

Recommendations for EPC+ investments on the basis of the Priority Programme Implementation

“Renovation with guaranteed savings EPC plus”



FinEERGo-Dom
GREY PAST 2 GREEN FUTURE

Work Package: 5

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ABBREVIATIONS

EU	European Union
EC	European Commission
NFOŚiGW	The National Environmental Protection and Water Management Fund
KAPE	The Polish National Energy Conservation Agency
EPC	Energy Performance Contract
PP EPC +	NFOŚiGW Priority Programme “Renovation with guaranteed savings EPC +”
FTiR	Thermomodernization and Renovation Fund
BOS	Environmental Protection Bank
PFR	The Polish Development Fund
BGK	Bank of National Economy
PE	Primary Energy
FE	Final Energy

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Executive summary

Analysing the NFOSiGW Priority Programme “Renovation with guaranteed savings EPC+” implementation process in order to develop recommendations, it is important to look at its requirements and the environment in which it was implemented.

It is important to consider that improving the energy efficiency of buildings is based on two main types of action. One is building and installation modernization, aimed at improving the performance of the building to reduce primary energy demand. The second measure is broadly defined energy management (preferably with a guaranteed effect) which, alone or in combination with the previous measure, reduces the amount of final energy consumed.

One of the factors influencing the success of programmes supporting energy efficiency improvements in buildings is the feasibility of meeting the required energy efficiency standards. In the case of multi-family buildings owned by cooperatives or housing associations, there is very limited scope for energy management due to the impossibility of forcing most of the rules and operational parameters affecting energy consumption on users, so in the case of multi-family buildings, the main objective is to stimulate a reduction in primary energy demand rather than final energy.

Considering the environment for the implementation of the PP EPC +, a closer look was taken at another programme carried out in Poland and dedicated to support owners of multi-family residential buildings in the implementation of measures to improve the energy efficiency of their buildings, that is the Thermo-modernization and Renovation Fund (FTiR), which has been implemented by BGK for many years and its conditions improved during the implementation of the FinEERGo-Dom project.

The report outlines the terms of both Programmes. It provides a more detailed presentation of the projects that were considered during the pilot phase and the conclusions/lessons learnt gathered from 3 perspectives: building owners (private and public), ESCOs and the energy advisor. The report closes with the recommendations developed as part of the project.

1. Introduction

According to the FinEERGo-Dom project, the National Fund 'NFOSiGW' supported by KAPE and partners was to seek to replicate the financing system, systems and procedures developed for the private and public sector within the Latvian Baltic Energy Efficiency Fund 'LABEEF'.

Other partner organisations in Austria, Slovakia, Romania and Bulgaria were setting the basis for similar structures in their countries.

One of the main results of the FinEERGo-Dom project is the creation of a stable financial instrument in Poland in the form of the Priority Programme established by NFOSiGW – the biggest green projects implementation agency in Poland, its implementation and operation under pilot investments during the project and continuing to function beyond the timeframe of the project.

The Priority Programme designed and established by NFOSiGW within the project is called “Renovation with guaranteed savings – EPC Plus” and its main objective is to improve air quality and reduce greenhouse gas emissions through optimized investments in energy efficiency improvements in multi-family residential buildings and public buildings implemented on the basis of an Energy Performance Contract (EPC) entailing possible additional investment components increasing the overall safety and comfort of the buildings ‘residents (EPC+) aimed to additionally motivate the building owner/administrator to undertake the investment.

As part of the project, NFOSiGW, with the support of KAPE, developed assumptions and standard documents (including EPC agreement) to support the implementation of investments involving the thermo-modernization of private and public (municipal) residential buildings. One of the final milestones of the FinEERGo-Dom project was also the signing of the first EPC and the start of the renovation of buildings under the EPC.

2. The Priority Programme “Renovation with guaranteed savings EPC Plus” established and operated by NFOSiGW

The creation of the Priority Programme and all its attachments (i.e. EPC+ contract template, Appendix No. 1 Building Accessibility Standards, Appendix No. 7 Energy (and other media) Consumption and Cost Settlement Report Form to the EPC Contract) were preceded by several consultations with various stakeholders. It was taken into consideration under the market analysis.

The Priority Programme has been divided into two parts: the first pilot call for proposals for which applications were accepted from 12th December 2021 to 28th April 2022, and the dedicated budget comprised 10 million PLN, with a sole focus on multi-family buildings and the second call, to scale up development outside the project FinEERGo-Dom scope, which will also include another beneficiary group interested in the concept – public buildings. The

budget of the second part is 100 million PLN. The whole Priority Programme is financed by NFOSiGW from the Modernization Fund.

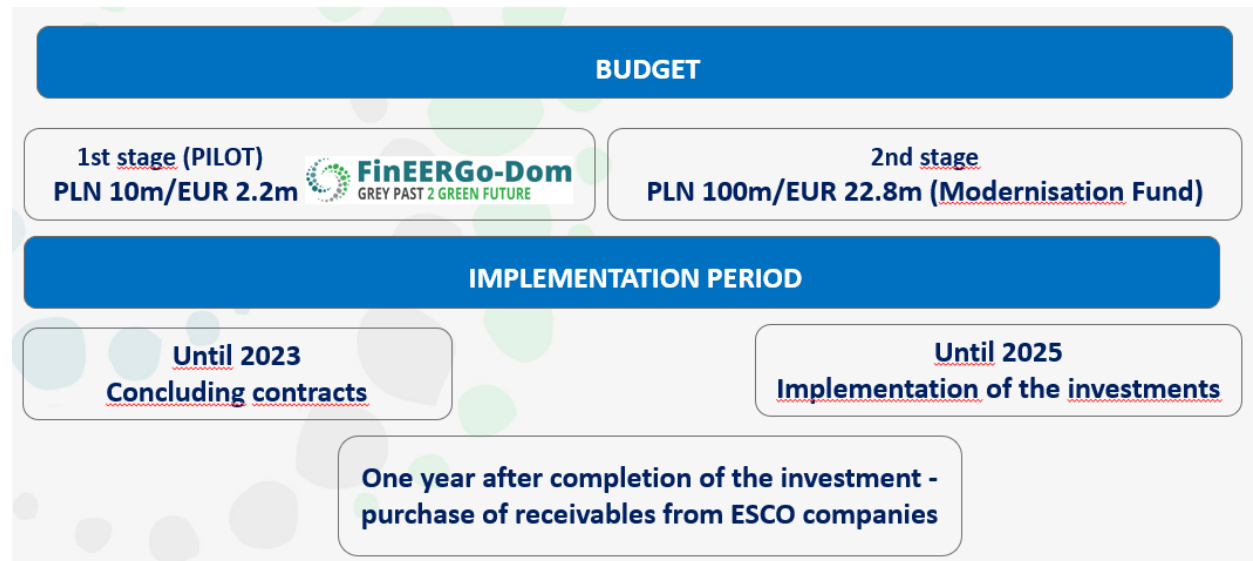


Figure 1 Scope of the Priority Programme EPC+

2.1. Background on the implementation of PP EPC +

Poland, like other EU countries, was obliged to promote Energy Performance Contracting. In line with Directive 2012/27/EU, it was necessary to introduce regulations to support the ESCO market in Poland. However, at the stage when the NFOSiGW Priority Programme concept was initiated, there were only two key types of ESCO investments in the public sector in Poland: street lighting and projects to increase energy efficiency in public buildings.

