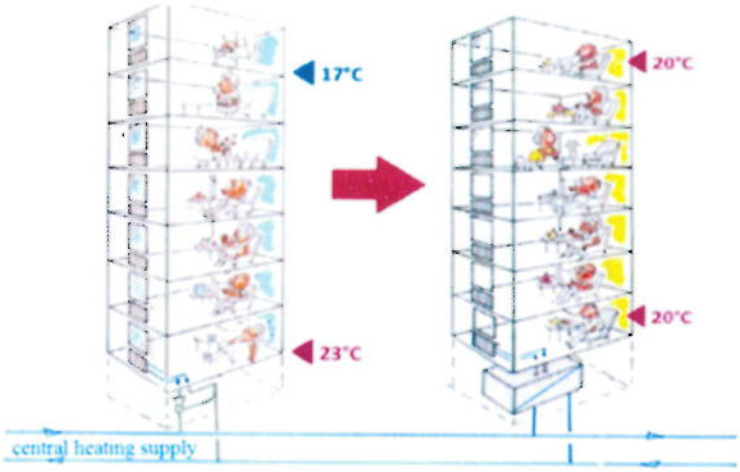
- the installation of systems for efficient heating, ventilation and preparation of sanitary hot water;
- the use of renewable energy sources for the heating of rooms and the preparation of sanitary hot water; modern devices for electricity generation;
- the reduction of heat loss in the renovation of existing residential buildings; the construction, or purchase, of a low-energy, or almost zero-energy residential building;
- the purchase of energy-efficient household appliances and etc.

During bi-lateral meeting in Slovenia VIPA discovered that in some cases there is no need to implement deep renovation. Slovenian Eco Fund provides financing for separate energy efficiency measures depending on households needs. This Slovenian example showed that in some cases energy efficiency could be reached through shallow renovation model.

2. The Shallow renovation programme in Lithuania (in detail)

The main point of Shallow renovation is the renovation of the existing heat point (unit) connected to central heating system. With a Shallow renovation, about 25% of energy may be saved and will pay off within seven to ten years or even shorter time. This is the most environmentally friendly way. Additionally, after arranging heating systems and balancing the distribution of heat, the comfort conditions are improved, but the heating bill is significantly reduced.

The renovation of the heat point (unit) allows saving energy as no hot water is taken from the network and it allows reducing the temperature of the water circulating in the network, thus optimizing the heating system.



Picture 1. Independent heating system

Shallow renovation measures would include works performed at the heating point and the heating devices (units) of the multi-apartment building. There are approx. 20% of non-renovated heat points in multi-apartment buildings in Lithuania (Annex No. 1). The main advantage of modernized heat points (units) is that they do not relate to the heat supplier because control and automation measures is controlled by the internal heating system of the building, depending on the outdoor air temperature. Renovated heat point has the ability to take exact amount of heat from the heat networks as needed when it is necessary to maintain the heating.

The main advantages of shallow renovation – payback period depending on measures installed fluctuates between 5,4 and 9,8 years even without subsidy (table No. 2) and the payback period of shallow renovation model with 30 percent of subsidy fluctuates between 3,7 and 6,8 years (table No. 3).

Table No. 2. Energy efficiency of shallow renovation (no financing costs included)

Shallow renovation measures	Average investment, EUR	Energy efficiency, %	Average price of centralized heat supply in EUR / MWh	Energy saving after modernization, MWh	The payback period, Years
Heat supply modernization	15000	8	60,6	28,4	8,7
Cold and hot water systems balancing	9500	5	60,6	17,7	8,8
Insulation of cold and hot water pipelines	2300	2	60,6	7,1	5,4
Particulators and / or thermostatic shakers	21000	10	60,6	35,5	9,8
Complexly	**47800**	**25**	**60,6**	**88,7**	**8,9**

