

**Evaluation of impact of priority No. 4 “Promoting energy efficiency and production and use of renewable energy” of the operational programme for the European Union funds’ investments in 2014-2020**

Final Report Summary

For the Ministry of Energy of the Republic of Lithuania

Vilnius, 2023



# Summary

On 2022 September 5th Smart Continent LT, UAB signed a contract with the Ministry of Energy of the Republic of Lithuania to assess the impact of the Operational Programme priority No 4 "Promoting energy efficiency and production and use of renewable energy"

The purpose of this evaluation is to determine the effectiveness and impact of 2014-2020 EU structural funds investments on the energy sector, the sustainability and cohesionof investments in this area. This is done to adapt best practices from the period of 2014-2020, in order to improve the way how EU fund investments will be used in the period of 2021-2027. Based on the Agreement, the Service provider must submit a summary of the final Evaluation Report in the Lithuanian and English languages.

Evaluation tasks:

1. Evaluate the eligibility and implantation of the Measures of the Operational Programme, designed for the promotion of the energy efficiency and RES production and usage (measures), by evaluating the impact of these measures;
2. Evaluate the efficiency and performance of investment of the Operational Programme, designed for the promotion of the energy efficiency and RES production and usage, to achieve the objectives provided in the Operational Programme;
3. Evaluate the eligibility, performance, efficiency and impact of the Operational Programme measures, designed for the promotion of the energy efficiency and RES production and usage that are implemented/are being implemented.

Evaluated measures

Based on the technical specification and the introductory evaluation report, twenty measures are falling under this evaluation scope, namely measures of Priority No 4:

1. 04.3.1-VIPA-V-101: Renovation of the Governmental Buildings;
2. 04.3.2-LVPA-K-102: Modernization and Development of the Heating Networks;
3. 04.3.1-FM-F-105: Enlargement of Energy Usage and Efficiency in Public Infrastructure;
4. 04.4.1-LVPA-K-106: Modernization and Development of the Electricity Distribution Networks;
5. 04.1.1-LVPA-V-108: Promotion of Urban High Efficiency Cogeneration;
6. 04.1.1-LVPA-K-109: Promotion of the Biofuels usage for the Production of Thermal Energy;
7. 04.1.1-LVPA-K-110: Promotion of Low Power Biofuel Cogeneration;
8. 04.3.2-LVPA-V-111: Replacing Boilers in Households;
9. 04.1.1-LVPA-K-112: The Change of the Biofuel-powered Heating Production Facilities;
10. 04.3.1-VIPA-T-113: Renovation of State-owned Buildings;
11. 04.1.1-LVPA-V-114: Installation of RES Electricity Production Systems in the Households;
12. 04.1.1-LVPA-V-115: RES for the Households;
13. 04.3.1-LVPA-T-116: Modernization of Street Lighting Systems;
14. 04.2.1-LVPA-K-804: Audit for Industry;
15. 04.2.1-IVG-T-811: Partial Interest Compensation;
16. 04.2.1-LVPA-K-836: Renewable Energy Sources for the Industry;
17. 04.3.1-FM-F-001: Renovation of Apartment Buildings;
18. 04.3.1-FM-F-002: Renovation of Municipal Public Buildings;
19. 04.3.1-APVA-V-003: Promotion of Modernization of Apartment Buildings and Public Municipal Buildings;
20. 04.3.1-APVA-V-023: Technical Support to the Apartment Building Modernization.

The transport sector is not the object of this analysis, since the 2014-2020 Lithuanian Impact assessment[[1]](#footnote-2) of the European Union investments Operational Programme priority "Sustainable transport and development of main networks of infrastructure" evaluates transport sector measures related to sustainability, including priority 4 measures.

Various quantitative and qualitative evaluation for data collection and analysis methods were used in this evaluation: analysis of legal documents, analysis of secondary sources, interviews with stakeholders, comparative analysis, reconstruction of intervention logic, statistical analysis, econometric modelling. SFMIS data was used for the evaluation, as well as data collected from the Lithuanian Statistics Department and other official sources.

When evaluating the adequacy of the measures to achieve the goals and specific tasks, an analysis of the intervention logic of the specific tasks and measures of the Operational Programme was performed, first by defining the goals and specific tasks of the Operational Programme, then moving to the level of measures and supported activities. It was found that the implementation of all measures directly or indirectly contributes to the tasks, it also contributes to the achievement of the targets set in the strategic documents. It was also found that the target groups that could apply for funding were properly selected.