Considering the potential of building renovation in Poland and the need to meet EU requirements, the adaptation of the FinEERgo-Dom mechanism was considered very supportive in accelerating the effective and efficient implementation of building renovation in Poland through ESCO/EPC investments.

For the purpose of developing the concept of a mechanism based on the ESCO/EPC model, the FinEERGo-Dom project partners analysed the legal, technical and financial environment

for this type of investment (D 4.1)¹ and analysed the potential for improving the energy efficiency of buildings in Poland (D 5.1)².

Among other things, these analyses have shown the huge potential for energy savings through the renovation of multi-family buildings, as multi-family buildings use almost half of the total final energy consumed in buildings. „After analyzing the age structure of buildings, the technology used and the state of thermo-modernization, significant energy saving potential was found. A selected age group of buildings to be included in the thermo-modernization program are buildings built in 1967-1985. Thermal modernization will allow achieving savings exceeding 100 TWh per year” (...) Preliminary estimation shows that in Poland it is potentially possible to reduce over 54% of energy consumed by existing buildings by 2050 (D 5.1).

Therefore, the concept of the mechanism implemented by the FinEERGo-Dom project and thus the development and implementation of the NFOSiGW Priority Programme "Renovation with guaranteed savings EPC Plus" was aimed at both enabling of increase in energy efficiency improvements in multifamily buildings and meeting EU requirements.

The aforementioned analyses also looked at the financial instruments in place at that time to support energy efficiency measures in buildings, in terms of their potential as competition for the FinEERGo-dom mechanism. They are presented in details in D 5.1. In case of one of them "Thermomodernization bonus and RES grant" the support conditions have been changed in the meantime, what had a significant impact on the implementation of the FinEERGo-Dom and PP EPC Plus mechanism. It is therefore more closely introduced in this document.

2.1.1. Thermo-modernization bonus and RES grant -Thermo-modernization and Renovation Fund (FTiR) – operated by National Economy Bank - BGK

The FTiR financing offered to the housing cooperatives and housing associations exists since 2008. It is well recognized and visible on the Polish market. At the stage of work on the

¹ D 4.1 National Context, Legal and Regulatory Framework Analysis

² D 5.1 Evaluation of the energy efficiency potential

EPC/ESCO financial model in Poland and on the priority programme's rules, the conditions of FTiR financing were following:

The amount of the thermo-modernisation bonus was 20% of the loan taken for the realisation of the investment, but could not exceed:

- 16% of the eligible costs incurred for the realisation of the thermo-modernisation project and
- double the expected annual energy cost savings.

Nowadays, since the 1st December 2022 new rules of the FTiR have been introduced. The thermo-modernization bonus is still granted to the investor for the realization of a thermo-modernization project in the form of repayment of a bank loan taken by the investor, but the percentage of the bonus increased.

It is designed for investors taking a loan (the support does not apply to investors implementing a thermo-modernization project exclusively with their own funds).

The amount of the loan is at least 50% of the cost of the thermo-modernization project and is no less than the amount of the bonus.

The amount of the thermo-modernization bonus is:

- 26 % of the cost of the thermo-modernization project;
- 31 % of the total cost of the thermo-modernization project together with a RES project involving the purchase, installation, construction or modernization of a renewable energy source installation (the cost of the RES installation must constitute at least 10 percent of the total cost of thermo-modernization and RES installation)

The amount of the thermo-modernization bonus may be increased from the thermo-modernization grant - additional support in the amount of 10% of the investment costs for deep and comprehensive thermo-modernization of a multi-family building (RES grant).

The basis for granting the thermo-modernization bonus is an audit, positively verified by specialists from the financing bank. It checks, among other things, the value of the index of annual demand for non-renewable primary energy (EP).

The basic requirement for payment of the bonus is that the thermo-modernization project is implemented in accordance with a building project carried out in accordance with a positively verified energy audit. In this programme, it is however not required to report the actual energy consumption after modernization. Therefore, no ex-post energy consumption verification takes place.

Additional support in the amount of 50% of the cost of strengthening a prefab large-panel building - for the implementation of thermo-modernization of buildings from the prefab concrete panels, together with their strengthening.

If an investor who owns or manages a multifamily building is granted a RES grant, then the amount of the thermal modernization bonus is 31 % of the cost of the thermal modernization project (when a RES project is carried out along with the implementation of the thermal-modernization project). The RES grant is available to an investor implementing a project involving the purchase, installation, construction or modernization of a renewable energy source installation - it amounts to 50 % of the cost of the project. The RES grant is available if:

- the scope of the project is:
 - the purchase, installation or construction of a new renewable energy source installation or
 - the modernization of a renewable energy source installation resulting in an increase in the installed capacity of the installation by at least 25%;
- the renewable energy source installation to which the RES project relates will produce energy for the building residents needs
- the RES project has not been started
- the project does not cause serious damage to environmental objectives and meets the horizontal criteria.

*In the time between the launch of the PP EPC+ and the call for projects, the terms and conditions of the FTiR were made much more attractive. It has become **a very competitive instrument** - well known, simple (only ex-ante audit required, no ex-post verification) and with more favorable financial conditions.*

2.2. The general concept of EPC+ Priority Programme.

The work on the NFOSiGW Priority Programme design also entailed the analysis of barriers to the development of the ESCO market in Poland to date, which included the following:

- lack of confidence of building owners and potential ESCOs in the EPC formula;

- lengthy and complicated process requiring the involvement of lawyers to negotiate EPC, including the expected levels of energy savings and the mechanism to reward savings achieved or consequences of failing to achieve them;
- lack of willingness on the part of the building owner/manager to undertake thermo-modernisation investments as disturbing the residents daily routines and of knowledge on possible energy savings, available technical solutions and sources of funding;
- difficulties in mobilising the building owner's own contribution to the co-financing of the thermo-modernisation investment to complement the financial contribution of the ESCO.

The concept of the FinEERGo-Dom mechanism, the development of model contracts templates within the project, including the EPC contract, makes it possible to reduce the burden on the parties to the project in terms of negotiating the terms of cooperation and to ensure a balance of costs and benefits between the building owner and the ESCO company; to enable the building owner to benefit from professional energy advice, the selection of optimal technical solutions at the investment implementation stage and organisational solutions at the building exploitation stage, and verification of the projected levels of energy and heat savings.

*Standardization –
contract templates*

During the pilot phase of the NFOŚiGW Priority Programme 'Renovation with a guaranteed savings EPC Plus', the role of energy advisor was held by the Polish National Energy Conservation Agency S.A. (KAPE).

*Energy advisory for
building owners*

The NFOŚiGW Priority Programme envisages testing EPC formula with a forfeiting mechanism to buy back part of the ESCO's receivables from the owner of the building by an external financial institution, thus giving the ESCO back their financial liquidity and the ability to engage in another thermo-modernisation project.