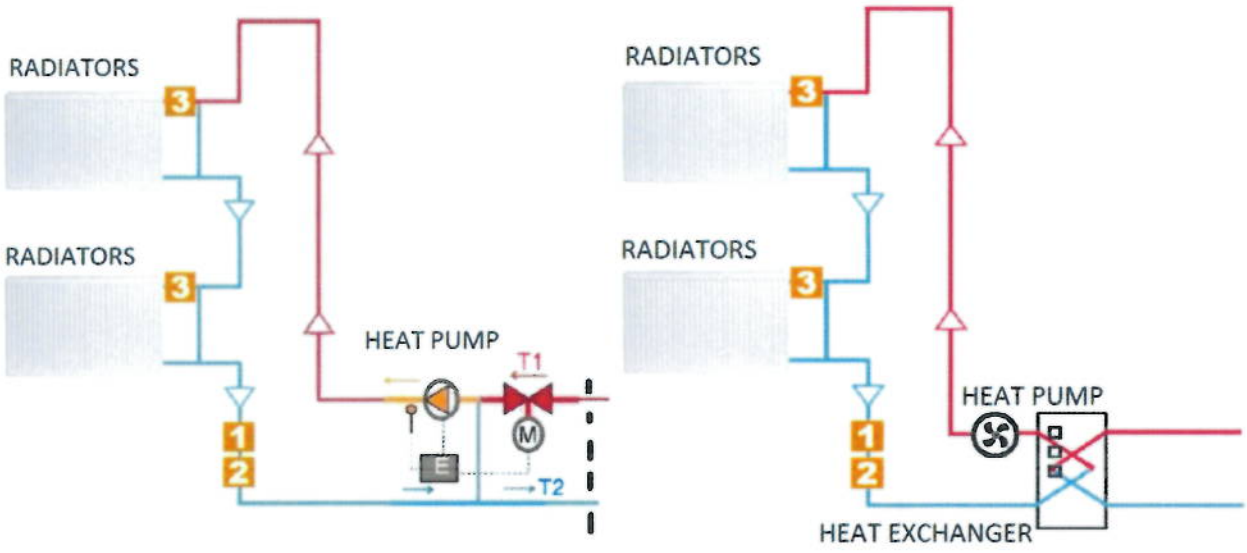
Table No. 4. The payback period of shallow renovation measures with 30 percent subsidy

Shallow renovation measures	Average investment, EUR	Subsidy, %	Subsidy, EUR	Investments, EUR	The payback period (with subsidy), Years
Heat supply modernization	15000	30%	4500	10500	6,1
Cold and hot water systems balancing	9500	30%	2850	6650	6,2
Insulation of cold and hot water pipelines	2300	30%	690	1610	3,7
Particulators and / or thermostatic shakers	21000	30%	6300	14700	6,8
Complexly	**47800**	**30%**	**14340**	**33460**	**6,2**

After the renovation of the heating point:

1. energy efficiency is increased in all apartments in multi-apartment buildings and;
2. the technological losses of the heating networks in the supply pipelines are decreasing, as the automation of heating units for heat suppliers gives the opportunity to reduce the temperature of the heat exchanger in the supply pipeline by 10-15 °C.

Usually one-pipe heating system is replaced with completely new two-pipe system and each room then has two risers. One of them is supply riser, the other is return riser. Equal temperature coolant flows to all radiators. When desired temperature is achieved in the room flow coming to the radiator is reduced by thermostatic sensor and gradually flow in the riser becomes lower. As a matter of fact, flow in two-pipe system is variable depending on heat demand. In order to prevent the flow streaming down to the neighbours' heating equipment when thermostats are closing, at the bottom of risers automatic balancing valves, which consist of balancing valve and differential pressure control, are installed. Automatic balancing valves create perfect working conditions for thermostatic sensors, heating units do not cause noise, the amount of heat consumed is equal to the amount required to reach the desired temperature.



Picture 2. Heating system scheme – dependent before renovation and independent after renovation

Smart metering

In the last years, efforts to maximize energy efficiency in buildings have focused on improving the elements of the envelope -walls, windows, roofs- and on improving installations -heating, ventilation, cooling and lighting. As these energy saving measures are increased, the influence of users behaviour on energy consumption is higher, but individual metering and billing for heating costs is one of the most effective solutions to intervene in such behaviour. Installation of individual metering of heating is not in itself an improvement of energy efficiency of the installation, but it is a measure that promotes energy savings because it changes the way it is used the heating system and allows more efficient use of the systems.