When assessing the sufficiency of the measures, an analysis of the achievement of the targets of the measures was carried out, during which it was found that in all cases the sum of the values to be achieved for the product targets of the PIP is equal to or greater than the value to be achieved for the corresponding product targets of the Operational Programme. Therefore, it is assessed that the set of measures of the Operational Programme is suitable and sufficient to achieve the goals of the Operational Programme.

Assessing the implementation of recommendations for Operational Programme for the period of 2007-2013, the below was found:

1. After the evaluation of the impact of EU structural funds on the energy sector in the period of 2007-2013, two major recommendations were established, both related to changes in the administrative aspect of measures. It was found that the recommendation, which proposed to consider the possibility of achieving that the applicants could coordinate the activities of different measures related to the same infrastructure object, was partially implemented. Compatibility of measures was observed in measures 04.2.1-LVPA-K-804 "Audit for Industry" and 04.2.1-LVPA-K-836 "Renewable Energy Resources for Industry". It was established that the second recommendation, which suggested that the accounting administrative institutions together with Public Procurement Office should prepare packages of public procurement documents for the applicants, was also partially taken into account.
2. It was found that conclusions of the preliminary evaluation of the European Union's Structural Funds Investment Operational Programme for the period of 2014-2020 was taken into account to improve Operational Programme. The expansion of biofuel infrastructure that focused on central heating systems was targeted with four measures, therefore the recommendation was taken into account; The use of renewable energy sources for electricity production was aimed at by three measures, and therefore this recommendation was also taken into account; with one measure is was intended to reduce the intensity of energy consumption, the measure was applicable for industry companies, therefore it is established that this recommendation was taken into account as well.
3. Five recommendations of 2007-2013 ex post evaluation of the Cohesion Fund and ERDF were identified, which were also assessed in this evaluation. It was established that recommendations 1 and 3 (paying more attention to results and forecasted changes) were taken into account when forming the 2014-2020 EU funds investment Operational Programme; those changes can be depicted in the documents for projects’ financing requirements. Recommendations 2 and 4 refers to the changes that European Commission encourages; however, the final decisions are made by leading national level institutions. There is enough evidence to determine that these recommendations were implemented when planning the program at the institutional level. Recommendation 5, as mentioned in the evaluation, focuses on increasing attention to quality monitoring data, which, as evidenced by the information gathered during this evaluation, is being pursued, and therefore the recommendation is considered addressed.

Evaluating how the infrastructure created during the financing period of 2007-2013 in the area of RES and energy efficiency improvement is being used, was established that:

1. 77.3 percent of all funding for energy sector was allocated to renovate buildings. The investments of the EU structural funds allowed to renovate only a relatively small part of the country's buildings, as the renovation needs are significantly greater. It is estimated that the buildings renovated under the building renovation measures are being used. However, it is noted that demographic trends must be taken into account when planning the scope of renovation and considering funding priorities.
2. Physically and morally outdated devices and infrastructure no longer meet the modern requirements of reliability and security of energy supply. It is estimated that the investments in the infrastructure were made purposefully, since the use and need of the infrastructure is ensured and it also contributes to the strategic goals of energy independence.
3. Central heating systems infrastructure before investments of period of 2007-2013 was worn out, so with low ambient temperatures, the probability that the pipelines could no longer maintain the existing pressure and temperature parameters and thus cause an accident increased. The need for the renovation of the Central heating systems network is even more significant due to the increasing population in cities. It is estimated that the benefits and continuity created by investments in Central heating systems are ensured. However, it is noted that when planning investments in Central heating systems volumes and technical parameters, attention must be paid to demographic trends.
4. During the financing period of 2007-2013, there was an increase in the share of biofuels in Central heating systems - it reached 61 percent. However individual houses face the problem of worn out and tore boilers. It has been estimated that continuity of investments into biomass infrastructure should be prioritised.

