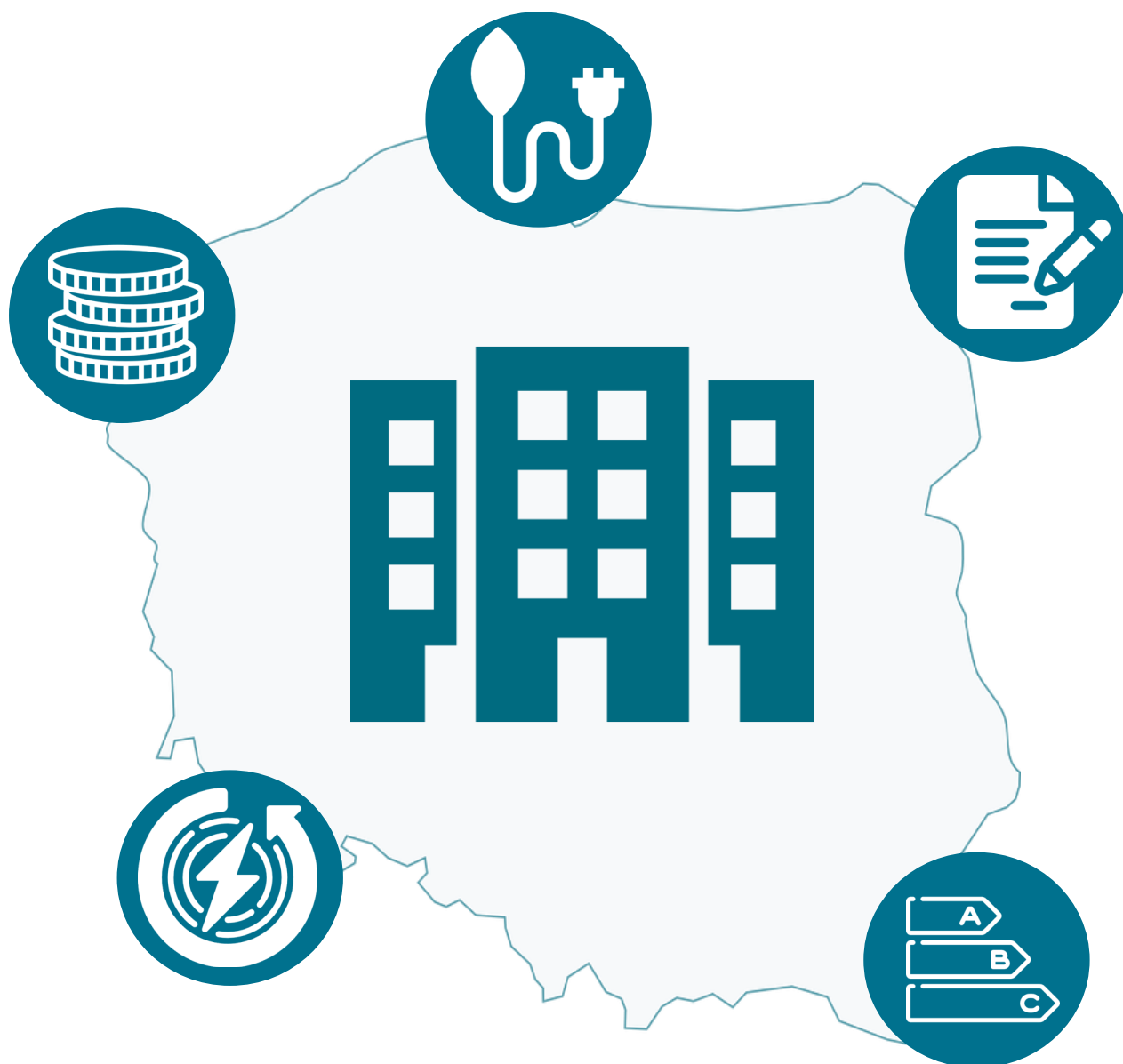


FINANCING

RENOVATION OF BUILDINGS

IN POLAND



An overview of public funding allocation for the renovation of buildings in Poland

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EXECUTIVE SUMMARY

Poland is the largest beneficiary of EU funds under the 2014-2020 Multi-annual Financial Framework (MFF), receiving nearly €80 billion from the Cohesion Policy budget over the 7-year period. Only 2.8% of this funding, some €2.2bn, is dedicated to energy efficiency in buildings, compared to the EU average of 3.9%. Additionally, international financial institutions (IFIs), notably EBRD, EIB and the World Bank, direct €27 billion to Poland, while only 1.3% of the total committed amount is allocated to building renovation.

At the same time, the low energy performance of existing buildings (especially single-family houses) and use of old coal fired boilers causes significant air pollution - Poland has some of the worst air quality in Europe, with 33 of the continent's 50 most polluted cities, according to a World Health Organization (WHO). Despite the potential role of building renovation in reducing emission of pollutants, raising energy security and improving the health and wellbeing of its citizens, Poland does not currently apply sufficient priority to this activity.

Renovating 50% of the existing building stock in the next 20 years would require around €5.3 billion of total annual investment per year, raising the current renovation rate of less than 1% of floor area p.a. to 2.5% p.a. To achieve this would require a reallocation of EU and IFI funding towards energy efficiency in buildings as well as better utilisation of the available funds, for example, through financing instruments with higher leverage (i.e. funding from third parties, including building owners and other investors). The European Fund for Strategic Investments (EFSI) and revenues of the EU Emissions Trading System could bring additional funding streams to Poland.

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GLOSSARY

Acquis communautaire: The accumulated legislation, legal acts, and court decisions that constitute the body of European Union law. The acquis is the body of common rights and obligations that is binding for all the EU Member States. Candidate countries must accept the acquis before they can join the EU and integrate its laws into their own national legislation.

Blending: The complementary use of grants and non-grant financing from private and/or public sources to provide financing under terms that would make projects financially viable.

Cohesion Fund (CF): The Cohesion Fund aims to strengthen the economic, social and territorial cohesion of the Union in the interest of promoting sustainable development. The CF focuses on investments in environment and transport, including areas related to sustainable development and energy that present environmental benefits.

Cohesion Policy Funds: The Cohesion Policy Funds refer to three (CF, ERDF and ESF) out of the five European Structural and Investment Funds (ESIF). The aim of these funds is to support development in a comprehensive way by investing, for instance, in businesses, research and development, infrastructure, employment and training.

Efficiency First: Efficiency First is a principle applied to policymaking, planning, and investment in the energy sector. It prioritises investments in customer-side efficiency resources (including end-use energy efficiency and demand response) whenever they would cost less, or deliver more value, than investing in energy infrastructure, fuels, and supply alone. The aim of the Efficiency First principle is to systematically identify decision points where efficiency can be taken into account and integrated. The principle was formally endorsed by the European Commission within the framework of the Energy Union in February 2015.

EU Emissions Trading System (EU ETS): The ETS system works by putting a limit on overall emissions from covered installations, which is reduced each year. Within this limit, companies can buy and sell emission allowances as needed. This 'cap-and-trade' approach gives companies the flexibility they need to cut their emissions in the most cost-effective way.

European Fund for Strategic Investments (EFSI): The European Fund for Strategic Investments (EFSI) is an initiative launched jointly by the EIB Group and the European Commission to help overcome the current financing gap in the EU by mobilising private financing for strategic investments.

European Regional Development Fund (ERDF): The European Regional Development Fund aims to reinforce economic and social cohesion within the European Union by redressing the main regional imbalances. This is achieved through financial support for the creation of infrastructure and productive job-creating investment, mainly for businesses.

European Social Fund (ESF): The aim of the European Social Fund is to strengthen economic and social cohesion within the European Union mainly through training measures, encouraging a higher level of employment and the creation of more and better jobs.

European Structural and Investment Funds (ESIF): ESIF consist of five funds including European Regional Development Fund (ERDF) and European Social Fund (ESF). EU Member States administer the funds on a decentralised basis through shared management.

Financial instruments: Financial instruments provide support for investments by way of loans, guarantees, equity and other risk-bearing mechanisms.

Global Energy Efficiency and Renewable Energy Fund (GEEREF): It is a Fund-of-Funds catalysing private sector capital into clean energy projects in developing countries and economies in transition.

Gross Fixed Capital Formation (GFCF): It is a component of the expenditure approach to calculate Gross Domestic Product. It refers to the net increase in physical assets (investment minus disposals) within the measurement period. It does not account for the consumption (depreciation) of fixed capital, and does not include land purchases.

International financial institutions: Include public banks, such as the World Bank, KfW, and regional development banks. They provide loans, grants, and technical assistance to governments, as well as loans to private businesses investing in developing countries.

Multiannual Financial Framework (MFF): The MFF is the European Union's seven-year framework regulating its annual budget. The financial framework sets the maximum amount of spending in the EU budget each year for broad policy areas and fixes an overall annual ceiling on payment and commitment appropriations.

Operational Programmes (OP): OPs are detailed plans in which the Member States set out how money from the ESI-Funds will be spent during the programming period. They can be drawn up for a specific region or a country-wide thematic goal (e.g. energy). Member States submit their operational programmes on the basis of their Partnership Agreements.

Partnership Agreement: Agreements between the European Commission and individual EU countries. They set out the national authorities' plans on how to use funding from the ESIF during the MFF period.

Public buildings: Buildings used by public services, including schools, hospitals and administrative offices.

Residential buildings: Include multifamily apartment houses or single-family houses which are primarily used for housing. They can be owner-occupied, privately rented or social housing.

Smart Finance for Smart Buildings Initiative (SFSB): Proposed as a part of the "Clean Energy for All Europeans" package, aiming to (i) make better use of public finance, (ii) support with assistance and aggregation of project development and (iii) 'de-risk' energy efficiency investments through better information and data gathering.

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INTRODUCTION

Poland is the biggest beneficiary of EU funds under the 2014-2020 Multi-annual Financial Framework (MFF), receiving up to around €80 billion from the Cohesion Policy budget. The importance of these funds is evident, since they accounted for over half of public investment in the Polish economy over the period 2009-2013.

Preparations for the next MFF period (2021-2027) are currently underway and the European Commission's proposal is expected to be published before summer 2018. In view of these debates, a better understanding of the availability of funding in Poland is needed. This report provides an overview of the current funding streams directed to energy efficiency in buildings available in Poland. The findings of this report should help to determine whether and how additional resources could be brought to bear on the renovation of Polish buildings, in particular single-family houses, and to help in solving the air pollution problem.

Figure 1 shows the funding streams that have been analysed in this report. Most of the funds covered are allocated under the MFF for the period 2014-2020 (excluding EU ETS, which is not part of the MFF). For non-EU funding streams, projects that are active or have been activated since 2013 were considered. Some funding streams that were analysed are not presented in the study because they either do not focus on demand-side infrastructure but rather focus on capacity building, or reliable data are missing, and/or the amount going to Poland is negligible.

The quantitative analysis in this study builds on publicly available data published by national, EU and international institutions (e.g. European Commission, European Investment Bank, the World Bank, Bank Gospodarstwa Krajowego, European Bank of Reconstruction and Development and National Fund for Environmental Protection and Water Management) on how the funds are being allocated or spent. In order to gain a deeper understanding of these figures, the analysis was complemented by qualitative interviews for the study with local experts¹.