Central heating with individual metering combines benefits of central heating -greater efficiency- and the individual heating - flexibility- because it has individual meters that record the consumption of each resident and is billed on the basis of that consumption. Generally, a fixed monthly payment directed to maintenance of central heating company is done and the balancing value according to the consumption is made periodically (e.g. annually). Installation of regulators increases the motivation of inhabitants to regulate indoor temperatures and thereby reduce heat consumption. Individual metering allows the resident to lower the temperature in the apartment when needed, and then, pay less than those tenants, which chooses to have a higher temperature. In addition, individual metering compensates the risk residents opening windows to lower the temperature.

Buildings supplied with the heating from a district heating network or a central source servicing multiple buildings must be equipped with a central heat meter installed at the heating exchanger or point of delivery. As regards final customers residing in multi-apartment buildings, whether such buildings are supplied from an external source or a common source within such buildings, individual heat meters for each

apartment or unit in such buildings must be provided. However, the individual heat cost allocators must be installed on each radiator in the individual apartments/units of those buildings. It is very important to ensure that final customers are provided with individual meters that accurately reflect their actual energy consumption and provide information on actual time of use. Individual metering of consumption in each apartment puts tenants in control of their own bills for heating.

Smart metering automatically collects, transport, analyze and manage the data gathered from individual meters and other intelligent devices. Using a combination of digital sensors, network and data management, and advanced analytics, heat proving companies can understand demand in near real time, identify and respond to outages faster, improve productivity and safety by automating tasks, and ensure compliance with regulations.

Summarising smart metering advantages:

1. Smart metering data can make consumers more aware of the effect of their behaviour on their bills and can use automatic regulation of heat consumption;

2. smart metering data enables development of new, dynamic and flexible business models;

3. smart metering data makes possible to monitor the state of the existing district heating network in real time. This is highly valuable for the operation the network (e.g. it is possible to identify, where an effort to reduce heat loss has the highest value);

4. Smart metering data enables efficient and robust choices in the designing of new district heating networks.

Financial calculations including financial loan instrument

According to the analysis, the shallow renovation demand in multi apartment buildings will be 3908 buildings and this means that number of households with improved energy consumption classification will be more than 21000 households (dwellings). Assumptions for shallow renovation financial calculations are presented in table No. 5 below.

Table No. 5 Assumptions for shallow renovation financial calculations

	Indicator	Units	Value
1	Shallow renovation demand in multi-apartment buildings	Number	3908
2	Energy consumption of non-renovated buildings	MWH/Year	355
3	Average investment	EUR	47800
4	Energy efficiency of shallow renovation	%	25
5	The payback period of shallow renovation measures	Years	8,9
6	The payback period of shallow renovation measures with loan	Years	10,3
7	Planned subsidy of shallow renovation	%	30,0
8	The payback period of shallow renovation measures with subsidy	Years	6,2
9	Shallow renovation target until 2023 (number of renovated buildings)	%	20
10	Shallow renovation target until 2023 (number of renovated buildings)	Number	782
11	Shallow renovations annual renovation target	%	4
12	Shallow renovations annual renovation target	Number	156
13	Annual interest rate	%	3
14	Loan maturity (with subsidies)	Years	7
15	Loan maturity (without subsidies)	Years	10

In table No. 6 the payback period for shallow renovation measures (including subsidy and loan) varies from 4,2 to 7,6. The payback period of full packaged of shallow renovation model averages to 7 years.