*Forfeiting
ESCO receivables
purchase*

The NFOŚiGW Priority Programme first pilot stage/call for proposals is dedicated to owners and managers of multi-family buildings. Its beneficiaries are housing associations and cooperatives, local government units that have multi-family buildings in their housing stock and commercial law companies in which local government units hold 100% of shares or stocks and which are established to perform their own tasks indicated in the acts.

*Subsidy for building
owner*

Depending on the standard of the improvements implemented and the achievement of a certain level of final energy reduction, a subsidy of 10%, 20% or 30% is available.

The NFOSiGW Priority Programme requires both reduction in final energy consumption of at least 30% compared to the existing state (before the retrofit), as well as the achievement of a state in which the building's final energy demand for heating, ventilation and hot water (EKH+W) after the retrofit will not exceed 85 kWh/(m²*year).

Thermo-modernization works must be carried out in accordance with the Technical Guidelines and based on the EPC contract signed between the building owner or manager and the ESCO company, based on the provisions of the model EPC contract template annexed to the NFOSiGW Priority Programme³.

Technical standards

The ESCO is required to commit to achieve Guaranteed Energy Savings. The EPC contract imposes an obligation on the ESCO to provide input to the financing for the implementation of the investment complementing the grant support offered by the NFOSiGW Priority Programme and to cover all costs related to the fulfilment of the contract.

Guaranteed savings

The building owner (investor) is obliged to provide remuneration to the ESCO company. This remuneration is paid in tranches upon completion of the investment and confirmation of the material effect and the environmental effect (achievement of appropriate energy and environmental parameters over at least one heating season).

Repayment of the investment in instalments

So the fulfillment of the requirements of the NFOSiGW Priority Programme by the ESCO, and consequently by the beneficiary, ensures that the planned level of final energy consumption, the one for which the owner pays under the guaranteed savings scheme, is achieved.

³ <https://www.gov.pl/web/funduszmodernizacyjny/renowacja-z-gwarancja-oszczednosci-epc-energy-performance-contract-plus>

Completion of works and delivery of necessary energy management equipment in accordance with the "Material and Financial Schedule of Investment", confirmed by a final acceptance protocol means recognition of the achievement of the material effect.

The basis for approving that the investment provides the energy efficiency required to settle the investor's subsidy from NFOŚiGW, that is approving the achievement of the environmental effect, is the ex-post energy audit conducted in accordance with the template developed by NFOŚiGW.

ESCO's remuneration under the EPC is linked to the energy savings achieved. If the contractually guaranteed level is not achieved, the ESCO is fined, calculated as the price per unit of energy multiplied by the difference between the amount of energy consumed and the guaranteed amount. If the savings are greater than the guaranteed level, an amount calculated by multiplying the price per unit of energy by the difference between the guaranteed amount and the amount of energy actually consumed during the billing period is split between the building owner/manager and the ESCO.

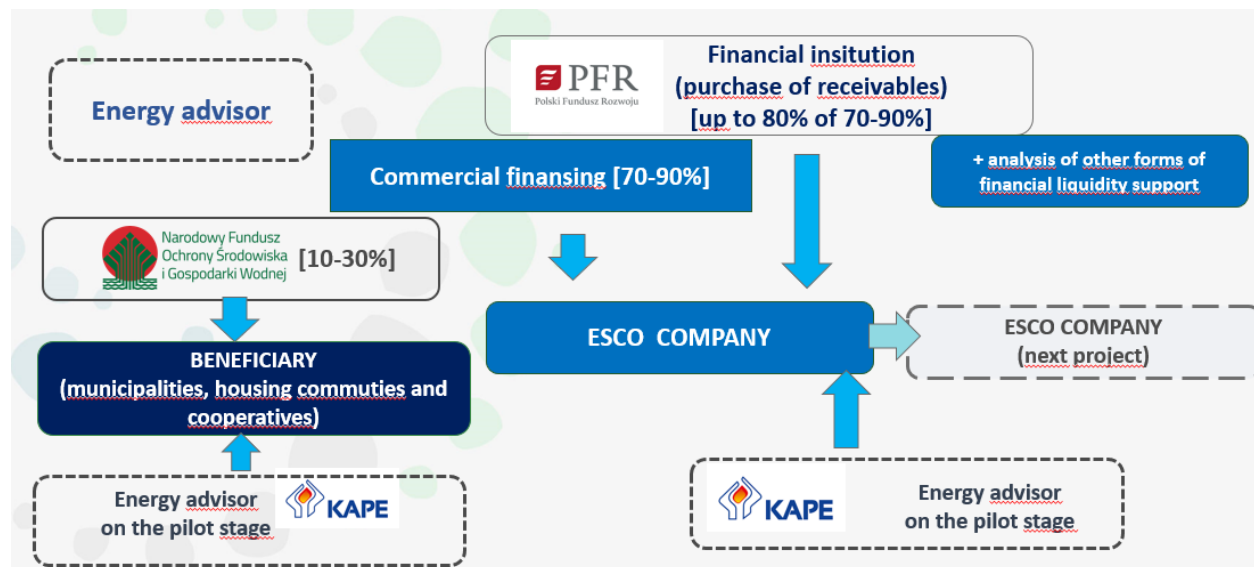


Figure 2 Holistic system supporting investments in ESCO model

3. Pilot phase of EPC + Programme

The PP EPC+ is described in section 2.2 and in detail on the National Environmental Protection and Water Management Fund website: <https://www.gov.pl/web/funduszmodernizacyjny/renowacja-z-gwarancja-oszczednosci-epc-energy-performance-contract-plus>

The first call for applications under the NFOSiGW Priority Programme was announced on 30.11.2021 and followed by promotion of the Priority Programme and trainings for potential applicants and ESCO companies.

To facilitate the implementation of the NFOSiGW Priority Programme, KAPE was acting as an energy advisor in the pilot phase/call for proposals dedicated to the multifamily buildings.

In Poland, there are two basic types of multifamily buildings that require renovation to improve energy efficiency. The first one includes buildings owned by private entities, mainly housing associations (Act on Housing Associations of 15.12.2000) and housing cooperatives (Act on Premises Ownership of 24.06.1994). The second type refers to multifamily buildings owned by public entities, mostly local government units. In total, there are app. 530,000 multifamily buildings in Poland (and 420,000 public buildings).

As part of the first call for proposals under the NFOSiGW Priority Programme, the beneficiaries - institutions interested in participating such as Local Government Units and their subsidiary companies, housing associations and housing cooperatives were, as a first step, asked to confirm their interest by providing data on their buildings in need for retrofit and the planned scope, cost and energy effect of the retrofitting. KAPE supported them in collecting basic data and estimated calculations. This allowed for a preliminary assessment by NFOSiGW as the Priority Programme operator of whether the parameters required under the PP EPC+ can be achieved. For this purpose, the potential beneficiaries filled in the data sheet prepared under the NFOSiGW Priority Programme on their own or with the help of KAPE SA. As a result, 9 entities owning or managing building declared their participation in the NFOSiGW Priority Programme and delivered pre-applications to NFOSiGW 7 of them (3 public and 4 private entities) received a positive pre-assessment from NFOSiGW and were qualified for the next stage, i.e. submission of formal grant application.