To answer the question of what the good practices of other EU member states are, when investing in measures to promote energy efficiency and RES production and use, it was established:

1. Poland. The solar energy development policy in Poland is favourable to individuals. Exemption from VAT and other taxes for those who decide to install solar collectors and connect to the grid, as shown by the Polish practice, are the main aspects that have encouraged people to generate their own energy and thus rapidly increased the volume of solar energy production in a few years. The white certificate system implemented in Poland, which controls the intensity of energy consumption in industry to encourage the reduction of energy waste, is an option for Lithuania to consider in order to introduce more regulation in this area at the state level.
2. Estonia. Lithuania, which has a similar model to Estonia, can take into consideration Estonia's lessons and good practices to further improve the model and thus achieve an even faster and more efficient process of renovation of apartment buildings. In Estonia, stakeholders (apartment housing associations, research partners) are actively involved in the formation of measures and further stages of implementation, with the aim of faster dissemination of information and more market-oriented interventions. Greater involvement of municipalities to achieve a higher renovation speed and block renovation of apartment buildings to create green spaces and thus combine different EU measures also seem to be favourable ideas for Lithuania, which have the potential to contribute to the improvement of the Lithuanian model.

During this evaluation, it was analysed which 4 priority measures should be considered examples of good practice and low efficiency. It was found that non-financial measure 04.1.1-LVPA-K-109 " Promotion of the Biofuels Usage for the Production of Thermal Energy" can be singled out - the product-cost indicator of the measure was lower than the average according to both sections of the analysis. Financial measure 04.3.1-FM-F-001 "Renovation of Apartment Buildings" can also be considered a good practice - the funds supported under this measure - RPF, DNMF, JIIFF - have the best leverage effect indicators (5.0, 4.36, 2, 7). In general, it has been discovered that financial instruments compared to non-financial instruments are more effective. Financial instruments create additional added value. Financial instruments not only ensure the creation of the product and result sought by the public intervention, but also ensure the repeated use of public funds, solve the problems of lack of external funding, and attract private funding.

After assessing the probability of achieving the program goals and specific tasks, it was determined:

1. Due to the fact that 21 percent of the projects are still being implemented, only 5 out of 20 measures of PIP product indicators are known for their final values. Taking this into account, not only the values of achieving the PIP product indicators of the measures are evaluated, but also the values of the PSP product indicators planned to be achieved in the ongoing project contracts.
2. Assuming that ongoing projects will reach 100 percent of contracted targets, the product indicators of 16 out of 20 measures will be fully achieved. Accordingly, 26 product indicators out of 30 will be implemented.
3. PIP targets, based on 2022 December 12 data may not be achieved (partially) depending on the progress of the implementation of the measures, but most of them will be implemented, and the target values of the Operational Programme will be reached and exceeded. This is due to the fact that the values of the targets of the Operational Programme products are lower, as the values of the corresponding targets of the PIP product are being sought.
4. There is no possibility to assess the contribution of implemented measures to the specific tasks result targets, because the contribution of individual projects and measures to the specific tasks result targets are not known. Common statistical indicators, which are influenced by different macro factors, are used as the targeted indicators of the specific tasks result. It is estimated that 4 out of 6 specific tasks result indicators will not be reached, but no correlation has been established between the implementation of the specific task measures of the PIP product indicators and the implementation of the corresponding specific tasks result indicators.
5. It is estimated that the Operational Programme product targets will be reached, however, the specific tasks result targets will be reached only partially. This is determined by the fact that specific tasks result targets are only partially affected by the results of the measures (there is no connection with the extent of the contribution of the intervention to the result targets that was programmed). Specific tasks result targets are influenced by other factors (macroeconomic, climate, human behaviour, etc.).

After evaluating the efficiency of complementarity of the infrastructure created during the financial period of 2014-2020 is assessed that in 2014-2020 EU investments have contributed positively to the development of RES. Further investment in RES energy is and will continue to be relevant in the future due to Lithuania's strategic goals targeted. It is estimated that the benefits created by the investments in Central heating system are ensured, because Central heating system is recognized at the EU level as the best heating supply system, and the demographic trends of Lithuanian cities indicate that the need for further development remains. It is estimated that projects financed by EU funds, I.e., renovated buildings, contributed to the reduction of the number of energy-inefficient buildings in Lithuania, therefore the measures used to finance such projects will be relevant in the future as well. Lithuania faces the problem of a considerable part of the electricity supply and distribution infrastructure being in critical condition, which increases energy and financial losses. It has been established that the targets achieved by measures contribute to the solution of such problems. It is noted that the need for installation of electricity distribution infrastructure is also relevant due to the growing number of producing consumers.