Table No. 6. The payback period for shallow renovation measures with loan and grant element

Shallow renovation measures	Average investment excluding subsidy, EUR	Interest rate, %	Interest Amount, EUR	Investments with interest, EUR	The payback period (with subsidy and loan), Years
Heat supply modernization	10500	3%	1150	11650,0	6,8
Cold and hot water systems balancing	6650	3%	730	7380,0	6,9
Insulation of cold and hot water pipelines	1610	3%	176	1786,0	4,2
Particulators and / or thermostatic shakers	14700	3%	1615	16315,0	7,6
Complexly	**33460**	**3%**	**3678**	**37138,0**	**6,9**

In table No. 7 the payback period for shallow renovation measures with loan instrument (no grant) varies from 6,2 to 11,3 years. The payback period of complex implementation of shallow renovation investments averages to approx. 10 years. This information shows that grant element is needed for the shorter payback period.

Table No. 7. The payback period for shallow renovation measures with loan (no grant)

Shallow renovation measures	Average investment , EUR	Interest rate, %	Interest Amount, EUR	Investments with interest, EUR	The payback period (with loan), Years
Heat supply modernization	15000	3%	2380	17380,0	10,1
Cold and hot water systems balancing	9500	3%	1507	11007,0	10,2
Insulation of cold and hot water pipelines	2300	3%	365	2665,0	6,2
Particulators and / or thermostatic shakers	21000	3%	3333	24333,0	11,3
Complexly	**47800**	**3%**	**7587**	**55387,0**	**10,3**