Figure 1 - Scope: Funding streams analysed

EU Funding Streams 2014 - 2020	Cohesion Policy Funds (Structural Funds, Cohesion Fund, European Social Fund)
	European Fund for Strategic Investments (EFSI)
	Energy projects to aid economic recovery (EERP)
	The EU Emissions Trading System (EU ETS)
International Financial Institutions Funding Streams 2014 -2020	The World Bank
	The European Investment Bank (EIB)
	European Bank for Reconstruction and Development (EBRD)

The funding streams are presented in two separate chapters: the first focuses on funding streams coming directly from the EU, and the second on funding from international financial institutions.

¹ Names and affiliation of interviewees can be found on the second page of this report

Polish building stock

According to data from the Central Statistical Office, the total number of buildings in Poland exceeds 6 million. A breakdown of the residential stock according to location (urban/rural) and type is provided in Table 1, while Table 2 presents the breakdown of non-residential buildings.

Table 1 – Breakdown of Polish residential building stock in 2011 [1]

		Residential	Of which	
			Single-family	Multi-family
Total	Thousands	5,543	5,008	535
Urban areas		2,176	1,738	438
Rural areas		3,366	3,269	97

Table 2 – Estimated breakdown of Polish non-residential buildings stock in 2010 [2]

Non-residential building type	Total
Warehouse	123,700
Hotels/Restaurants	82,500
Educational facilities	38,900
Cultural facilities	11,400
Health facilities	33,400
Office buildings	18,500
Total	308,400

According to a 2013 report on energy efficiency in Poland², 72% of single-family buildings have a low or very low energy efficiency rating. At the same time, 70% of single-family buildings in Poland use coal, amounting to 3.5 million coal-fired boilers (which collectively consume more than 9 million tonnes of coal per year). 29% of buildings have boilers that are more than 10 years old. About 3 million of these installations are based on manually fed boilers, an outdated technology which leads to significant air pollution.

Polish energy consumption in households, by energy carrier, differs significantly from other EU countries, notably with the highest per capita coal consumption. The consumption of coal per inhabitant in Poland was ten times higher than the EU-28 average.

The problem of air pollution

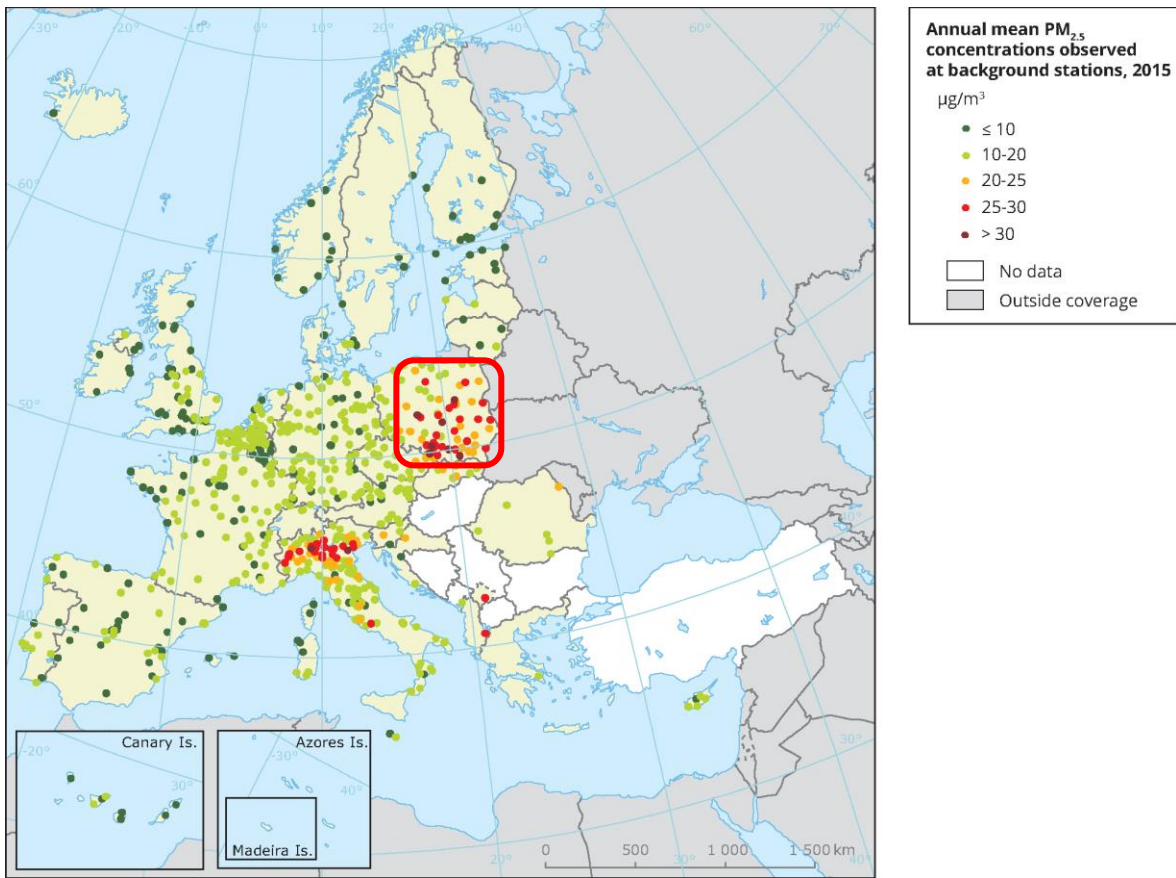
Studies link exposure to outdoor concentration of particulate matter (PM) and other pollutants (e.g. benzo[a]pyrene (BaP)) with increased mortality [5]. Poor air quality exacerbates the quality of life and is

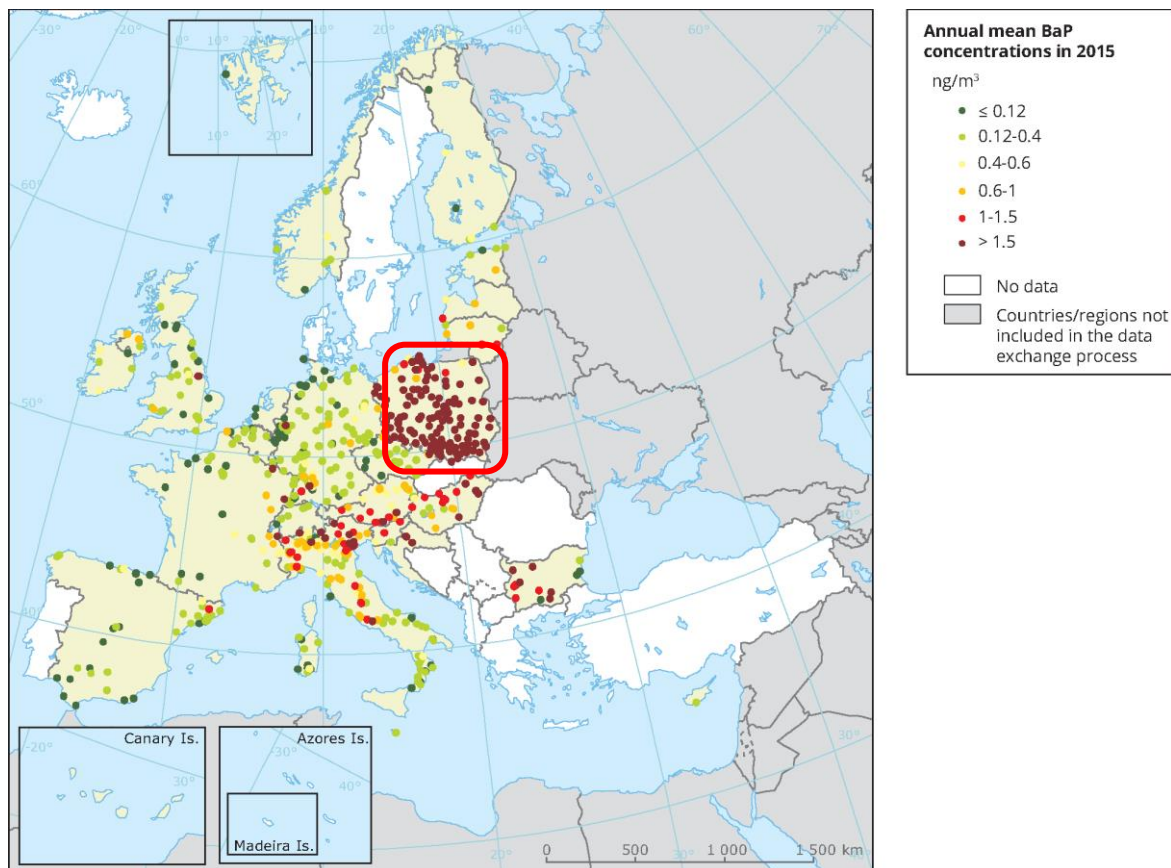
² Energy Efficiency in Poland 2013 Review

responsible for increased mortality, morbidity and hospitalisation. The International Agency for Research on Cancer declared PM and BaP as carcinogenic [5].

According to the European Environment Agency (EEA), in 2015 80.6% of the urban population in Poland was exposed to concentrations above EU levels for PM10 and 99.1% of the urban population for BaP [3]. 46,020 premature deaths in Poland are attributed to PM2.5 exposure. Residential heating in Poland is a major factor of air pollution, being responsible for: 78% of BaP, 41% of PM2.5 and 40% of PM10 emissions [4]. The high concentrations of PM and BaP emissions are found across Poland but are particularly high in the southern part [5] (Figure 2).

Figure 2-Air quality in Europe 2015: (top) annual mean PM2.5 concentrations (bottom) annual mean BaP concentrations [5]





PM and BaP pollutants originate from solid fuels such as coal, wood and other biomass, with BaP being emitted in the process of (inefficient) incomplete combustion at low temperatures. Coal remains a dominant heating fuel in Poland, due to the price and governmental support. 84% of coal in the residential sector in Europe is consumed in this country. As a result, over the last years emissions of PM have not decreased in Poland, and concentrations of BaP have actually increased by 63% from 2007 to 2015 [3].

In 2015, households were responsible for the highest share of energy consumed in Poland, almost 29%, compared to transport (25%) and industry (27%). 65.5% of energy consumed in households is used for space heating [6]. This energy is predominantly used in old non-insulated houses constructed in times with very low energy performance standards for buildings, as more than 70% of residential buildings in Poland were constructed before 1989.