3.1 Pre-application phase - potential pilot projects

Out of 7 projects pre-qualified for the pilot phase 2 projects decided not to participate:

- Orunia Housing Association in Gdańsk - difficulties with finding ESCO. ESCOs were not interested in a scope of work that included only insulation of buildings and partial replacement of windows, without any energy management option
- Municipal and Housing Utility Company in Sierpc - the city's budgetary limits did not allow a decision to launch the investment project.

The remaining 5 entities include 3 private owners (housing associations) and 2 public owners. The initial situation and motivation for proceeding are different for private and public owners. Due to these differences in implementing thermo-modernization projects in multi-family residential buildings, this report describes the pathways for the two cases separately.

3.1.1. Private owners' path (Housing Associations, Housing Cooperatives)

Three private entities - housing associations – that pre-applied to the pilot phase are: Baloszyce, Ulnowo and Zyrardow.

- Housing Association (HA) "Pragnienie" in Zyrardow (planned implementation in 2023)
- Housing Association (HA) "Jedność" in Ulnowo (planned implementation in 2023)
- Housing Association (HA) "Wspólnota" in Baloszyce (planned implementation in 2024)

By taking the decision about the thermomodernisation investment are important for private entities following factors:

- The lowest costs for the inhabitants,
- The simplicity of the procedures,
- Increase in general comfort after modernisation.

It has to be taken into consideration that many management boards of Housing associations and cooperatives have no or very low knowledge of energy efficiency in buildings and technical solutions concerning it.

While the non-binding pre-application for the pilot phase was based on general and approximate data, the decision (resolution of the cooperative's Board of Directors) to sign

an EPC contract with an ESCO company and a subsidy agreement had to be based on actual data obtained as a result of an energy audit, enabling a reliable assessment of the cost and effect of the energy renovation.

KAPE, as an energy advisor, linked these building owners with ESCOs that might be interested in this type of implementation. Before deciding on a possible implementation in PP EPC+, these companies made energy audits. The results of the audits are presented below:

Housing Association (HA) “Pragnienie” in Zyrardow

The energy audit covered one multi-family building, supplied with heat from the municipal heat network. The recommended solution, included in the audit carried out by an ESCO, was:

Technical scope	Costs in thousand PLN
technical design	28,0
heating substation modernization and energy mgmt. system	652,7
PV installation 6 kWp	30,0
new windows 43,2 m2	39,6
walls, ceiling and flat roof insulation 8060 m2	2312,8
Total net investment cost	3063,1
Energy savings per annum 47,96% (SPBT 11 years)	273,9

According to the results of the audit, the EPC + Programme allows for a level of subsidy at **20%** of total net investment cost, which gives **PLN 612,6k**.

Unfortunately, despite many meetings between the HA “Pragnienie” and ESCOs, none of the ESCOs decided to guarantee the 45% effect and to finance the project.

In this situation, the HA decided to use the offer from BGK and the FTiR grant which enabled a subsidy of **26%** of the investment value, i.e. **PLN 796.4k**, provided that the HA takes a loan of min. 50% of the total cost.

*FTiR - higher subsidy;
easier procedures*

Housing Association (HA) “Jednosc” in Ulnowo and Housing Association “Wspolnota” in Baloszyce.

These 2 Housing Associations operate under one joint Management Board.

The energy audit covered 4 multifamily buildings in semi-detached housing configuration with a common coal-fired boiler.

The recommended solution (for one building), included in the audit carried out by the ESCO, is:

	Costs in thousand PLN
technical design	125,0
heat pumps 2*14 kW + electric boiler 30 kW, energy mgmt. system	326,2
hot water storage tanks with master heater control function	154,7
local recuperators (36 units) in apartments	194,4
PV power plant 50 kWp + battery 15 kW	200,0
replacement of windows and doors in common areas 16,2 m ²	23,5
full insulation of the building (walls/ceiling/basement ceiling) 1445 m ²	604,0
Total net investment cost	1627,8
Energy savings per annum 88,10% (SPBT 13,8 years)	117,7

In this case EPC+ Programme offers a subsidy at **30%** of the investment cost, which gives **PLN 488,3k**.

As in the case of HA "Pragnienie", these housing associations also failed to find an ESCO offering financing and a guarantee of 60% effect.

The BGK programme, on the other hand, makes it possible, in this case, to obtain a subsidy of **31 %** and a RES Grant, that is **50 %** of the cost of the PV installation - making a total of **PLN 604.6 k**, providing that the HAs take out a loan of min. 50% of the total cost.

For housing associations and cooperatives, in the case of projects improving the energy efficiency of buildings, the most important issue is maximizing the energy effect and getting the subsidy, reducing the overall cost of the project.

It has to be mentioned that for the private owners is easier to get the FTiR financing, because there are required less documents and formalities and what is the most important there is not foreseen checking of energy use reduction after the investment. This means, that no energy savings guarantee is being required from a contractor. From a financial institution point of view this fact minimizes credit risk. From a contractor point of view, the project is just a standard set of tasks to be done (no "energy" aspect involved). In general, the thermomodernisation bonus is definitely more profitable and easier to obtain for the housing associations and cooperatives than the grant and EPC/ESCO model from the priority programme.

*FTiR - higher subsidy;
easier procedures*

3.1.2. Public owners' path

Two public entities positively evaluated in the pre-application to the EPC+ Programme are:

- Polczyn Municipal Company as administrator of the housing stock of Polczyn-Zdroj Municipality (planned implementation in 2024)
- The Municipality of Gdańsk, represented by the Local Government Budget Unit Gdańsk Properties (planned implementation in 2024)

Public entities, in making the decision to renovate the housing stock, must take into account the specific legal requirements and the particular role of local governments, i.e.:

- the obligation for public bodies to reduce their energy consumption
- avoiding taking out loans if other solutions are possible

- obligation to mitigate investment risks
- aiming for contracts that do not increase public debt

The answer to these requirements are energy efficiency improvement projects implemented on the basis of EPC contracts, which are defined by two particular aspects: the ESCO contractor's fee must be linked to the energy effect and the ESCO contractor must accept most of the project risks (as defined in the Regulation to the Energy Efficiency Act). In addition, public entities must select contractors by following the Public Procurement Law. Both of the above-mentioned public bodies successfully prepared and carried out ESCO selection procedures under the relevant procurement procedure.

The announcements included, i.e. information on the buildings to be renovated (data on energy consumption, building construction, installations, additional requirements of the contracting entity).

In both cases, the template of EPC contract and other documents prepared for the PP EPC+ were included in the tender documentation.

ESCOs submitting bids were also required to provide financing for the investment part of the project and allow the public entity to repay the commitment in instalments over a 10-year period. Energy management over the entire period of the contract is a separately payable service.