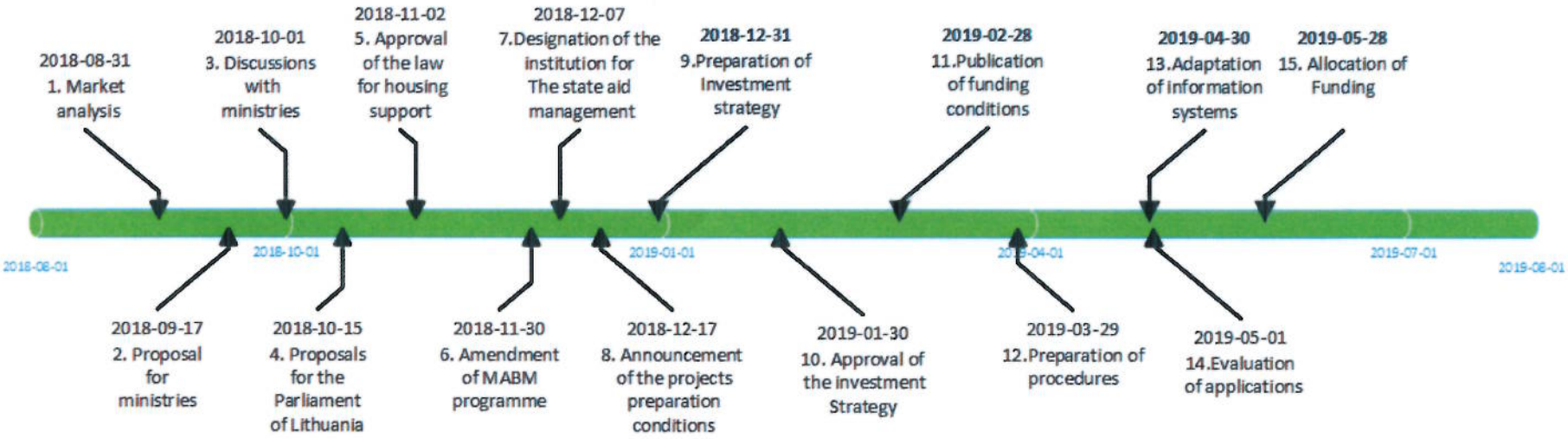
3. Detailed actions to be implemented

No.	Action	Institution	Description	Schedule
1	Market analysis	VIPA	Preparation of analysis of market failures according to the action plan.	Quarter III, 2018
2	Proposal for ministries	VIPA	Submission of market analysis to Ministry of Energy (MoE) and Ministry of Environment (MoEn) including draft amendments to legislation	Quarter III, 2018
3	Discussions with ministries	VIPA	Presentation of shallow renovation financing model and proposal for Ministry of Energy, Ministry of the Environment, Ministry of Finance, Government	Quarter IV, 2018
4	Submission of proposals to amend the Law on State Support for Housing	MoE, MoEn	Ministry of Energy makes a proposal to the National Parliament of Lithuania to amend the Law on state support for Housing. The Law on state support for Housing provides the possibility of granting a subsidy for shallow renovation projects.	Quarter IV, 2018
5	Approval of the law on State Support for Housing	The National Parliament of Lithuania	Approval of the law on State Support for Housing at National Parliament committees	Quarter IV, 2018
6	Amendment of the Government resolution on modernization of multi-apartment building modernisation programme	MoE, the Governement	Ministry of Energy proposal for the Governement to amend the Government resolution for by providing support for the shallow renovation measures and the grant of support	Quarter IV, 2018
7	Designation of the institution for state aid management	The Government	The decision of the Government provides for financing and the institution administering state aid is appointed - HESA (Housing Energy Savings Agency), which is responsible for advising applicants, approval of investment projects and providing subsidies.	Quarter IV, 2018
8	Conditions for project preparation and payment of subsidies are announced	HESA	Inspection of investment plans, allocation of state support (subsidies) for projects, methodical consultation of applicants.	Quarter IV, 2018
9	Preparation of Investment Strategy	VIPA	Following the pre-market analysis of market failures, an investment strategy preparation, for funding (loans) from the limited liability partnership – „Energy Efficiency Investment Platform“.	Quarter IV, 2018

No.	Action	Institution	Describtion	Schedule
10	Approval of the investment strategy of the Steering Committee (the limited liability partnership – „Energy Efficiency Investment Platform".)	VIPA	Confirmation of the investment strategy by the Energy Efficiency Investment Platform Steering Committee. The funds are foreseen for the financing of shallow renovation projects - for the provision of loans.	Quarter I, 2019
11	Publication of financing conditions for applicants	VIPA	financing conditions and a call is announced for multi-apartment buildings administrators	Quarter II, 2019
12	Internal applications evaluation, decision making, etc. approval of procedures	VIPA	Preparation of Procedures and forms for evaluation applications, risk assessment procedures, signing and supervision of contracts.	Quarter II, 2019
13	Development of information systems for project management	VIPA	An electronic application form development on the www.vipa.lt website of applicants, VIPA IS additional functionality development for the management of shallow renovation projects.	Quarter III, 2019
14	Evaluation of applications	VIPA	Receiving applications, registration, and evaluation.	2019-2020
15	Allocation of funding	VIPA	Granting funding and signing contracts.	2019-2020

* Actions 14 and 15 will continue till 2023

4. Timeframe



Picture 3. Actions to be implemented

5. Players involved (please indicate the organizations in the region who are involved in the development and implementation of the action and explain their role).

The monitoring action of the Build2LC Action Plan is implemented by VIPA. It should also be noted that the contribution to the plan has been entirely voluntary and the time, energy and efforts of all involved are greatly appreciated.

Ministry of Finance – is the Managing Authority and is in charge of the implementation and coordination of OP 2014-2020.

Ministry of Environment - is Executive Authority of the OP and is in charge of the implementation and coordination of the Multi-apartment building modernization programme.

Housing Energy Efficiency Agency (HESA) - provides consulting services and assistance for homeowners on matters related to the renovation (modernization) of multi-apartment buildings. It also evaluates and approves submitted investment plans and procurement documents, cooperates with municipal authorities, engineering consultancy companies, educational institutions, non-governmental organizations, etc.

Final beneficiaries (owners of households) – owner of households will be participants of the shallow renovation programme as they received the benefits (e.g. increased real estate value, reduced heating expenses, improved living conditions etc.) of implemented energy efficiency measures.

6. Costs (if relevant)

Shallow renovation investment needs are forecasted regarding annual renovation target, including required subsidy and loan part, and are presented in table No. 9.