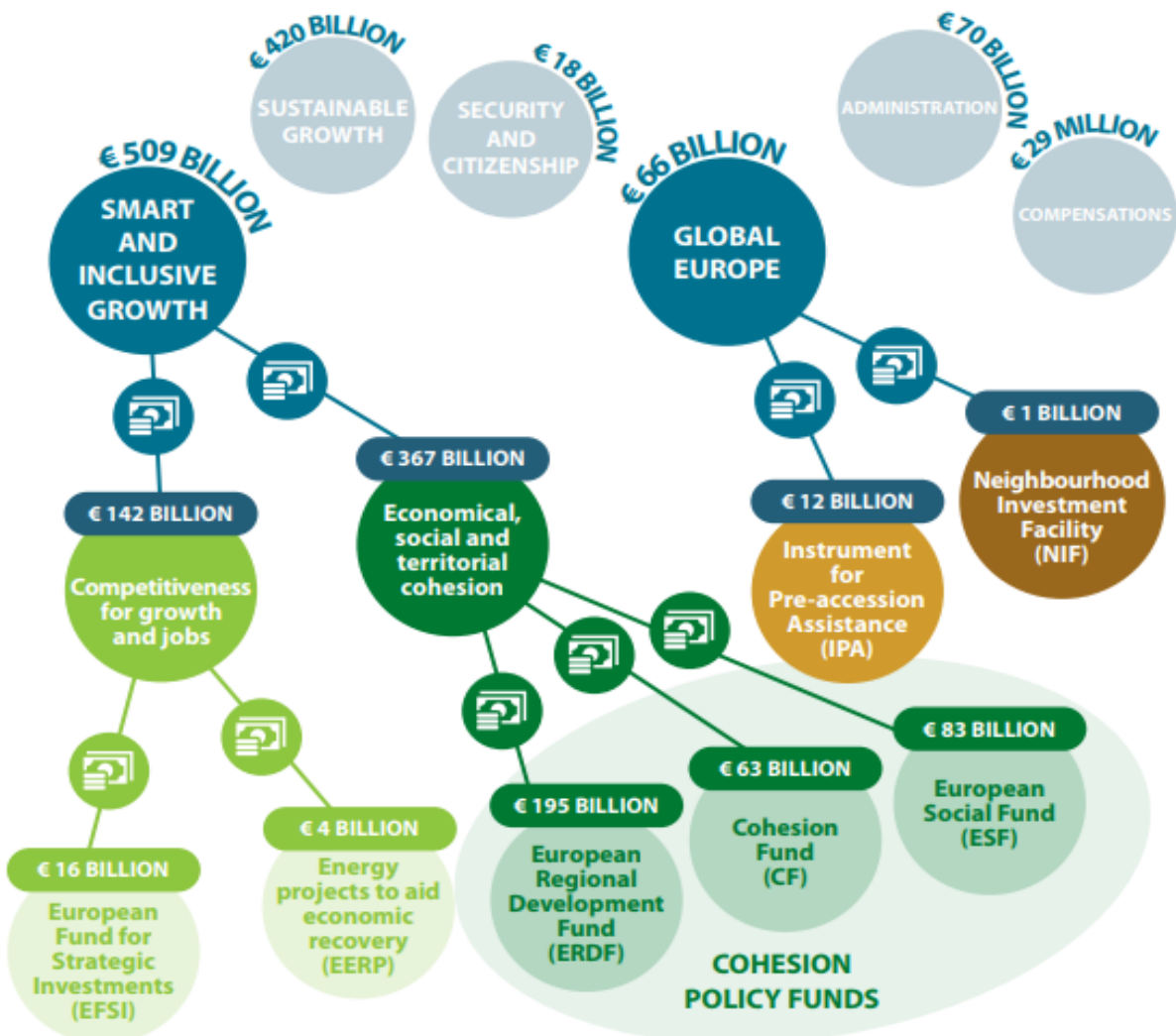
Air pollution from the residential sector can be tackled with renovation of existing buildings – especially single-family houses - and by switching to less polluting heating sources. Data show that the largest energy saving potential lies in reducing heating energy consumption. This can be achieved through better insulation and deeper renovation of existing buildings and switching from energy intensive polluting carriers for heating to alternative sources. Both actions should be strengthened with funding streams focusing particularly on improvements in the energy efficiency of the building stock, with the additional benefits of improving comfort levels, cutting energy bills and improving national energy security.

EU FUNDING STREAMS

The EU has established several funding streams partially, or exclusively, focusing on energy and demand-side infrastructure. The size, purpose and scope of these funds differ substantially.

The current prioritisation of the funds was set out in the current MFF, covering 2014 to 2020. The total budget for this period is almost €960 billion³, of which €450 billion is committed under the category ‘Smart and Inclusive Growth’ [7]. In Figure 3, the list of programmes presented under the ‘Smart and Inclusive Growth’ headings only include the budget breakdown for the programmes relevant to this analysis. Therefore, programmes like Horizon2020 and Connecting Europe Facility (CEF) are not included.

Figure 3 - MFF by heading 2014-2020 (selected items) at 2013 prices.



A short description of each fund under the MFF, including its total amount, main purpose whether it focuses on energy and the type of financial instruments it offers (e.g grants, loans guarantees) is presented in Figure 4 while Figure 5 describes support for EU member states that originates outside the MFF budget.

³ In 2011 prices

Figure 4 - EU Funding Streams for Member States

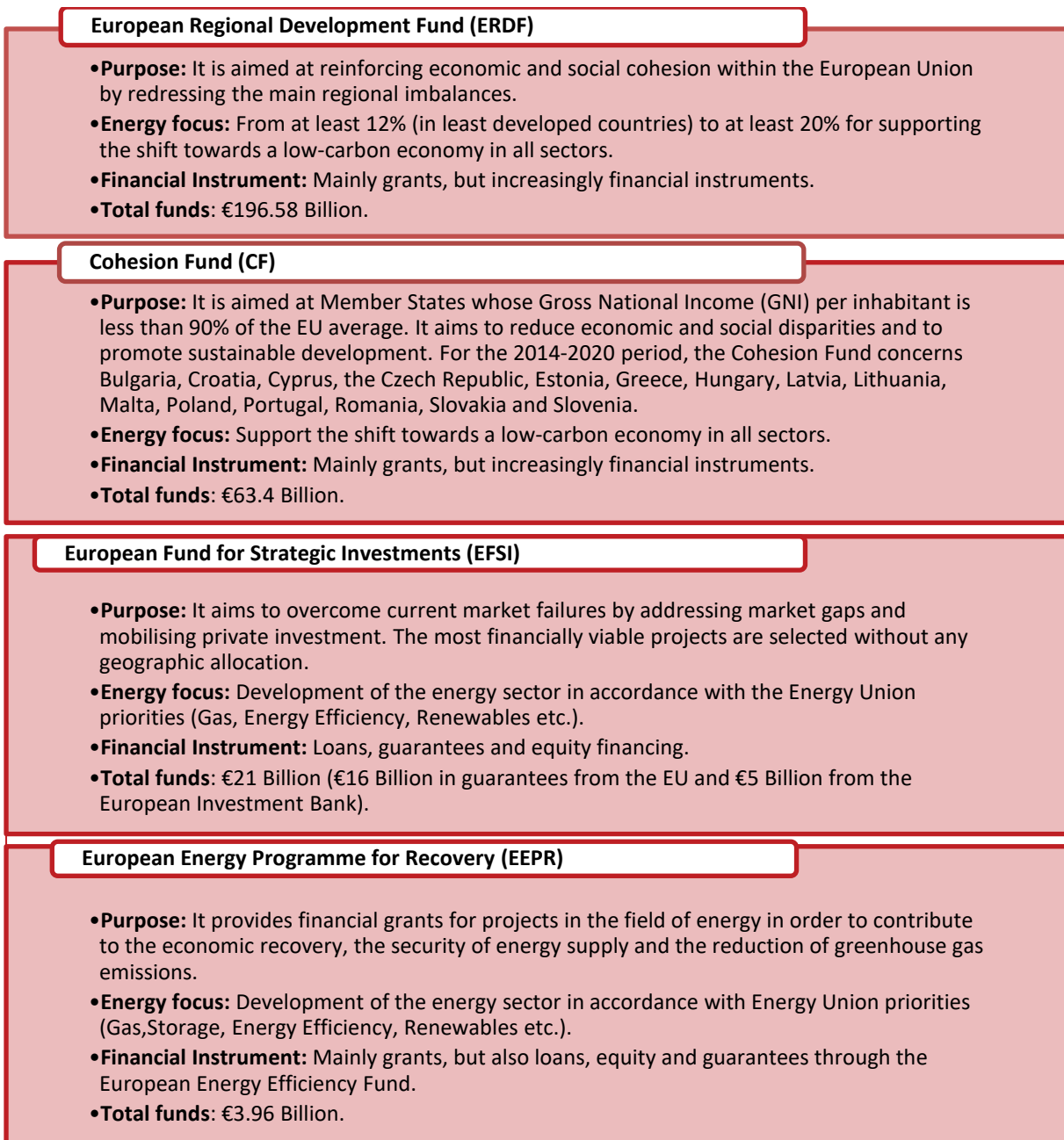


Figure 5-Other EU Funding Streams for Member States (Not included in the MFF)

The EU Emissions Trading System (EU ETS)

- **Purpose:** The European Union launched the EU ETS in 2005 as the cornerstone of its strategy for cutting greenhouse gas emissions. It operates in the 28 EU countries plus Iceland, Liechtenstein and Norway.
- **Energy focus:** At least 50% revenues from allowances are allocated for climate purposes (Energy Efficiency, RES, Carbon Capture and Storage, etc).
- **Financial Instrument:** Since 2013, auctioning is the default method of allocating emission allowances. The use of revenues is determined at national level.
- **Total funds:** € from auctioning allowances between 2013 and 2015: €11.7 billion.

The Cohesion Policy Funds

The Cohesion Policy Funds comprise the EU's Regional Development Fund (ERDF), the Cohesion Fund (CF) and the European Social Fund (ESF). The common thread is the focus on reducing regional disparities in income, wealth and opportunities. The ERDF allocates investments to all EU countries and promotes balanced development in the different regions of the EU. The CF is only available to countries where the Gross National Income (GNI) per inhabitant is less than 90% of the EU average, which is the case in Poland. In these countries, the CF primarily funds transport and environmental projects. The ESF supports employment-related projects throughout Europe and invests in Europe's human capital.

The Cohesion Policy Funds cover more than one-third of the whole EU budget [7]. It totals €342 billion, of which the ERDF is more than €195 billion, the CF more than €63 billion and the ESF more than €83 billion (Table 3). In order to tackle climate change, the EU agreed that at least 20% of its budget for 2014-2020 should be spent on climate action, including building energy renovation. According to an assessment by the European Commission, only 16.5% of Cohesion Policy Funds have been allocated to climate action [8]. The ESF provides a minor share (1.3%) to climate change action and nothing to energy infrastructure. The CF allocates the biggest share (27.8%) to climate change, while the ERDF assigns the biggest amount (€38 billion).

Large energy infrastructure projects are being funded through other funding streams (such as the Connecting Europe Facility and the European Energy Programme for Recovery). Under the Cohesion Policy Funds, 6.8% of the total investments are allocated to energy infrastructure, which includes investments in energy efficiency in buildings, investments directed to renewables (wind, solar, biomass and others), natural gas, as well as smart and efficient distribution and heating systems.

Cohesion Policy Funds are the main funding streams for energy efficiency in buildings: 3.9% (€13.3 billion) of the total Cohesion Policy Fund investments are being directed to energy efficiency in buildings (public and residential), which amounts to more than half of the total Cohesion Policy Funds spent on energy infrastructure.

Table 3 - Share and amount of Cohesion Policy Funds allocated to climate, energy infrastructure⁴ and energy efficiency in buildings across the EU-28

Fund	Total EU Support (€ M)	Climate Change Rate	Climate Change Amount (€ M)	Energy Infrastructure Rate	Energy Infrastructure Amount (€ M)	Energy Efficiency in Buildings Rate	Energy Efficiency in Buildings Amount (€ M)
Cohesion Fund	63,397	27.83%	17,643	7.18%	4,550	3.76%	2,382
European Regional Development Fund	195,396	19.28%	37,678	9.57%	18,693	5.60%	10,948
European Social Fund	83,136	1.33%	1,103	0.00%	0	0.00%	0
Total – Cohesion Policy Funds	341,928	16.50%	56,424	6.80%	23,243	3.90%	13,330

The focus of Cohesion Policy Funds on energy efficiency⁵ increased between the 2007-2013 MFF period and the 2014-2020 period (**Error! Reference source not found.**) from €5.94 billion to €15.78 billion. The increase in Poland was even more prominent, where it grew from €0.58 billion to €3.04 billion⁶. It was the highest amount of funds among EU countries.