3.2. Application phase

Finally, two applications were received by NFOSiGW under the PP EPC+.

BALTCAP ESCO has won a tender to carry out construction works and deep energy renovation of two municipal residential buildings in Połczyn-Zdrój. The Fund will allocate PLN 1.28 million (EURO 0.285 milion) to carry out these works.

In the case of this project, the 'EPC+' option, which means the possibility of extending the implemented scope of the project beyond energetic measures, was of great value due to the fact that the buildings are under the protection of the Historic Preservation Officer

In case of Gdańskie Nieruchomości, the ESCO offer was rejected. As far as we are informed, the municipality has not foreseen the cost of 10 years payment in instalments in their budget.

4. The role of project facilitator - KAPE

Most beneficiaries willing to apply for the Priority Programme in Poland were not familiar with EPC model and in many cases also with energy efficiency and modernization measures. For deep renovation projects it is necessary that the beneficiaries are provided with support from impartial advisors. The advisor should guide them through the process and help maintain the energy standards required by the programme.

energy advisory, the support of an advisor during the entire process as a response to the lack of knowledge of building owners about possible energy solutions and the implementation of the EPC model

This process was very time consuming especially as this was the pilot phase where each case needed to be treated separately. Many cases required multiple bilateral meetings (between advisor and different representatives of the beneficiary – management board, tenants, dedicated staff for building maintenance etc. but also with representatives of ESCOs, and financial institutions).

At the pre-application phase of the PP EPC+ (submitting the so-called project fiches to NFOSiGW), KAPE supported potential Beneficiaries in collecting basic data and making estimated calculations. Based on expert knowledge and experience, KAPE also advised preliminarily on the optimal solutions to be applied to the building to improve its energy

Two main roles of Energy Advisor during the pilot phase of the PP EPC+:

- *To learn about EPC model*
- *To make pre-audit assessment to make a potential ESCO*

efficiency. As the ESCO/EPC model is not yet commonly known and understood by building owners, KAPE also explained the details of the EPC model and the provisions of the programme documents. An extremely important phase of the advisory was to assist in establishing contacts with ESCOs and to act as an active facilitator between ESCOs, banks, potential beneficiaries of the programme and NFOŚiGW. KAPE also supported potential ESCOs interested in participating in pilot investments, in meetings with banks to discuss optimal financing options for specific projects. As a result, a number of meetings and discussions took place with different stakeholders, making the work more dynamic and enabling both beneficiaries and ESCO contractors to make rational decisions about the planned renovations.

5. ESCOs and the role of financial institutions

Besides the grant provided to the investor by the NFOSiGW, other financing possibilities are important in the EPC/ESCO scheme and for efficient implementation of the priority programme.

Based on the agreement between the NFOSiGW and the PFR, the possibility of selling and purchase of receivables of ESCO companies was created. The PFR agreed to take a special role in PP EPC+ as a financial institution responsible for additional financing for ESCOs. Therefore, the PFR, under an agreement with the NFOSiGW, developed the forfaiting agreement template. It is probable, that if some high volume projects existed in the pilot program, the effective financing from PFR would happen.

ESCO receivables purchase to release funds for new projects

The other important place in the scheme play commercial banks, which were consulted about the possibilities of their financial support for ESCOs - KAPE held a number of meetings with banks, mainly Environmental Protection Bank (BOS) and ESCOs. Special attention should be considered for financial funds, as they are often more flexible/less restrictive in their security configuration and sometimes have a better understanding of the EPC/ESCO model during the risk assessment process.

As a result, there were identified several barriers during the pilot phase in obtaining financing by ESCOs for further EPC investments.

The purpose of meetings with banks and ESCOs was to:

- to familiarise financial institutions with the concept and principles of EPC projects, both in relation to the EPC+ pilot programme and in the broader national context,
- to exchange views between financial institutions and ESCOs on the financing needs and requirements of EPC projects for private and public entities
- exchange of views on the issue of ESCO financing in relation to the EPC+ pilot principles, in particular the evaluation of the EPC contract and the Forfaiting Agreement,
- discussion on the model and terms of financing ESCO during the investment phase and long-term financing of the management phase

- risk assessment of ESCO financing in EPC projects
- scale of interest in this area depending on volume and contract periods

The conclusions of the above activities and meetings are summarised below:

5.1. ESCO financing needs

ESCOs, depending on their size and the market in which they operate, have different needs and barriers to using bank financing.

In the case of small ESCOs operating in the private market of housing associations and cooperatives, their preferable solution is to be paid, e.g. 80% after the investment part has been completed, from the building owner's funds (e.g. from a loan), and to receive the remaining part in instalments, in parallel with periodic payments for the energy management service.

Small ESCOs need a return on investment in the shortest possible time. Only a small share of the cost can be repaid in instalments.

This 20% of the investment value would be financed by the ESCO from the loan. If the EPC contract includes not only an energy management service, but also supplementary services (e.g. servicing of the installation) and, in addition, the ESCO regularly receives funds from the distribution of any excess savings over the guaranteed value, the bank may accept the EPC contract obligation as the basic form of guarantee.

Large companies, for which ESCO business is often only one of a few business fields, are interested in high-value EPC projects. Such projects are generally generated by public entities. ESCOs seek to have project financing guaranteed as early as possible, as public negotiations procedures for selecting a contractor are time-consuming and generate participatory costs. The most optimal solution for ESCOs here is a framework cooperation with financing institutions, which allows them to develop procedures for evaluating projects and increases the predictability of financing decisions. Financing, even partially from own resources, is not an acceptable solution in this case. Public entities do not consider partial payments because the payment in instalments over the energy management period is an important value for them.

*Small ESCOs – private market
Large ESCOs – public owners*

A well-known problem in the EPC model is the difficulty in making project financing convenient and accessible to ESCOs from banks. This difficulty was clearly confirmed in the EPC+ pilot programme. The programme offers a grant by a public institution, but does not include any mechanisms to make it easier for ESCOs to obtain financing. Nevertheless, meetings with banks confirmed that from their point of view there are two stages of credit risk assessment:

the need to establish a facility by the banks to support the financing of projects by ESCOs

- implementation stage - a typical evaluation of the investment contractor, with the exception that partial payments from the investor only concern at most the subsidised part, i.e. less than 30% of the investment value
- the energy management stage (10-15 years), where the bank sees the guarantee of the effect as an additional risk rather than as a guarantee of payment by the building owner of the converted amount of savings in technical units; i.e. as an amount of debt with less, rather than more, repayment risk

In the case of public entities, the lack of ESCO financing options is a definite showstopper for an energy modernisation project in any model, as local governments are reluctant to increase debt on this account.

5.2. The position of financial institutions

Both the Bank (BOS) and the PFR need to develop a risk assessment model specific to providing financing to ESCOs in an EPC project. This will enable standardisation and speed up credit committee decisions. It should be noted that, especially in the case of EPC projects for public entities, the ESCO bidder should already have at least a credit commitment at the time of entering the selection procedure. This model will be different if the receivables are purchased from the ESCO after the investment phase and different if the financing also includes the investment phase (more risky from the point of view of the financial institution).