When evaluating the effectiveness of the forms and methods of funding of the measures, it was found that:

1. Most of priority 4 measures were funded in the form of a non-refundable subsidy (17 measures) and only three measures were financed through financial instruments.
2. The most favourable form of funding for project implementers is a non-refundable subsidy, since in this way beneficiaries do not risk financial obligations created by the financial instruments. Subsidies are the most favourable form for relatively small heat supply parties, since the latter do not have the funds to finance the necessary renovation using their own funds, and borrowing from banks is difficult, there they are also facing challenges in covering such investment costs.
3. Combining grant funding with financial engineering can be successful. What specifically came out during the interviews, is that when the project is financed in such a way that one part is subsidized, and the other part is subject to financial engineering, and when both measures are administered by the same institution (however, it can also be one measure), it can be considered a good financing mechanism that is acceptable to both the institutions administering the measures, as well as project implementers.
4. According to project implementers and administrative institutions, the borrowing limit of municipalities is limited, so changes in this area would better cover the needs of municipalities and the situation in municipalities. However, the borrowing limit applied to municipalities in the case of EU structural fund funds was revised in December 2022, when change of the law was adopted. It says that starting from 2023 municipalities will be given wider opportunities to borrow when implementing projects financed by the European Union, thus this additionally will be strengthening the financial independence of municipalities. Such changes are expected to enable municipalities to more widely implement EU-funded projects.
5. Measures that are fully or partially financed through forms of financial engineering are more effective for the state, which aims to use the funds as efficiently as possible, so that the invested funds generate the greatest possible result.

After assessing the possible continuity of the measures in financial period of 2021-2027, it has been established:

1. Measure 04.1.1-LVPA-K-109 "Promotion of the Biofuels usage for the Production of Thermal Energy" was comprehensively positively evaluated, however, it would be worthwhile to assess the measures suitable for the applications, i. e., according to the deterioration of the boilers, not the number of years those are being exploited. Measure 04.3.1-FM-F-001 "Renovation of Apartment Buildings" should be singled out as well, as high potential to continue the measure is visible. 04.1.1-LVPA-V-108 "Promotion of Urban High Efficiency Cogeneration" should be continued due to the high potential impact. It is proposed to continue the measure 04.3.1-VIPA-T-113 "Renovation of State-owned Buildings", however, it is important to improve planning process. 04.4.1-LVPA-K-106 "Modernization and Development of the Electricity Distribution Networks" was singled out by interview respondents as adding up to reaching the results of other measures.
2. The biggest problem identified by the project implementers is that the publication of calls for proposals late in the financial period, which then requires the rapid implementation of projects, which often leads to the termination of projects. A big problem faced by project implementers is the lack of indexation of budgets. There are measures that are believed to help achieve more of the desired result if they were planned at the national level, instead of a tender. Household measures are not targeted at socially sensitive groups of society. Municipal borrowing limits limit municipalities from submitting applications.

During the evaluation, it was established that the activities that can be financed by all measures are planned in such a way that they correspond to the logic of the intervention logic of the Operational Programme, projects had the potential to contribute to the development of renewable energy sources and/or to increasing the efficiency of energy consumption, the indicators set by the measures are linked to the activities that can be financed.

When assessing the impact of projects on prices, it was found that investments of EU structural funds are not included in the costs of the heat and electricity sector. Accordingly, if those were investments from national funds, amortization costs would be included in heat and electricity prices (before the liberalization of the electricity market). Due to EU investments, 3.87 million EUR per year were not included in the electricity production sector, 4.41 million EUR per year in the heat production sector. Accordingly, it is estimated that the implemented measures made it possible to reduce the price of electricity by 0.07 kWh per EUR cents, the price of heat by 0.042 kWh per EUR cents (estimating production volumes in 2020).