This increase can be explained by three main reasons:

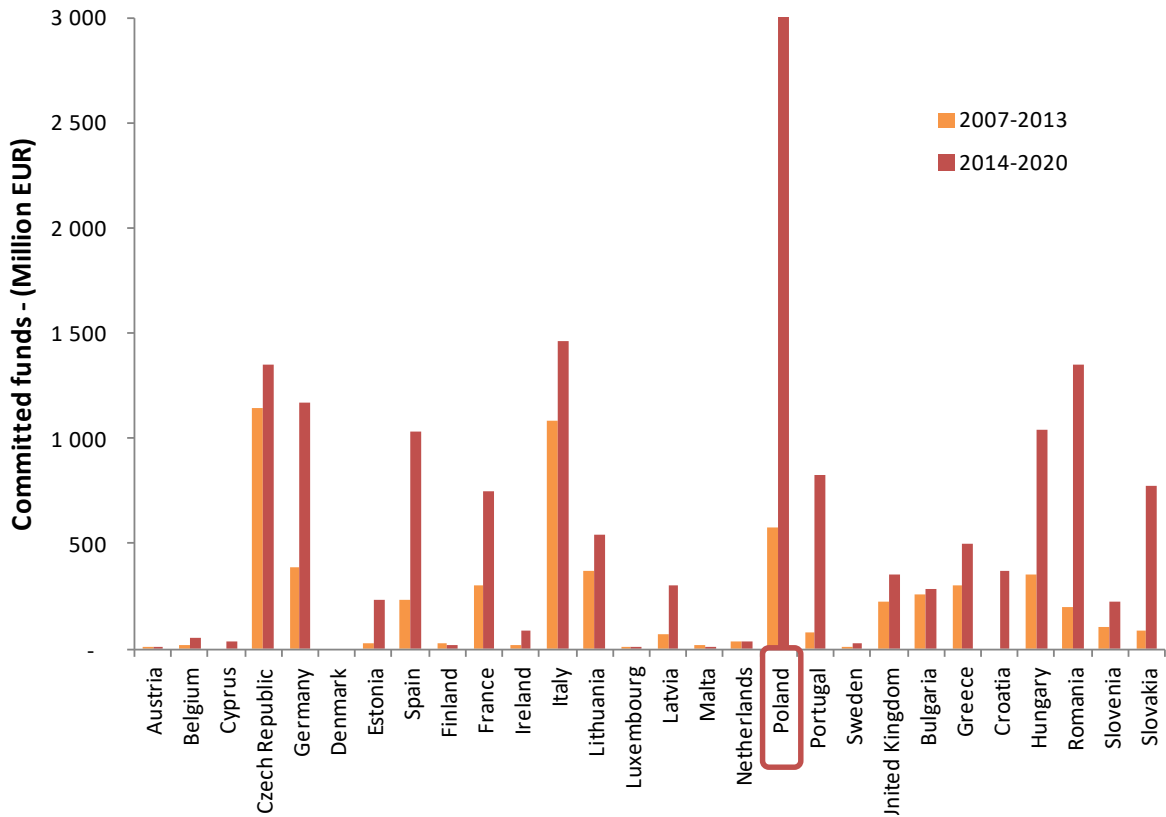
- The shift towards addressing climate change and achieving a low-carbon economy: the EU agreed that at least 20% of its budget for the 2014-2020 period should be spent on climate action [8] including energy efficiency investments.
- The economic and financial crises that lingered over Europe when the priorities for the current period were set. Investments in the construction sector were seen as a good way to boost economies and create local jobs.
- Successful past energy efficiency investments. Several managing authorities deemed investments in energy efficiency successful and therefore decided to allocate additional funds. Over the course of the 2007-2013 period, Member States' total allocations for energy efficiency increased by 45% compared to their initial intentions [9].

⁴ The allocated spending is for the seven-year period (2014-2020). The climate change allocated amount is based on European Commission calculations [8]. Energy infrastructure and energy efficiency in buildings are based on BPIE calculations coming from European Commission data [7]

⁵ *Energy efficiency* comprises energy efficiency renovation of (i) public infrastructure and (ii) residential households, as well as (iii) intelligent energy distribution systems (smart grids and ICT) and (iv) high efficiency co-generation and district heating. In the 2014-2020 period these four topics are divided into separate intervention fields, while the topics comprised one intervention field in the previous period.

⁶ Croatia was not a Member State until 2013. Excluding Croatia, the committed amount grew from €1.3 Billion to €4.2 Billion

Figure 6-Allocation of Cohesion Policy Funds for energy efficiency, based on data gathered for 2007-2013 [10] and 2014-2020 [11]



The total amount of Cohesion Policy Funds committed to Poland is around €76 billion (€40 billion through the ERDF, €23 billion through the CF and €13 billion through the ESF). Within this, €12 billion (15.5%) is allocated to climate actions. This is comparable to the EU average of 16.5%, but less than in case of Czech Republic – 18.5%, Slovakia – 19.4% or Lithuania – 21.1%. Only €2 billion (2.8%, see Table 4) is allocated to energy efficiency in buildings (public and residential multifamily) over the seven-year period. This is below the EU average of 3.9% (Table 3) for energy efficiency in buildings.

Table 4 - Share and amount of the Cohesion Policy Funds allocated to climate, energy infrastructure and energy efficiency in buildings for Poland

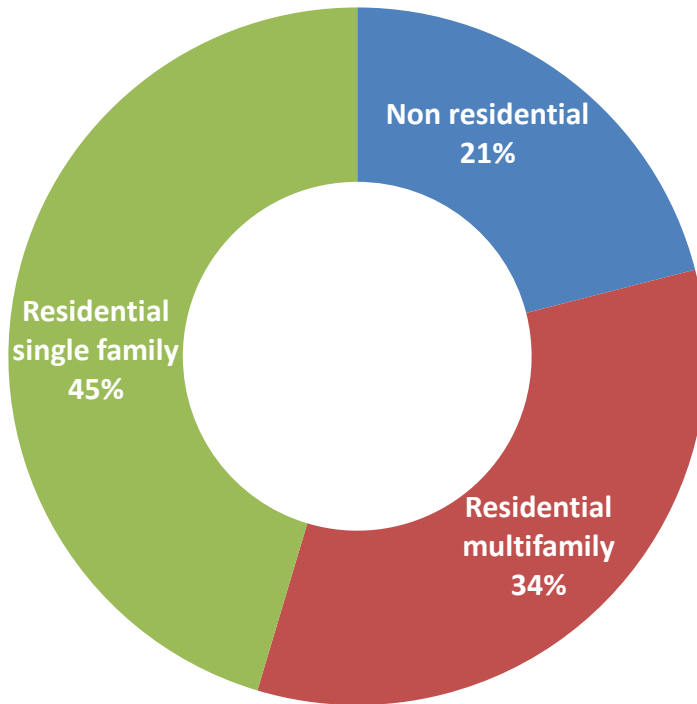
Member State	Total Cohesion Policy Funds (M €)	Climate Change Rate	Climate Change Amount (M €)	Energy Infrastructure Rate	Energy Infrastructure Amount (M €)	Energy Efficiency in Building Rate	Energy Efficiency in Building Amount (M €)
Poland	76,362	15.5%	11,813	5.9%	4,489	2.8%	2,149

*The climate change amount is based on [12]. Energy infrastructure and energy efficiency in buildings are based on BPIE calculations and [11]

Comparing the amounts allocated to energy efficiency in buildings and the size of the building stock provides an indication of the investments dedicated to renovation. **Error! Reference source not found.** illustrates Poland’s investment plan for energy efficiency in public, residential multifamily and single-family buildings in relation to the size of the building stock. The number of non-residential buildings is

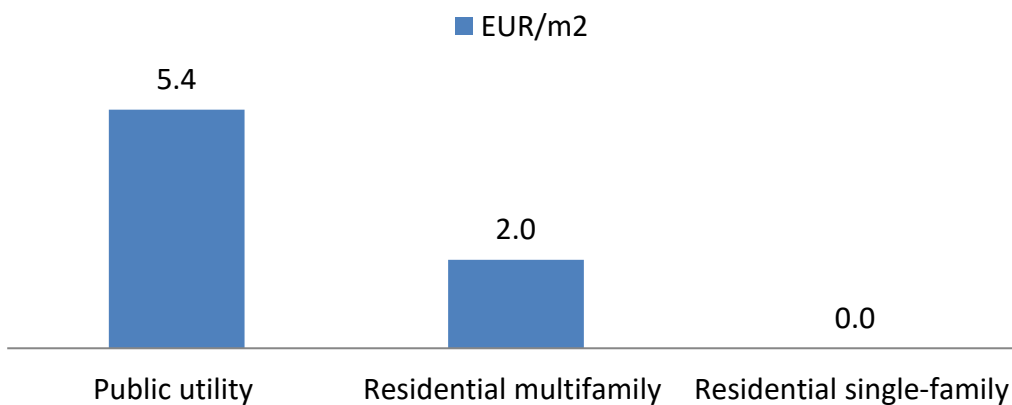
around 310,000 with a total area around 250 Mm². There are around 535,000 multifamily buildings (with a floor area of around 400 Mm²) and 5 million single-family houses (occupying a floor area of 540 Mm²).

Figure 7- Share of building type by floor area. Calculation based on data from the Polish Statistic Office [39] and BPIE report [34]



Poland has committed to spend more than €5 per square metre on the energy efficiency of public buildings and €2 per square metre on the energy efficiency of residential multifamily buildings. No funds have been committed to energy efficiency in residential single-family houses.

Figure 8- Cohesion Policy Funds commitments for the 2014-2020 period by building type for Poland. Calculation based on data from the European Commission [7] and BPIE report [34]



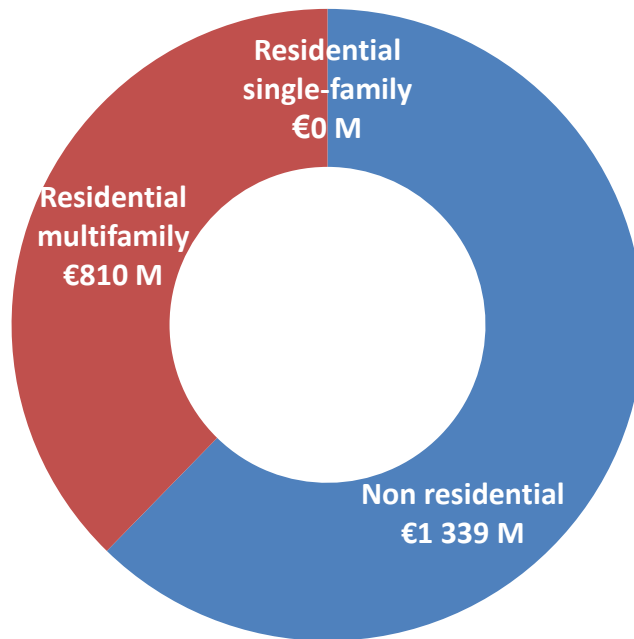
Cohesion Policy Funds are more commonly used to support the renovation of public buildings than residential buildings. In Poland, 62% of funds are allocated towards the renovation of public buildings, while residential single-family houses, with a 45% share of the total building floor area, receive no support.