Financial institutions/ banks understand the need to develop a standard ESCO financial support mechanism to accelerate the decision to assign funds for investment.

It was quite challenging to convince both financial institutions that the real risk of ESCOs failing to achieve an effect and consequently having to pay contractual penalties is very low (based on national experiences). Despite the fact that there is no previous experience of such

cases, the approach of the bank and the fund is quite different. This means that the required guarantees from ESCOs, in the case of small but highly experienced companies, allow financing only for very small individual projects.

For large companies, the problem is similar, the only difference is that they are targeting large projects, which also result in the ability to finance only single EPC contracts. Mitigation of bank risks by including additional building owner guarantees is not efficient. The private owners' rating is not always high, while due to national regulations for public entities, they cannot in practice participate in securing the purchase of the EPC contract.

The expected solution is a re-guarantee by another institution (based on a special guarantee fund). It seems that only this type of solution will allow the implementation of several EPC contracts simultaneously by a single ESCO. Such a solution has been suggested and discussed on the country level many times, but there is not yet a concrete solution for national EPC/ESCO projects.

6. Conclusions and lessons learned from the implementation of NFOSiGW Priority Program EPC+

Lessons from the implementation of the pilot phase of the NFOSiGW EPC+ Programme are presented from the point of view of building owners, ESCOs and the energy advisor.

6.1. Building owners

From the point of view of the needs of the Programme Beneficiary, i.e. the building owners, the EPC + Programme offer is very attractive as it meets their expectations, such as:

- subsidy significantly reducing the cost of the project
- guarantee of savings - guarantee of effect
- repayment in instalments
- no need to take out a loan for the investment

Despite the above benefits for the Beneficiary willing to participate in the Programme, some challenges/barriers for the Beneficiary were also identified that made it difficult to use the Programme efficiently

- in some cases the involvement of the Beneficiary in the financial guarantee of the ESCO to take the loan was considered
- complicated process and formalities requiring cooperation and agreements with ESCOs, NFOSiGW and PFR, especially for entities which have little experience in this field (small HA and small municipalities.
- low level of interest from ESCOs for this type of investment in private multifamily buildings
- extensive documentation of the Programme; EPC contract format and consequent limitations in terms of legal advice (lack of financial resources for legal analysis of the contract)

Taking into account the above barriers and challenges, it should be stated that currently the most popular and most frequently chosen support by the private owners of multi-family buildings is FTiR funding.

6.2. ESCOs

The implementation of the EPC + PP pilot phase has enabled a more detailed insight into the problems faced by ESCOs and their expectations.

- Problems with financing investments; lack of a dedicated banking product for a company operating under the ESCO model
- Problem with guaranteeing savings at the level required by the Programme - for multi-family buildings
- Too complex contract and many risks on the ESCO side
- More difficult energy (temperature) management for multi-family buildings than for public buildings such as hospitals, schools, etc.
- The big competition is FTiR, where an easily accessible loan is offered to housing associations , the contractor only finances a small part of the project.

6.2.1. Specifics of ESCO in the market of housing cooperatives and housing associations

- ESCO in its business activities deals exclusively with EPC projects.
- An important part of the profit comes from a multi-year contract:
 - from additional savings sharing,
 - from an energy management service,

- from other technical services,
- The ESCO prepares the complete EPC project for the customer.
- Depending on the situation, the ESCO can guarantee the result in technical units or amount, but liability for any shortfall in savings is mitigated by the annual report evaluation process.

ESCOs attitudes and possibilities on private market:

- The ESCO receives approval from the HA to prepare an EPC design.
- The ESCO develops the author's set of technical changes and calculates the energy effect and investment cost.
- The ESCO helps to configure a financial solution that is acceptable to HA, by putting together the elements, that cover the cost of the retrofit, such as:
 - the estimated amount resulting from energy savings over the contract period,
 - the amount of subsidy,
 - other possibilities - credit with write-off, White Certificates, documentation subsidy.
- The ESCO, taking into account the combination of technical, financial and energy efficiency elements, chooses a contract period that minimises the customer's own contribution.
- The ESCO provides a model contract, usually simple, describing realistically possible situations. The contract is not subject to formalities such as Public Procurement Law.
- The ESCO usually does not have the possibility to organise the financing of the project through a loan.

6.2.2. Specifics of ESCO in public EPC projects

- ESCO is most often a separate structure within a large company, such as a construction, energy or installation company and thus:
 - can participate in public EPC proceedings in negotiated mode, with a duration of 6-12 months,
 - can undertake high-value contracts,

- is able to accept quite complex EPC contracts for public entities, taking into account the requirements of the Public Procurement Law and the Public Finance Law, among others,
 - has the ability to finance the project with a loan.
- ESCO expects in public EPC projects:
- higher profit due to additional risks in the projects,
 - less competition in the proceedings, due to the specificity of the contracts (guarantee of the effect),
 - projects of considerable value, compensating for the cost of participation in the proceedings.

ESCOs attitudes and possibilities on public market – local government units and state budgetary units

- ESCO companies respond to the demand of the public market, that is, announced by public entities Invitations to participate in EPC projects under preparation.
- ESCOs participate in the preparation project by the public entity and its advisors, only to the extent provided by the entity.
- ESCOs, qualified for EPC proceedings by the public entity, participate in the in the negotiations, contributing ideas, demands and comments, which the public entity, together with its advisors, takes into account to its corresponding extent. The criteria for evaluating bids are known from the beginning of the proceedings.
- After the negotiation stage, the public entity develops documents, enabling the preparation of offers and invites ESCO companies to submit them.
- The selected ESCO company arranges financing of the project arranges and the public entity repay the contractual obligation in installments, during the energy management period.

6.3. Energy Advisor in the EPC + Programme

As described before in this document, the advisory work carried out by KAPE in the EPC + Programme is in fact project facilitation, i.e. active participation in the whole process from the identification of potential investments, to support in establishing the cooperation of the building owner with the ESCO, support in discussions with financial institutions, etc.

Acting as an advisor/facilitator for projects in the EPC+ Programme presented some challenges, such as:

- Many sides to the process, meetings with NFOSiGW, ESCOs, financial institutions, Beneficiaries of the programme
- Long process; time limitations of FinEERGo-Dom project, call for applications to the Programme
- Different specificity of ESCOs interested in cooperating with housing cooperatives and associations; others interested in cooperating with public entities, local authorities (different procedures, financial and time commitment).

The conclusions are as follows:

- KAPE's facilitation of projects was essential and seems to have played a large role in the final outcome in the form of financing applications submitted to the National Environmental Protection and Water Management Fund and signing EPC contract between public entity and ESCO,
- in the case of continuation of the EPC+ program, intended for public entities and their public buildings, the participation of a facilitator (EPC advisor), employed by the JST and supporting the process in the scope indicated in section 4.1.2, is needed.
- NFOŚiGW, as the institution leading the continuation of the EPC+ program, should only provide consultancy within the scope of the program closely related to the program, including its promotion in the market.