Table No. 9. Shallow renovation target funding required

Shallow renovation target until 2023	Shallow renovations annual renovation target	Investments, EUR	Subsidy, EUR	Loans, EUR	Energy saving after modernization, MWh
2019	156	7 472 096	2 241 629	5 230 467	13 865
2020	156	7 472 096	2 241 629	5 230 467	13 865
2021	156	7 472 096	2 241 629	5 230 467	13 865
2022	156	7 472 096	2 241 629	5 230 467	13 865
2023	156	7 472 096	2 241 629	5 230 467	13 865
Total	**782**	**37 360 480**	**11 208 144**	**26 152 336**	**69 323**

7. Funding sources (if relevant):

There is high demand for the financing of the shallow renovation investments. Depending on the decisions of the Government funding sources could be:

- Operational Programme 2014-2020;
- State budget funds;
- The other funds.

Till the end of 2020 it is estimated to reach shallow renovation target 300 heating points with total amount of 15 million EUR and till the end of 2023 there is a target to implement 782 shallow renovation projects with total amount of 37,86 million EUR (see table No. 9).

The shallow renovation will be financed with Operational Programme 2014-2020 funds, and complemented with financial state resources or other resources. The estimated subsidy needed is approximately 5 million EUR from state budget till the end of 2020.

Date: 12 MARCH, 2019

Organisation: JSC Public investment development agency

Signature of representative of the organisation: _____

Gaidė Dagytė

Stamp of the organization (if available): _____

ANNEX No. 1 Shallow renovation demand in multi-apartment buildings

No	Heat Supplier	With hot water tubular heat exchanger, units	The hot water plate heat exchanger, units	Without hot water, pcs.	With an open-type hot water system, units	Total, units
1	UAB „Vilniaus energija"	85	13	101	0	**199**
2	AB „Kauno energija"	210	221	674	0	**1 105**
3	AB „Klaipėdos energija"	250	179	65	0	**494**
4	Litesko „Alytaus energija"	1	2	19	0	**22**
5	Litesko „Marijampolės šiluma"	9	0	14	0	**23**
6	Litesko „Marijampolės šiluma" Kazlų Rūdoje"	22	0	14	0	**36**
7	Litesko „Telšių šiluma"	0	0	6	0	**6**
8	Litesko „Vilkaviškio šiluma"	42	0	11	0	**53**
9	Litesko „Biržų šiluma"	4	5	6	0	**15**
10	Litesko „Druskininkų šiluma"	46	0	15	0	**61**
11	AB „Panevėžio energija" Panevėžio	0	4	7	200	**211**
12	AB „Panevėžio energija" Rokiškio	3	3	20	0	**26**
13	AB „Panevėžio energija" Kupiškio	13	5	49	0	**67**
14	AB „Panevėžio energija" Kėdainių	21	84	72	0	**177**
15	AB „Panevėžio energija" Zarasų	0	0	5	24	**29**
16	AB „Šiaulių energija"	14	1	47	0	**62**
17	UAB „Mažeikių šilumos tinklai"	57	0	75	0	**132**
18	AB „Jonavos šilumos tinklai"	2	137	7	0	**146**

19	UAB „Utenos šilumos tinklai"	23	6	9	0	**38**
20	UAB „Šilutės šilumos tinklai"	30	100	14	0	**144**
21	UAB Tauragės šilumos tinklai"	10	10	33	0	**53**
22	UAB „Plungės šilumos tinklai"	34	0	25	0	**59**
23	UAB „Radviliškio šiluma"	2	0	39	0	**41**
24	UAB „Akmenės energija"	0	0	22	0	**22**
25	UAB „Raseinių šilumos tinklai"	0	0	9	0	**9**
26	UAB „Varėnos šiluma"	27	43	29	0	**99**
27	UAB „Kaišiadorių šiluma"	3	85	19	0	**107**
28	UAB „Anykščių šiluma"	0	0	16	0	**16**
29	UAB „Fortum Švenčionių energija"	0	0	13	0	**13**
30	UAB „Šilalės šilumos tinklai"	0	0	1	14	**15**
31	UAB „Širvintų šiluma"	22	0	4	0	**26**
32	UAB „Molėtų šiluma"	0	45	23	0	**68**
33	UAB „Birštono šiluma"	0	0	10	0	**10**
34	UAB „Pakruojo šiluma"	0	37	10	0	**47**
35	UAB „Lazdijų šiluma"	0	0	3	0	**3**
36	VĮ „Visagino energija"	0	0	0	152	**152**
37	UAB „Skuodo šiluma"	0	0	14	0	**14**
38	UAB „Nemėžio komunalininkas"	0	0	108	0	**108**
	Total					**3 908**