A few reasons could be behind this decision:

- The significant investment required to renovate public buildings has a short-term negative impact on the debt and deficit of public authorities. Due to accounting rules and debt ceilings, many local governments are not able to acquire the necessary funding, even if there is a positive net present value of the investment. Directing investments from the Cohesion Policy Funds to public buildings reduces this pressure on public budgets.
- The average cost, per building, of deep renovation of public buildings is around 4 times higher than those for the renovation of multi-family buildings and over 23 times higher than in case of single-family buildings [15]. Public buildings have a larger area and they are usually equipped with additional systems like cooling or mechanical ventilation. This means there is less administrative burden, since it requires dealing with fewer buildings for a given spend.
- Institutions implementing the EU programmes do not like to deal with private investors (individual home owners) or small projects, like the renovation of single family buildings. They prefer to spend money quickly and with fewer administrative formalities.
- The requirement to renovate 3% of the floor area occupied by central government each year (Article 5 of the Energy Efficiency Directive) [14].

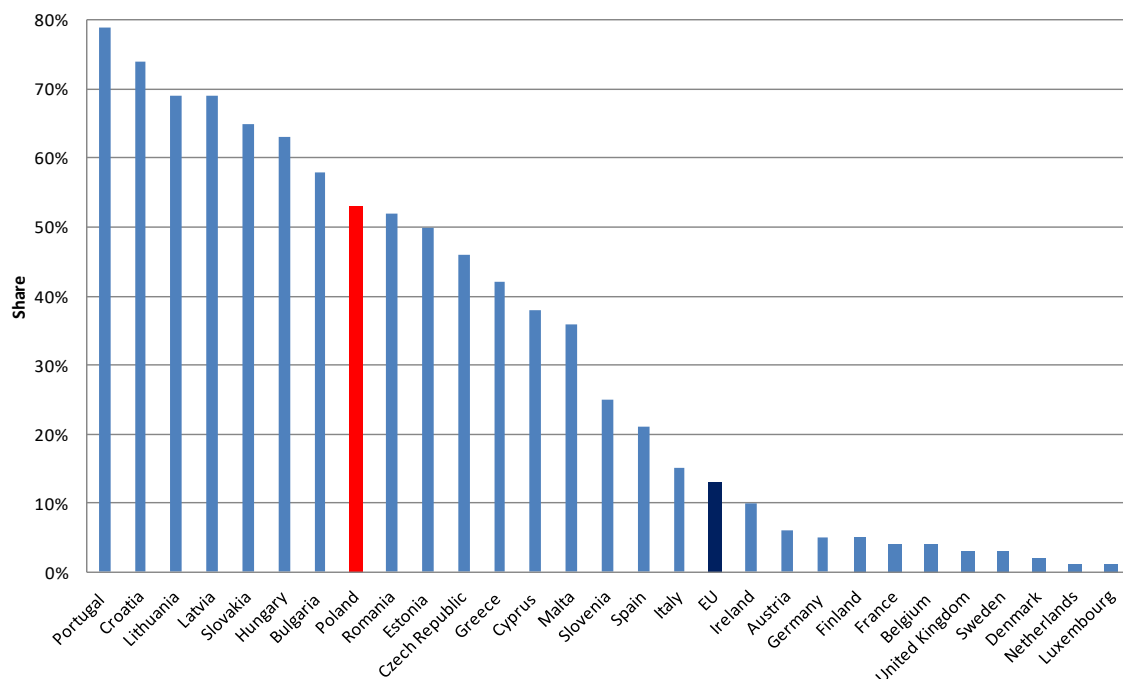
While renovation of public buildings is crucial, and the public sector should be encouraged to lead by example, the imbalance between the funding allocated to public and residential (especially single-family) buildings is huge. The stock of public buildings is much smaller than private residential buildings, so a greater focus should be placed on the residential sector. Additionally, most public buildings use heat sources that are not causing heavy air pollution, while uninsulated or insufficiently insulated single-family houses using old coal boilers are especially problematic.

Figure 9- Allocation of Cohesion Policy Funds 2014-2020 to public and residential buildings for Poland.
Based on European Commission data [11]



For Poland, the share of Cohesion Policy Funds in public investments is about 53% and is much higher than the EU average of 13% (Figure 10). Applying these funds cost effectively to building renovation in a manner outlined in this report means Poland has the potential to be a leading player in the path to a decarbonised EU building stock.

Figure 10- Proportion of Cohesion Policy Funds in Public Investments [12]



Cohesion Policy Funds are primarily used for non-repayable grants across Europe [11]. The European Commission has recommended an increased use of financial instruments, such as loans, guarantees and Energy Service Company (ESCO) services, across all sectors of the Cohesion Policy Funds for the 2014-2020 programming period. The main objective is to move from grant mechanisms towards instruments that would leverage private sector resources. Despite this, Poland uses non-repayable grants as almost the only form of finance for energy efficiency improvement in buildings.

The use of non-repayable grants can be explained by several reasons:

- Grants are easier to manage and dispense as they require less administrative preparation and continuous maintenance;
- There is a lack of experience and expertise on how to set up more elaborate financial schemes;
- Financial instruments, such as guarantees and ESCOs, are considered risky due to economic and political instabilities;
- There is a lack of long-term trust in the political and financial system, which hampers establishment of long-standing financial schemes such as loan repayments.

According to local experts, Cohesion Policy Funds should be allocated first to public buildings and single-family houses. The renovation of multi-family buildings should be financed with available national programmes like the Thermo-Renovation and Repairs Funds [15].

The process of designing a programme for single-family houses should take into consideration the large variety of this type of building in Poland. This diversity means that a single, repeatable solution cannot be applied, but instead, programmes need to be tailored to specific target audiences. Furthermore, the scale of investment is much smaller (per property) than in the case of public or multi-family buildings. But in principle, new support schemes should be designed in such a way that, when replacing the heat source, part of the funding will also be available for renovation works. Municipalities should assist in project aggregation and supporting building owners. Such solutions would make the application process more efficient and reduce the number of administrative formalities. The implementing institutions responsible for programme coordination, e.g. Regional Environmental Funds, could receive a collective application from the municipality.

As already noted, the experts interviewed as part of this research indicated that non-repayable grants are the most popular among beneficiaries. The size of the grant should not be too large – the suggested level is in the range 45-60%. Currently it can be up to 85% in regional and national programmes [15]. Grants should only be given to public buildings undergoing deep renovation or renovated to zero emission standards, and not to minor renovations. Such approaches will help to invest the funds in more cost-effective and energy-efficient ways. Additionally, the number of renovated buildings would be increased, because of the smaller grant size – nearly twice as many buildings can be addressed with a 45% grant instead of 85%.

Grants should be also focussed on single-family houses undergoing deep renovation. Minor or moderate renovation of houses could also be supported but with the use of repayable mechanisms such as soft loans or ESCO financing. According to one of the experts, a special fund should be created that would buy contracts from ESCO companies for reducing energy consumption. This fund would be primarily

financed from EU sources. Only owners of single-family buildings that would decide to undergo deep renovation would receive a non-repayable grant.

In relation to the current MFF period 2014-2020, the size of Cohesion Policy Funds for energy efficiency of buildings should greatly increase – at least double, according to the experts. The example of the Mazovia region shows that, although there was only one call for energy efficiency renovation (*4.2 Energy efficiency - Renovation of public buildings*), the size of the requested funding substantially exceeds the amount of resources available for these actions in the whole period 2014-2020 [16]. Now the Voivodship authorities do not know from where to access the funds for these projects.

A 2016 BPIE report [15] shows that realisation of an ambitious renovation scenario to 2020 for Poland needs an increase in annual public funding (national and EU) to €1.9bn. This compares to the current level of funding of €0.6 billion. An effective programme targeting about one million single-family houses, or 20% of the total, over a ten-year period would require a total investment of €14 billion [17]. Assuming an average subsidy rate of 30%, this amount equates to €4 billion of public funding, or an average annual rate of €400M. While this may seem a significant sum, by comparison, the much smaller multi-family housing sector is currently funded to approximately €240M p.a.

The effectiveness of fund utilisation and the likelihood of securing the desired energy and environmental results could be increased by a requirement to install energy management and monitoring systems in every renovated public building. Additionally, the data from the systems should be freely available for all, including local residents. Such citizen control would motivate local governments to design and implement renovation projects in a way that they will be really effective. The second solution would be to link the level of financial support, e.g. grant rate or interest rate on the loan, to the level of pollution or energy consumption reduction.

The example of the Mazovia Region shows that the existing support programmes are run and managed smoothly. The main problem is the insufficient amount of funds allocated for these activities in the current period (2014-2020) in relation to the size and potential of the region. In the opinion of the expert from Mazovian Energy Agency *“If we had 10 times this amount of money, I think that we could also find appropriate projects to allocate it.”* Other experts point to a lack of stable financing – the EU programmes are rather short, e.g. only one project call in the period 2014-2020 in Mazovia Region, which was in addition poorly promoted in the media.

European Fund for Strategic Investments (EFSI)

The European Fund for Strategic Investments (EFSI) came as a response to the ‘investment deficit’ following the 2008 global financial crisis and intends to mobilise private financing for investments in ‘strategic infrastructure’⁷ in various sectors of the economy, including energy, transport and the IT sector. The EFSI comprises an EU guarantee of €16 billion and a €5 billion allocation of the European Investment Bank (EIB)’s own capital. This €21 billion is expected to unlock additional investments of at least €315 billion over a three-year period.

The EFSI differs from other EU funds as it is designed to mobilise additional investments and targets financially riskier and more innovative projects (for example, setting up an ESCO service in a new

⁷ http://ec.europa.eu/growth/industry/innovation/funding/efsi_en

market). Projects under the EFSI are not funded based on geographic or sectoral quotas, but each project is evaluated on its specificities and merits.

Out of a total of more than €8 billion⁸ allocated to approved and confirmed energy projects under the EFSI to date, €545 million (6.8%) is allocated to Polish projects and €443 million (5.5%) is allocated to joint projects in which Poland is participating. Most of the 11 projects are related to the development of energy infrastructure, environment and resource efficiency. Some of the projects can indirectly support energy efficiency in buildings, e.g. Bank Ochrony Środowiska climate action MBIL. The project aims to provide financing intermediated by the Bank for small and medium-scale projects carried out by SMEs, mid-caps and public-sector entities with a dedicated window for activities related to climate action. Energy efficiency improvement or implementation of RES can be supported.

An example of how EFSI funds are being accessed to improve building energy performance can be seen in two projects in Germany: Energy Efficient Buildings; and Vonovia Energy Efficient Buildings. The first one supports investments in energy-efficient modernisation of residential housing and the construction of near-zero energy buildings (nZEB). The EFSI financing is €100 million out of total cost of €230 million. The second project aims to bring environmental benefits by supporting investments that reduce energy consumption and increase the use of renewable energy, thus helping to mitigate climate change. The EFSI financing is €300 million but the total cost not disclosed.