7. Recommendations for the development of investments in the EPC model

From a technical point of view, the issue of energy renovation of a building is similar regardless of the status of its owner. However, as outlined above, the specificities of the public and private market in this area, related to, among other things, the EPC project

preparation process, the procedure for selecting an ESCO company, the detailed contractual provisions, financing, show very significant differences.

7.1. EPC model for public entities.

Based on the lessons learnt from the PP EPC + pilot phase, a key recommendation for the implementation of building renovation in the EPC model is that the target audience of this model should mainly be owners of public buildings.

This is due not only to the specific nature of the projects, the benefits for the public sector demonstrated above, but also, in the case of Poland, to the huge impact of the Thermomodernisation and Renovation Fund dedicated to multifamily buildings.

Public entities are mainly local government units (municipalities, cities and districts), which own facilities such as educational, sports, medical care, office and residential buildings. They are obliged to improve the energy efficiency of their buildings. This is due both to the Energy Efficiency Act (Ch. 3 Art. 6 Tasks of public sector units in the field of energy efficiency) and other legislation, but also to the need to rationally allocate public funds and to reduce increasing energy expenditure. An additional stimulating factor is the increasing expectations of the local community to reduce emissions.

The EPC+ scheme facilitates the financial neutrality of an energy efficiency project. For local authority buildings, compliance of the model contract with the requirements of the Energy Efficiency Act for EPC projects ensures that the local authority receives most of the benefits listed above. However, beneficiaries and ESCOs point out that for multifamily buildings, with very limited energy management options, as well as the impact on the behaviour of residents, it is very risky to guarantee a 60% reduction in energy use for a 30% subsidy and an FE of no more than 85 kWh/(m²*year). At the same time, the need for ESCO to finance the project places additional requirements, as the financing bank sees additional risks in the EPC project.

In summary, PP EPC+, in the case of public entities, should mainly support the modernisation of public buildings, i.e. where there is the possibility of setting the performance of energy systems and efficient energy management, as well as the impact on users' behaviour and the way the facilities are operated, is sufficiently large. In addition, the requirements of the EPC+ programme should give a realistic possibility of obtaining a 30% subsidy for projects involving public buildings.

PP EPC+ for public buildings

The EPC/ESCO model, has a number of advantages for Polish local governments:

- the ESCO company is responsible for both the investment phase of the renovation (documentation and implementation phase) and the long-term energy management (management phase)
- the ESCO company organizes the financing of the project so that the local government repays the project in instalments over the contract period (10-15 years)
- the ESCO company's fee is dependent on the energy effect achieved
- ESCO guarantees the achievement of specific energy savings in technical units,
- most of the construction risk and the guaranteed level of annual average energy savings is covered by the ESCO
- obligations resulting from an energy performance contract have no impact on the level of the national public debt and the deficit of the public finance sector, where the energy savings service provider carries most of the construction risk and the risk of achieving the guaranteed level of annual average energy savings
- in the case of a well-configured and prepared EPC project, its cost will be entirely covered by the energy cost savings accumulated over a 10-15 year energy management period, and with a subsidy of around 30%, this is almost certain to be achieved

7.2. Energy Advisor for public entities.

The EPC+ pilot had a built-in module of support to beneficiaries by an energy advisor. In the case of local authorities, the expected and justified scope of advice is much broader. In this case, the advisor works with the public entity in the project preparation phase, then during the public negotiated procedure, and (recommended option) in the supervision of the implementation and monitoring of the energy management process, carrying out tasks such as:

*broader scope of advice
needed for public entities*

- selection of an optimal set of buildings for renovation in the EPC model
- identification of the technical scope of the renovation and the energy savings that can be achieved
- specification of the required configuration and functionality of the energy monitoring and management system
- surveying ESCOs for interest in participating and assessing their references and capabilities in relation to a specific EPC project

- determining the length of the EPC contract with a view to maximising the repayment factor from energy savings, taking into account the cost of investment, service and financing
- a proposal for a project timetable, including preparation, implementation and energy management phases
- exploring the possibility of using financial programmes to support the preparation and implementation phase

In addition, the EPC advisor supports the public entity during the negotiation phase with ESCO contractors in the public proceedings. During the implementation phase, the EPC advisor should have an important technical role in supervising the execution of the scopes related to subsequent energy monitoring and management. Works managers and supervisors most often do not give enough attention to the quality of this work and often have insufficient knowledge. During the first period of ESCO reporting of effects (1-2 years after the completion of the investment part), the EPC advisor should verify the correctness of the reports provided and the compliance of the effects with the contract.

It should be noted that a facilitator (EPC advisor) can also work well as an advisor in PPP projects - where energy efficiency issues are relevant, i.e. the contract also contains quantitative, energy-related targets; for example, the private partner must not exceed a certain annual level of final energy consumption in the contracted facility.

In summary, in the case of public EPC projects, the advisor performs a very broad substantive scope and should be employed directly by the public entity. The success of a multi-year EPC project worth tens of millions of PLN depends to a large extent on the experience and effective work of the advisor. The territorial self-government unit can partially cover the cost of consultancy thanks to the ELENA mechanism, and it should also mandatorily contract an advisor to obtain energy efficiency certificates, the so-called white certificates.

Advisor should be employed by investor

7.3. EPC Guidelines issued by the Ministry of Climate and Environment



In order to achieve all the benefits for the public entity that result from the specificities of EPC projects, it is necessary to carefully and thoughtfully combine the many elements that make up the complete EPC process.

Step-by-step guidelines for public sector

Based also on FinEERGo-Dom project results, a practical and comprehensive tool for public sector units has been developed in Poland in the form of guidelines for implementing investments in the EPC model.

This is a guide, transparently leading the public entity through the entire EPC project process. From the decision of whether and which buildings to cover with the modernisation, to the energy analysis, the preparation and conduct of the public tender, the implementation of the investment part and, further, the long-term cooperation with the ESCO, up to the final settlement of the contract.

The guidelines provide standard EPC contract templates for public entities.

The EPC guidelines are also very useful for ESCOs interested in the project, as well as for the facilitator (EPC advisor) leading and coordinating the whole process. The EPC Guidelines provide a qualified reference point for all participants in the process. They take into account the impact and interrelationship of the legislation, concerning public EPC projects and, very importantly, standardise the way in which the participants in the process should proceed,

<https://www.gov.pl/web/klimat/wytyczne-do-umow-o-poprawe-efektywnosci-energetycznej-epc>

7.4. Support mechanism for ESCO companies

In order to use the full potential of improving energy efficiency in the construction sector, including the success in the implementation of projects submitted under the priority program EPC+, it is necessary to systematically stimulate the ESCO market and reduce barriers to their functioning in order to create optimal conditions for creating this type of companies and, among others, encourage the financial sector to engage private capital.

Both KAPE and NFOSiGW started discussions at national level, as well as with commercial banks, during the FinEERGo-Dom Programme, the main focus of which was to find possible financing solutions dedicated to ESCOs to enable them to enter further projects in the EPC model. The work will be continued by KAPE.