After evaluating the results of the projects and their contribution to RES and efficiency goals, the following was determined:

1. The measures of the Operational Programme will additionally increase RES electricity generation capacity by 249 MW. These measures alone will make it possible to increase the power generation capacity of RES by 45 percent compared to 2014.
2. The measures of the Operational Programme will additionally increase RES heat production capacity by 72 MW. These measures alone will make it possible to increase the power generation capacity of RES by 17.9 percent compared to 2014.
3. Investments as per below will add up to achieving the main objectives of the RES Law until 2020:
* Share of RES in the country's total final energy consumption. The target value is 23 percent, the achieved value is 28.1 percent.
* The increase in electricity produced from RES share compared to the country's total final consumption. Target value - 20 percent, achieved - 20.9 percent.
1. The implemented measures also contributed to energy efficiency targets. It should be noted that not all measures contribution to energy efficiency goals can be measures due to data limitations; the real contribution to these goals is higher. The measures are estimated to have saved 927.5 GWh of energy between 2014 and 2022. Until 2030 these measures will save 3658.6 GWh of energy. The jointly analysed measures made it possible to reduce the annual primary energy consumption by 341.1 GWh, final consumption by 216.4 GWh.

After assessing the impact of the projects on climate change, it was found that 10 projects directly contributed to the reduction of GHG during the implementation of the measures of the Operational Programme. The total GHG reduction target value of the PIP product target is 669.4 thousand t CO2. Although the achievement of the PIP product indicator requires reducing the amount of GHG by 669 thousand t CO2 eq., the PSP product indicator of completed and ongoing projects is equal to 658 thousand t CO2 eq., respectively, the ongoing projects are not enough to achieve the PIP product targets. Currently, 23 percent of SP GHG reduction product targets has been reached. After the implementation of all ongoing projects, the annual total amount of GHG will decrease by 3.3 percent compared to 2020.

The Evaluation resulted in recommendations:

1. It is recommended that indicators at the level of measures under a specific target be formulated in such a way that all measures under the target have at least one common indicator where possible, thus ensuring comparability between measures. For example, if all the measures of a specific target aim to achieve a GHG reduction indicator, such indicator should also be calculated separately for each measure ("Know this" recommendation).
2. Ensure consistency between output and result indicators. In the 2014-2020 Operational Programme, in some cases de facto result indicators are assigned to the product type (e.g., P.B.234 "Annual GHG reductions" is considered as a product indicator, while this indicator measures an outcome, among the measures evaluated, this indicator has been assigned to 10 measures ("Know this" recommendation).
3. It is recommended that when forming measures targeting households, the social aspect and improvement of skills should be considered when submitting applications or accompanying documents, it is also suggested to create a support mechanism (e.g., through district offices) that would be directed to the advisory activities of submitting and preparing applications ("Know this" recommendation).
4. Projects financed by the CHS measure for replacing heat networks and/or boilers must be coordinated with the strategic planning documents of municipal administrations (e.g., by applying a special project selection criterion), and the measure should be financed by applying financial engineering mechanisms, thus ensuring the elimination of investment imbalances ("Know this" recommendation).
5. Measures to modernise public buildings should have a longer timeframe. A longer timeframe can be ensured by organising calls for tenders at the beginning of the financial period. According to project promoters, the optimum timeframe for projects should be 28 months - 12 months for design services, 4 to 6 months for the call for tenders for contractual works and 12 months for the execution of the contractual works (for projects located in cultural heritage areas or with large square footage, the timeframe for the contractual works may be more time consuming). The optimal timeframe for submission of proposals is 6 months (when audits, analysis are needed) ("Know this" recommendation).
6. For soft measures (e.g., publicity measures), result indicators (national) should be established to evaluate not only the output but also the outcome they create ("Know this" recommendation).
7. It is recommended to combine financial measures with subsidized (non-refundable subsidy) measures when financing heat network and/or boiler replacement CHS measures ("Act on" recommendation).
8. Indexation of project budgets (especially for measures financing contractual works (hard investment), such as renovation or networking/installation works) to ensure the viability of projects in the presence of rising inflation ("Know this" recommendation).
1. LR Susisiekimo ministerija, 2014–2020 m. Europos Sąjungos fondų investicijų veiksmų programos prioriteto „Darnaus transporto ir pagrindinių tinklų infrastruktūros plėtra“ poveikio vertinimas, galutinė vertinimo ataskaita, Smart Continent, Vilnius, 2021 m. <https://www.esinvesticijos.lt/lt//dokumentai//2014-2020-m-europos-sajungos-fondu-investiciju-veiksmu-programos-prioriteto-darnaus-transporto-ir-pagrindiniu-tinklu-infrastrukturos-pletra-poveikio-vertinimas> [↑](#footnote-ref-2)