Figure 11- EFSI financing for energy projects, based on an evaluation of EIB data [11]

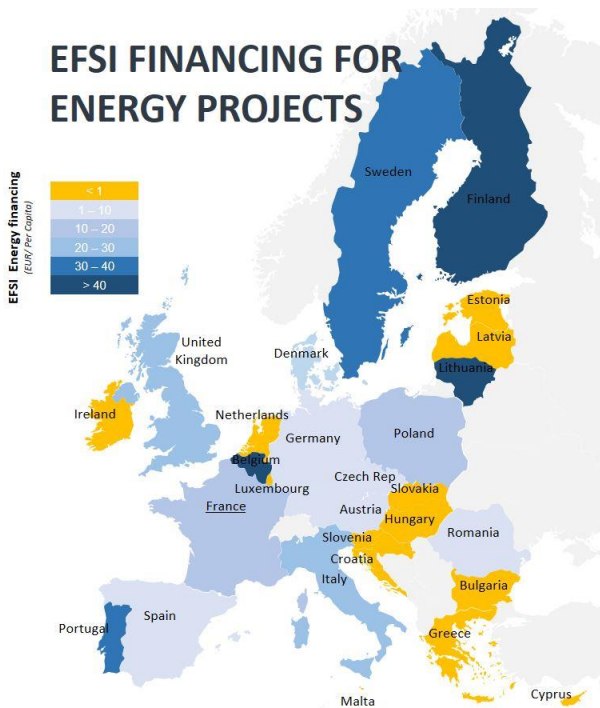
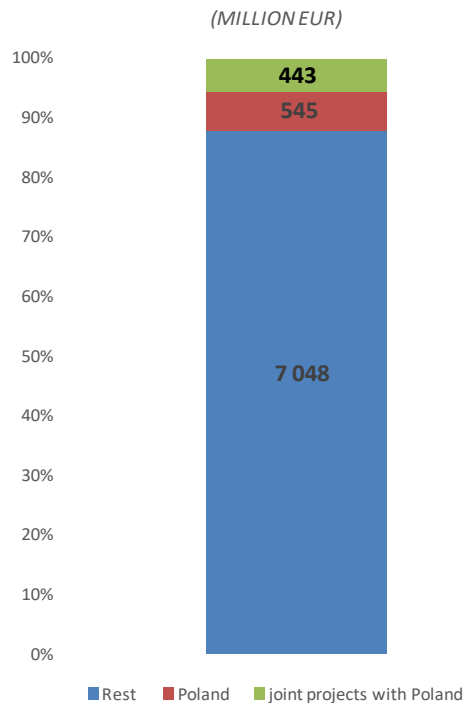


Figure 10- EFSI financing for energy projects, based on an evaluation of EIB data [11]



⁸ The amounts refer to EFSI financing: tranche of an operation that benefits from the support of the EFSI

Although EFSI is financing energy projects in Poland, none of them is directly focusing on energy efficiency in buildings.

Local experts think that EFSI is an attractive guarantee fund, above all for EIB. It allows EIB to support riskier projects in the private sector, like energy efficiency investments (including building renovation) in SMEs or the creation of energy service companies (ESCOs) like in France. The same could be done in Poland where an underdeveloped ESCO market hinders energy efficiency investments. Another solution could be supporting enterprises or municipal companies constructing social housing to achieve nZEB standards.

European Energy Programme for Recovery (EEPR)

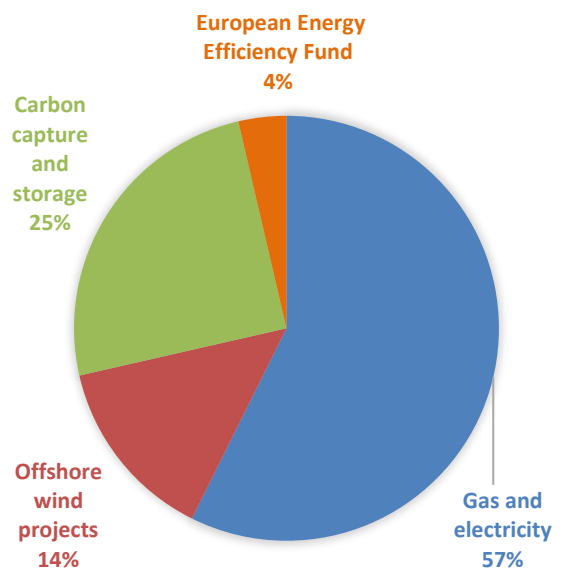
The European Energy Programme for Recovery (EEPR) grants financial assistance to the energy sector, especially for interconnection infrastructure, energy production based on renewable sources, carbon capture and storage and energy efficiency projects. The programme’s budget totals €4 billion, with approximately €2.3 billion directed to gas and electricity infrastructure projects, €565 million to offshore wind projects, €1 billion to carbon capture and storage projects, and €146 million to the European Energy Efficiency Fund (EEEF) [18].

The EEEF was not in the initial scope of the EEPR but was added in 2011 to utilise unused funds from the EEPR. It focuses on setting up innovative Public-Private Partnerships (PPPs) to mitigate climate change through financing energy efficiency measures and renewable energy projects. The fund intends to “support EU Member States in meeting their objective to, by 2020, reduce greenhouse gas emissions by 20%, increase renewable energy usage by 20% and lower energy consumption through a 20% improvement in energy efficiency.” [19].

Error! Reference source not found. illustrates that more than half (57%) of the EEPR funds are allocated to supply-side infrastructure, while only 4% to the EEEF. The EEPR provides funding for several gas interconnections in Poland [20]. A project concerning CO₂ Capture and Storage (CCS) in the Bełchatów power plant was terminated in May 2013. No projects related to energy efficiency were funded.

A higher allocation of funds to the EEEF would recognise the strategic importance of energy efficiency projects in achieving the EU climate and energy targets. A financially stronger EEEF could trigger valuable public-private partnerships (PPPs) that would contribute to the development of private energy efficiency investments in Poland. An example of such a project is deep renovation of ten public buildings (7 schools, 2 kindergartens and 1 health centre) in the municipality of Karczew [21]. It was implemented by the municipality in public-private partnership with Siemens Building Technologies and co-financed with the Green Investment Scheme. The total cost of the project was €2.5 million. Funds from EEEF could be used to scale up similar projects and initiatives.

Figure 12 - EEPR priorities



EU Emission Trading System (ETS) Revenues

The auctioning revenues of the EU Emission Trading System⁹ (ETS) are another funding source for EU Member States. This funding stream is not included in the EU budget but (re-)uses the revenues from the ETS to fund strategic objectives, such as energy, transport and agriculture. Between 2013 and 2015, auctioning revenues reached €11.7 billion, of which €454.9 million comes from Poland.

Since 2009, the Emission Trading Scheme Directive has included the provision that at least 50% of the revenues generated from the auctioning of allowances should be used for climate action (e.g. contribute to the Global Energy Efficiency and Renewable Energy Fund and develop renewable energies) [22]. Additionally, the Directive states that “Member States shall determine the use of revenues generated from the auctioning of allowances”. So far, Poland has only reported on the use of auctioning revenues from 2013 to 2015 ().

Figure 13 - ETS: Average spending of auctioning revenues on domestic climate actions in Poland (period 2013-2015) [23]

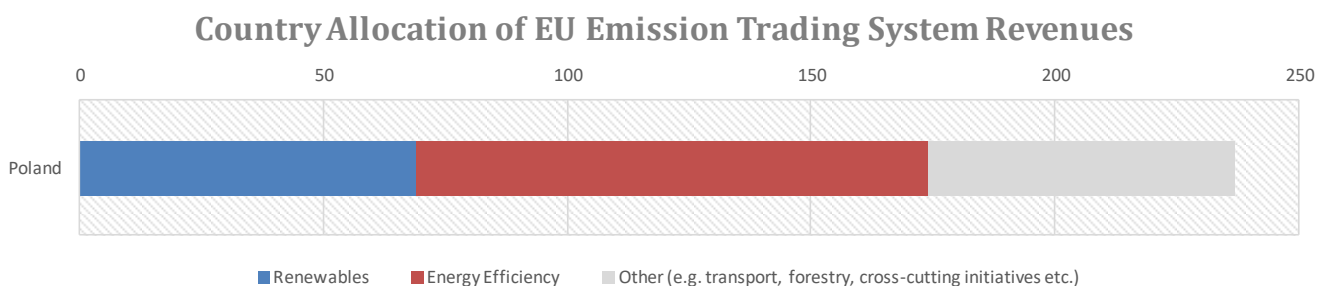


Figure 14 shows that Poland allocates the largest shares of its auctioning revenues to energy efficiency actions (about 44%) and renewable energy investment (about 29%). The funds spent on energy efficiency particularly support renovation of buildings. The projects are implemented by the National Environmental and Water Protection Fund. The use of ETS revenues for demand side infrastructure could, however, be increased. A good example is France, which uses 100% of its auctioning revenues for energy efficiency, including funding for the "Habiter Mieux" (Live Better) programme that subsidises energy renovation measures in the residential sector.

It should be noted that up to 300 million allowances from the New Entrant Reserve, the so-called NER300, are sold by the EIB. The revenue from these allowances is used to establish a demonstration programme comprising the best possible Carbon Capture and Storage and Renewable Energy Supply projects, involving all Member States [24].

Using ETS revenues could bring crucial funding streams to Poland. According to an Energy Forum report [25], depending on the price of allowances, in the years 2021-2030 Poland could obtain about €10-25 billion from the ETS auction. It could also have two additional support mechanisms for low-emission reduction: derogations for energy (€5-10 billion) and the Modernization Fund (€2-5 billion). A well-

⁹ The system works by putting a limit on overall emissions from covered installations, which is reduced each year. Within this limit, companies can buy and sell emission allowances as needed. This ‘cap-and-trade’ approach gives companies the flexibility they need to cut their emissions in the most cost-effective way

thought-out redistribution of auction revenues may become an impulse for the modernization of the Polish economy, especially in selected areas of buildings energy efficiency (single-family renovation programme) and energy supply.

Main Findings: EU Funding Streams

The Cohesion Policy Funds are the biggest funding streams for demand-side infrastructure and building renovation in Poland. Around €2.15 billion was allocated for energy efficiency in buildings for the seven-year period in Poland.

The EFSI and the EEPR programmes were created to support economic and energy developments in the European Union. About €1 billion for EFSI has been allocated to projects in which Poland is participating. These have primarily focused on energy infrastructure, environment and resource efficiency. EEPR funds have been used mainly to build gas interconnections.

In the case of ETS revenues, about €105 million out of €455 million have been allocated to energy efficiency, including building renovation. In the period 2021-2030, the use of ETS revenues could become a crucial source for energy efficiency funding.

The low share of EU funding streams directed to buildings renovation (only 3%) does not support the Efficiency First principle. Regardless of the big improvement since the last MFF period, demand-side infrastructure continues to be a low priority and is dwarfed by conventional (supply-side) energy investments.

Table 5 - Summary: EU Funding Stream in Poland, (period 2014-2020). Data based on [11], [26], [27], [28], [29].