The current situation, the requirements of banks towards ESCO companies, put some limitation on the development of small ESCO companies. The bigger companies with ESCO departments manage to organize financing (for example using 20% own money and 80% from the bank) and the main issue is in creation “critical projects number” to give the market impulse to develop itself.

7.5. Stakeholders engagement

Due to the involvement of various actors in the EPC process, it is necessary to engage all stakeholders in creating a framework for the facilitation process of this type of projects. It seems advisable here to continue project activities in this regard, including the continuation of broad consultation of the instruments supporting the process within the Advisory Committee meetings, for example.

The Polish model for facilitating EPC projects for public entities can be visualised like below:

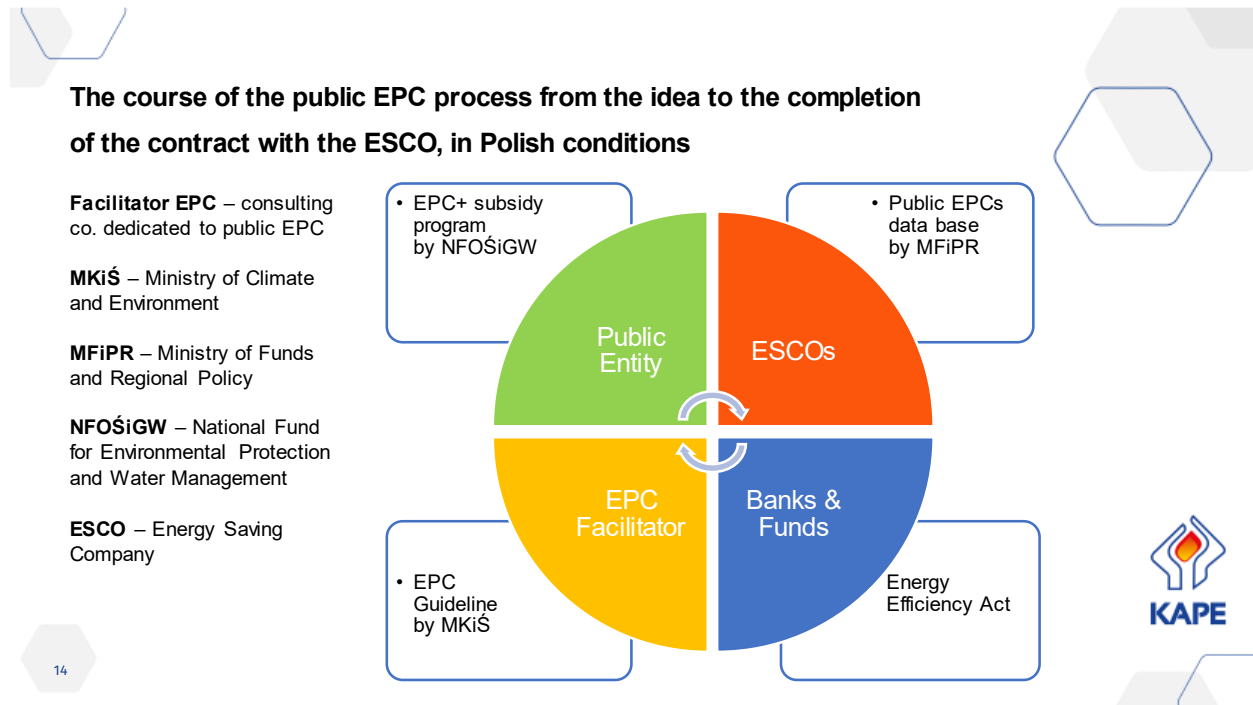


Figure 3 The Polish model for facilitating EPC projects, source: KAPE

8. Conclusions and recommendations for further implementation of the NFOŚiGW Priority Programme EPC +

Taking into account that the NFOŚiGW PP EPC+ is a very important tool to finance deep thermos-modernisation in buildings with use of ESCO model, it is essential to take the lessons learned from the FinEERGo-Dom project and take into consideration the below listened general and more specific conclusions.

1. In Poland, there is a great potential for implementing investments in the EPC/ESCO formula. This is especially true for public buildings; to a lesser extent, this applies to buildings belonging to housing associations and cooperatives, for which the thermo-modernisation relief has been the basic support instrument for many years.
2. In order to use the full potential of improving energy efficiency in the construction sector, including the success in the implementation of projects submitted under the NFOSiGW priority program EPC+, it is necessary to systematically stimulate the ESCO market and reduce barriers to their functioning in order to create optimal conditions for creating this type of companies and, among others, encourage the financial sector to engage private capital.
3. A standardization of the EPC contract is an important element of popularizing the ESCO formula, however, it seems absolutely critical to clarify and uniform approach to the rules for settling energy savings in individual projects. Therefore, the key documents for the implementation of investments in the EPC formula under the NFOSiGW priority program EPC+ are the "Accessibility Standards" where is specified the method of settling energy savings for individual scopes of projects and which may constitute a standard appendix to the EPC contract.
4. The beneficiaries of the NFOSiGW PP EPC+ are more willing to choose simple solutions with less formalities because of having not enough knowledge and capacity to communicate efficiently with the ESCOs and to analyse, asses and prepare the appropriate EPC contract – therefore, it is a crucial role of the advisor, who is able to help the beneficiary from the beginning to prepare for the investment and its financing mechanism.
5. For the success of the investments with the EPC/ESCO model is important in case of the municipalities to secure them a standardized solution with the right advice concerning not only the energy efficiency issues but also advice and help in preparation for the tender (legal advice).

6. The municipalities are often afraid to use EPC/ESCO model because of ambiguous regulations concerning the public debt accounting – despite the general regulations on EU and country level which don't treat investments in ESCO model as debt, on the regional level the Regional Chambers of Accounts might have different opinion in certain cases. Therefore, there is a need to prepare by the Ministry of Finance a guidance with unified rules for all Regional Chambers of Accounts.
7. In case of ESCO companies, it is crucial to offer them the appropriate financing ensuring financial liquidity, what requires stronger involvement of commercial financial partners.
8. There is a need to organize meetings with different stakeholders – similar to Advisory Committee meetings - with the goal to create a financial mechanism which will absorb funds from the Cohesion Funds in the new financial perspective.
9. Because of a big potential and interest in renovating the public buildings with the use of EPC/ESCO model, the next call for applications will be announced in the upcoming future.

Considering the above, NFOŚiGW, as the institution responsible for the implementation of the EPC+ PP, during the meetings held within the FinEERGo-Dom project, shared its preliminary plans regarding the shape and provisions of the EPC+ PP in its next edition and thus the next planned call for projects:

- Taking into consideration the results of the FinEERGo-Dom project and the consultations with the stakeholders, it is planned to increase the level of funding for the beneficiaries – maximum level will increase from 30% until 49%. This will allow to attract more investments and encourage more ESCO companies to realize such investments.
- Besides the costs of investment, the beneficiary will be able to cover within the grant the additional funding for the advisory activities, which can be provided by firms chosen on the market. The advisory will concern the technical preparation for the investment as well as preparation of documents for the tender process.

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