ANNEX No. 2 The payback period for shallow renovation measures

No	Heat Supplier	Total, units	Investments, EUR	Average price of centralized heat supply in EUR / MWh	Energy saving after modernization, MWh	The payback time, Years
1	UAB „Vilniaus energija"	199	9 512 200	50,6	17 650	11
2	AB „Kauno energija"	1 105	52 819 000	61,3	98 006	9
3	AB „Klaipėdos energija"	494	23 613 200	57,3	43 815	9
4	Litesko „Alytaus energija"	22	1 051 600	56,9	1 951	9
5	Litesko „Marijampolės šiluma"	23	1 099 400	76,6	2 040	7
6	Litesko „Marijampolės šiluma" Kazlų Rūdoje"	36	1 720 800	79,8	3 193	7
7	Litesko „Telšių šiluma"	6	286 800	78,9	532	7
8	Litesko „Vilkaviškio šiluma"	53	2 533 400	78,8	4 701	7
9	Litesko „Biržų šiluma"	15	717 000	80	1 330	7
10	Litesko „Druskininkų šiluma"	61	2 915 800	58,1	5 410	9
11	AB „Panevėžio energija" Panevėžio	211	10 085 800	57,7	18 714	9
12	AB „Panevėžio energija" Rokiškio	26	1 242 800	57,7	2 306	9
13	AB „Panevėžio energija" Kupiškio	67	3 202 600	57,7	5 942	9
14	AB „Panevėžio energija" Kėdainių	177	8 460 600	57,7	15 699	9
15	AB „Panevėžio energija" Zarasų	29	1 386 200	57,7	2 572	9
16	AB „Šiaulių energija"	62	2 963 600	48,4	5 499	11
17	UAB „Mažeikių šilumos tinklai"	132	6 309 600	57,7	11 708	9
18	AB „Jonavos šilumos tinklai"	146	6 978 800	49,9	12 949	11
19	UAB „Utenos šilumos tinklai"	38	1 816 400	43,9	3 370	12

20	UAB „Šilutės šilumos tinklai"	144	6 883 200	48,8	12 772	11
21	UAB Tauragės šilumos tinklai"	53	2 533 400	51,3	4 701	11
22	UAB „Plungės šilumos tinklai"	59	2 820 200	62,8	5 233	9
23	UAB „Radviliškio šiluma"	41	1 959 800	60,2	3 636	9
24	UAB „Akmenės energija"	22	1 051 600	54,3	1 951	10
25	UAB „Raseinių šilumos tinklai"	9	430 200	59,4	798	9
26	UAB „Varėnos šiluma"	99	4 732 200	55,5	8 781	10
27	UAB „Kaišiadorių šiluma"	107	5 114 600	64,7	9 490	8
28	UAB „Anykščių šiluma"	16	764 800	67,7	1 419	8
29	UAB „Fortum Švenčionių energija"	13	621 400	60,3	1 153	9
30	UAB „Šilalės šilumos tinklai"	15	717 000	54,2	1 330	10
31	UAB „Širvintų šiluma"	26	1 242 800	56,4	2 306	10
32	UAB „Molėtų šiluma"	68	3 250 400	53,8	6 031	10
33	UAB „Birštono šiluma"	10	478 000	58,8	887	9
34	UAB „Pakruojo šiluma"	47	2 246 600	65,8	4 169	8
35	UAB „Lazdijų šiluma"	3	143 400	64,7	266	8
36	VĮ „Visagino energija"	152	7 265 600	55,8	13 481	10
37	UAB „Skuodo šiluma"	14	669 200	70,6	1 242	8
38	UAB „Nemėžio komunalininkas"	108	5 162 400	70,1	9 579	8
	Total	**3 908**	**186 802 400**	**60,6**	**346 615**	**9,1**