(In million EUR)	Cohesion Policy Funds	EFSI	EEPR	ETS
Total Investment	76,362	3,105	338	455
Investments in Energy	4,489	988	158	174
Investments in Energy Efficiency including Buildings	2,149	75	0	105

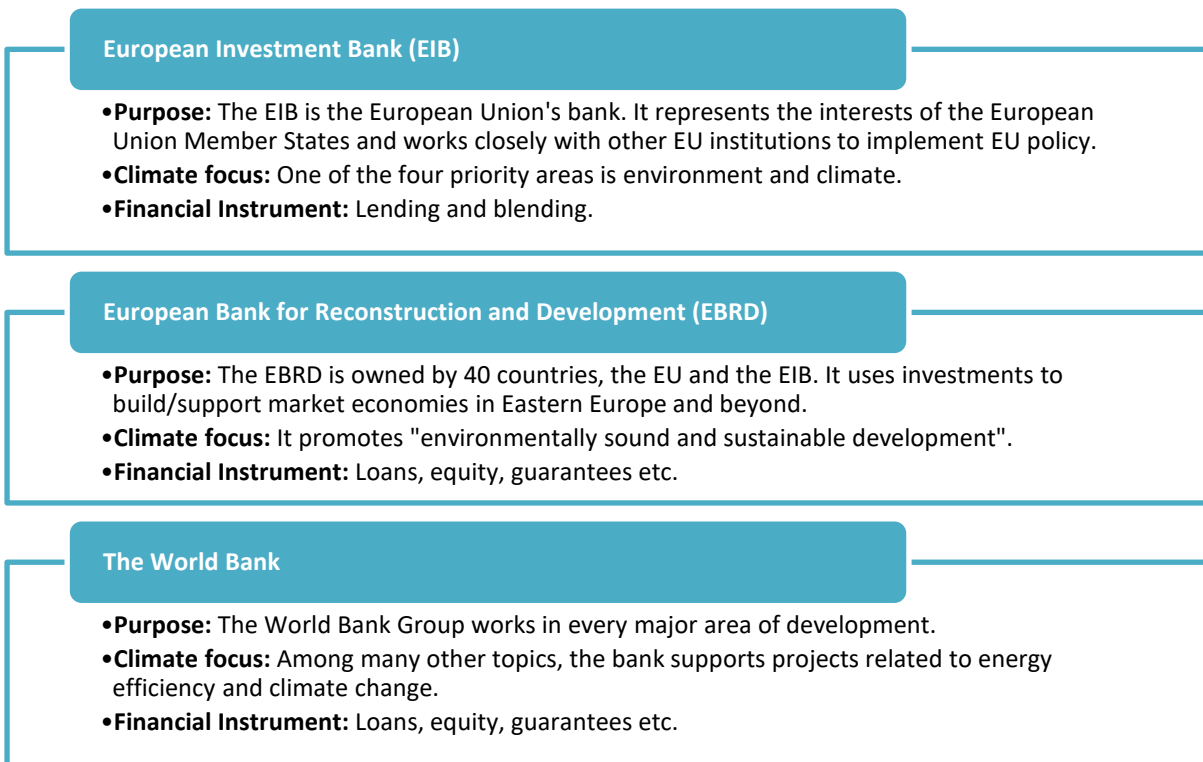
For Poland, grants are still the preferred method of channelling financial support. According to interviews conducted by BPIE on the progress of EU countries on their renovation strategies [30], a high level of grants risks subduing financial markets and making private investors less eager to invest. Grants for renovation activities can cover up to 85% of the costs and reduce the incentives to develop and adopt innovative financial instruments. The high share of grants also implies that the multiplying/revolving effect of the funding streams is very low.

INTERNATIONAL FINANCIAL INSTITUTIONS - FINANCING ENERGY EFFICIENCY IN POLAND

There are several additional funding streams for demand-side infrastructure in Poland. Regional programmes and investment and development banks play a key role in facilitating the creation of the right conditions for growth and sustainable development, and in directing investment to strategic projects. This section analyses selected international financial institutions, including: the European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), the World Bank (WB). These programmes are considered, and confirmed by local experts, as the most relevant for energy efficiency investments.

A short description of each funding stream including its main purpose, beneficiaries, energy focus and the type of financial instruments it offers (e.g. grants, loans, guarantees) is presented in **Error! Reference source not found.**¹⁵.

Figure 14- International financial institutions



The European banks allocate considerable amounts to energy projects. EIB financing in Poland since 2014 totalled € 21.5 billion (€ 270.9 billion for the whole European Union), thanks to which the country was one of the largest recipients of EIB loans. However, from a total of 259 projects, only 9 were related to the energy sector. The amount of loans directed to energy projects was €1.35 billion (6.3%). Most of the projects are related to the development of energy infrastructure, gas pipelines, power generation and distribution. Only one project indirectly supports energy efficiency in buildings – the thermal rehabilitation of Kraków district heating system. The project will improve the energy efficiency of the district heating network, reduce the intensity of CO₂ emissions for heat supply and contribute to the security of heat supply. The densification and extension of the grid, through new connections and new

equipment and substations, will help to reduce low-stack emissions in the city. The total cost of the project is €138 million, of which EBI financing is €46 million.

For comparison, the Czech Republic has implemented a project to support energy efficiency investments in public buildings by providing funds to be used as loans (i.e. refundable financial instruments) to the final beneficiaries. The investment will focus on thermal energy efficiency improvements to the building envelope (wall insulation, windows, roof and cellar insulation). Improvement of the buildings' heating controls could also be included in view of making full use of the building envelope measures as well as the use of building-integrated renewable energy. The total cost of the project is €222 million, of which EBI financing is €111 million.

Figure 16- EIB Energy Projects from 2014. Calculation based on EIB data [26]

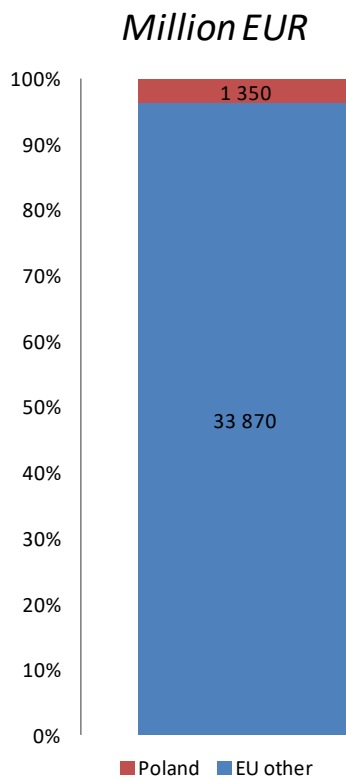
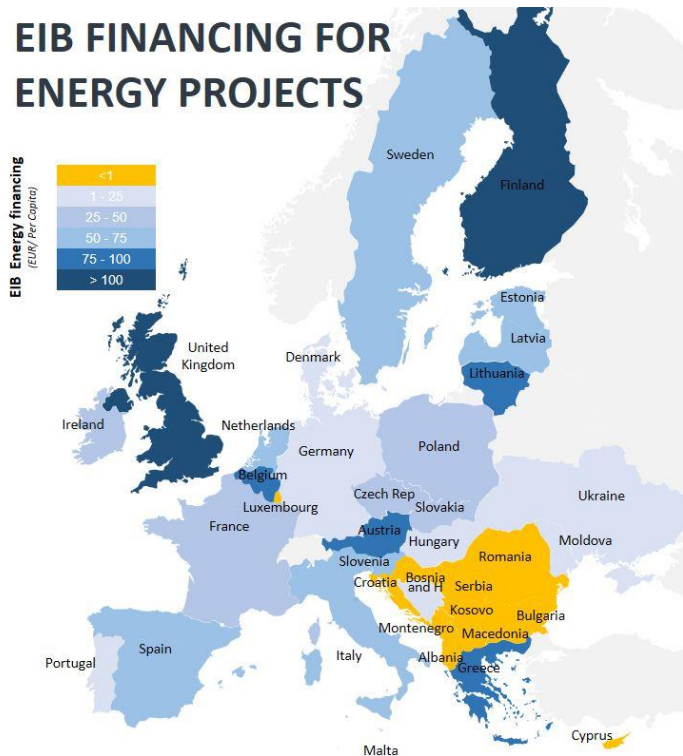


Figure 15- EIB Energy Investments. Calculation based on EIB data [26]

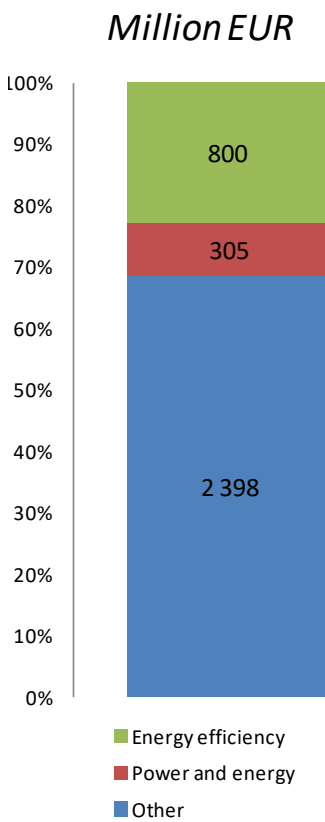


The EBRD has supported 48 projects (about €3.5 billion) in Poland since 2014, of which 6 (about €0.3 billion) are in the power and energy sector. Most of them are related to wind farms or sustainable energy. Additionally, 3 projects aiming to improve the energy and resource efficiency were financed to the tune of about €0.8 billion. One of the projects, the “Polish SME Sustainable Energy Facility II” supported sustainable energy investments by Polish SMEs. It was a joint initiative between the National Fund for Environmental Protection and Water Management and the EBRD. The EBRD financed credit lines up to an aggregate of €200 million. Energy saving investments in SMEs could include equipment, production lines and building renovation.

The “Polish Residential EE Framework” project currently under implementation aims to enhance the competitiveness of commercial financing for energy and resource saving investments in the residential sector. The project objective is to transfer knowledge and skills in the area of energy efficiency to participating financial institutions and encourage private beneficiaries (households, housing associations, housing cooperatives and private sector service providers) to take actions in the area of EE. The loans offered to the beneficiaries will have low interest rates but no subsidy element. EBRD financing is €200 million.

World Bank financing in Poland since 2014 totalled US\$2.47 billion (€2 billion). The loans supported the

Figure 17- EBRD Projects in Poland from 2014. Calculation based on ERDB data [26]



resilience and growth development policy and flood management. None of the 3 projects were related to energy or energy efficiency. Before 2014, projects like “GIS- Green Investment Scheme” were contributing with success to the modernization of energy management of public buildings such as public schools, kindergartens and nursing homes. The objective of the “Energy Efficiency Development Policy Loan”, was to support the Government’s programme to decrease emissions through accelerating energy efficiency and targeted renewable energy intervention. The US\$1.1 billion (€0.9 billion) funding was to develop a supporting legal framework for energy efficiency strategy, decrease supply-side energy use, improve demand-side energy efficiency and renewable energy action plan.

Currently the World Bank is working on financing instruments for supporting single-family building renovation. The results of the programme “World Bank’s Poland Catching Up Regions Program” [31] have shown that Poland’s single-family buildings are one of the main sources of air pollution. Residential Energy Efficiency measures - such as thermal rehabilitation of buildings and replacement of inefficient boilers – can substantially reduce pollution. The opportunity for savings in energy and reducing pollution is huge but enormous investments are required to achieve implementation at scale (ca. €50 billion across Poland). It is critical to mobilise private capital by leveraging limited public finance. Supportive environmental regulations and mandates should be in place. The report concludes that new financial instruments and implementation mechanisms are needed to support and incentivise all (not only energy poor) single-family building owners to make investments in energy efficiency measures.

The evidence from the current allocation of EU and IFI funding in Poland suggests that demand-side energy efficiency measures (including buildings) is not a high priority. There could be several reasons for this: (i) supply-side projects are in general bigger and therefore come with greater political significance; (ii) international development and investment banks have more experience of investing in supply-side energy projects; and (iii) there is perhaps less recognition of, or acceptance of, the role of demand-side investments in delivering energy security solutions. While some of these supply-side investments are crucial to ensure a reliable supply of energy, it is evident that the importance of demand-side investments is overlooked and undervalued.

Main Findings: International Financial Institutions (IFIs)

Within the period under analysis, most of the international financial institutions (IFIs) do not focus on energy efficiency or even on energy. Only EBRD prioritises more energy-related projects. Table 6 shows that 31.5% of funding supported energy infrastructure – mostly renewable energy production. Investments in energy efficiency projects were much lower, about 8.7%. The EIB supports this area at a much smaller scale (0.2%) while the World Bank doesn't fund these projects at all.

Table 6 - Summary: Financial Institutions in Poland from 2014. Data from EBRD [32], EIB [33] and WB [34]

In million EUR	EBRD	EIB	WB
Total Investments	3,503	21,500	2,010
Investments in Energy	1,105	1,350	0
Investment in Energy Efficiency including buildings	305	46	0

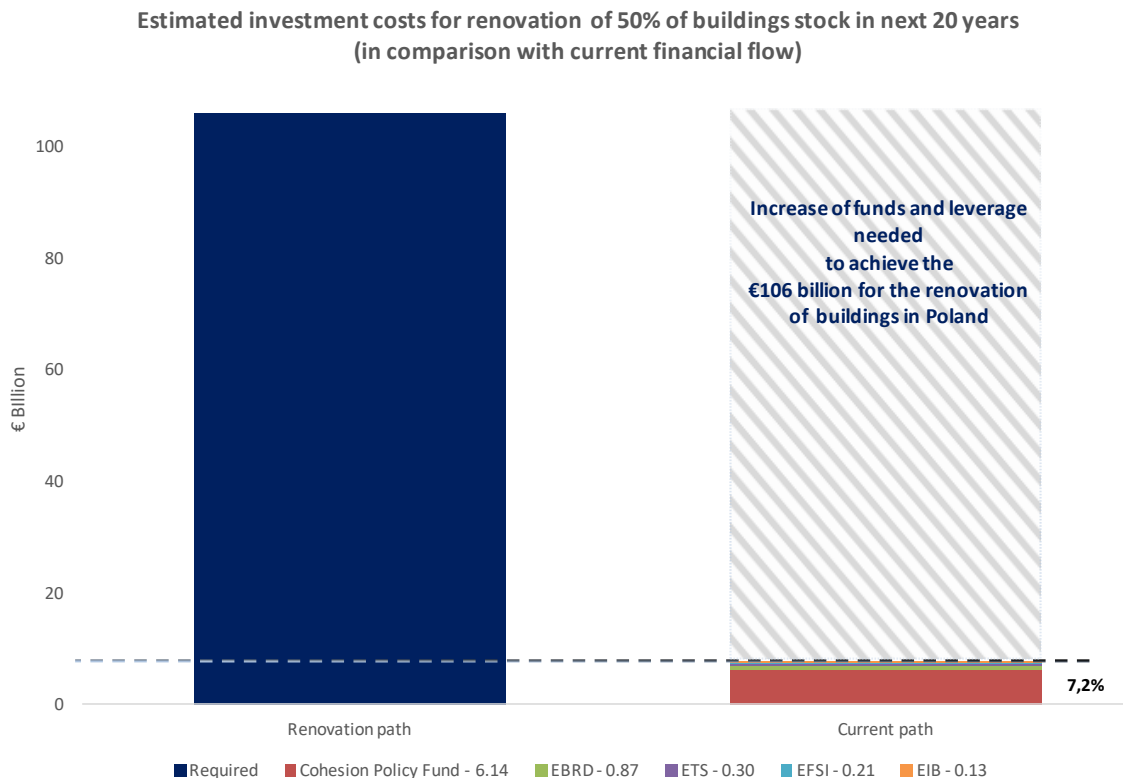
Just as with EU funding streams, energy efficiency measures such as building renovation, remain overlooked and underinvested in by international financial institutions in Poland.

FINANCING AN ALTERNATIVE PATH TO ENERGY EFFICIENT BUILDINGS

Currently, less than 2.5% of the total funding allocated to Poland from EU sources and from IFIs is dedicated to energy efficiency in buildings (20). The funding streams for demand-side infrastructure, presented in this report, represent most of the available streams in the country, and total around €383 million per year (over the seven-year period 2014-2020). If the current financial flow were to be maintained at the same pace, it would reach €7.66 billion over the next 20 years, equal to just 7.2% of the amount needed to renovate 50% of the Polish building stock (see **Error! Reference source not found.**). According to the “Buildings renovation strategy: road map 2050” [35] the average cost of modernization of 50% of all single-family and multi-family buildings as well as non-residential ones will be €106 billion. With a renovation rate of 2.5% p.a., this equates to €5.3 billion of total annual investment per year. **Reaching such levels of renovation rate requires increase of funding dedicated to energy efficiency in buildings and more effective use of funds.**

The increased EU funds should be used to leverage new investments and attract additional private and public financial support. But even with a leverage factor of five, **the level of EU & IFI funding should be increased about three times and reach around €1.2 billion per year. Additional funding should be directed first of all to single-family houses in order to attract private investors.** This would help to reduce not only the energy consumption but also emissions of air pollutants. A more efficient use of EU funds could also create a revolving effect, multiply the amounts available and allow reinvesting funds in new projects.

Figure 18– Financing energy efficient buildings in Poland. Based on BPIE calculation* and Buildings renovation strategy [35]



* For the 'current path', the funding streams have been assumed to remain constant

With the exception of the Cohesion Policy Funds and EBRD, there is no major funding stream dedicated to building renovation in Poland. Over €2.6 billion committed to energy renovations over a period of seven years is not an insignificant amount, but it is far from what is needed to complete the deep renovation of the building stock and substantially reduce pollutant emissions (Figure 19).

The results show that - despite their critical role in reducing pollutants emission, increasing savings on the energy bill and improving health and comfort levels - **buildings are not perceived as critical energy infrastructure**. Current funding streams do not target single-family buildings (in particular those with low energy performance and heated using coal), which is a precondition to improve the outdoor air quality.

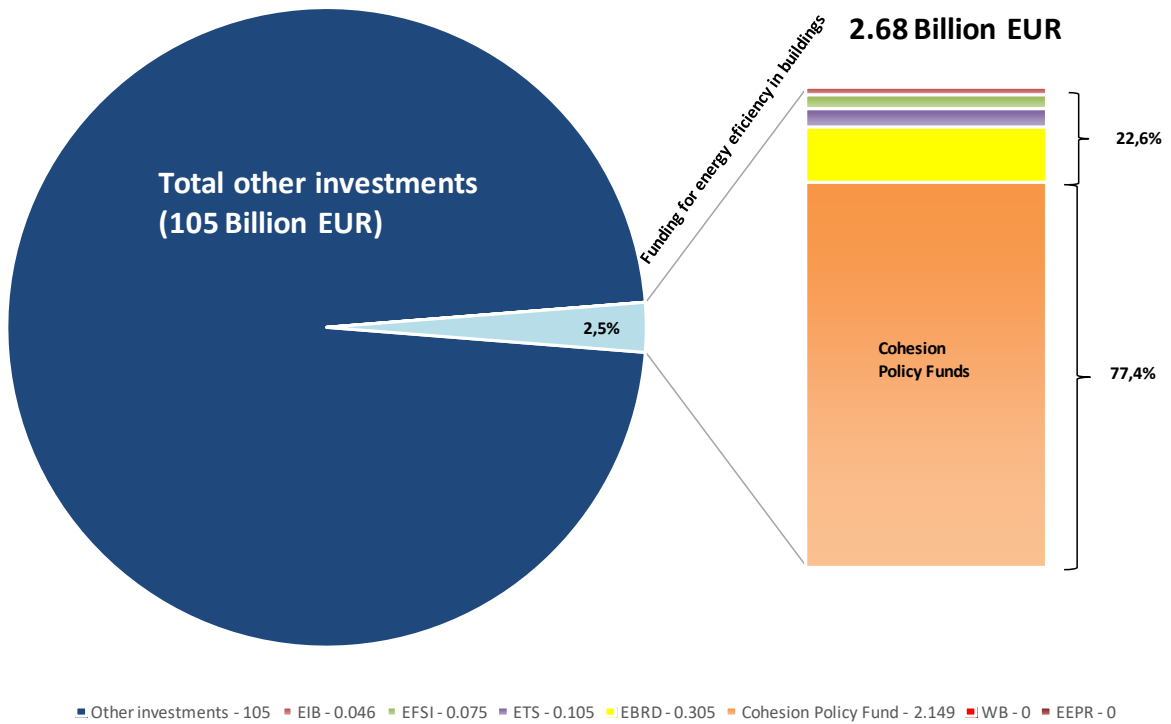
The findings also show that the opportunities for investments in demand-side infrastructure, such as building renovation, are not fully exploited:

- Only a limited share of the total EU funding streams (3.0%) is allocated to building renovation in Poland. The Cohesion Policy Funds are the main financial sources, and bring a considerable amount of financial investments in demand-side infrastructure to the region (€2.15 billion, 2.8% of the country's funds). **The amount of funds allocated to energy efficiency in buildings should be increased about three times in the next Multiannual Financial Framework**. Among those funds, the European Fund for Strategic Investments (EFSI) and revenues of the EU Emission Trading System could be used in a more effective way. Using ETS revenues could bring crucial funding streams to Poland.
- International financial institutions (the EBRD, EIB and the World Bank) direct €27 billion to Poland, while **only 1.3% of the total committed amount is allocated to building renovation**. The EIB (currently only 0.2%) and WB (no allocation) could bring crucial additional funding streams to Poland.

While the increased awareness and committed funding for energy efficiency in MFF (**Error! Reference source not found.**) sends a positive signal in favour of building renovation, the total amount allocated, in comparison to supply-side investments, shows that buildings are not yet considered as a core component of the country's energy infrastructure. A more strategic view accompanied by a long-term political commitment would increase the confidence among investors and would create an incentive to shift considerable investments in the region from the supply-side to the demand-side.

Figure 19- Overview of the share of funding streams dedicated to Energy Efficiency in Buildings in Poland. Figures are based on previous calculations. "Total other investments" includes EU and international financing institution funding not directed towards energy efficiency in buildings

Share of Funding Streams for Energy Efficiency in Buildings in Poland



CONCLUSIONS AND POLICY RECOMMENDATIONS

Poland is the biggest beneficiary of EU funds under the 2014-2020 MFF, receiving up to around €80 billion from the Cohesion Policy budget. Only 2.8% of this funding is dedicated to energy efficiency in buildings. At the same time, low energy performance of existing buildings (especially single-family houses) and use of old coal fired boilers causes significant air pollution. Poland has some of the worst air quality in Europe, with 33 of the continent's 50 most polluted cities, according to a World Health Organization (WHO) report. In order to address the air quality problem and reduce energy consumption, the available funds should be shifted towards demand-side infrastructure, notably the renovation of single-family houses. Furthermore, there needs to be better utilisation of funding that achieves higher leverage of third party resources so that a larger share of the building stock can be renovated.

Such an approach would increase the energy performance of the Polish building stock and by doing so, improve comfort and health levels, create local and regional economic opportunities, alleviate energy poverty [13] and significantly reduce the emission of harmful pollutants.

The limited impact that available funds have on building renovation investments can be explained by a multitude of reasons. Interviews with local experts have highlighted four main potential reasons:

❖ Investing in building energy efficiency is not a strategic priority

Poland is highly dependent on coal and its economy is very energy intensive. Despite being central to the European Union's objectives of energy security and a rapid transition to a low-carbon economy, funding for energy renovation of buildings only accounts for around 2.8% of Cohesion Policy Funds, which are the biggest funding stream available to EU countries.

A similar situation is visible in Polish energy policy, where funding streams are allocated first of all to energy supply infrastructure. The construction of one nuclear power plant in Poland would require financing to the tune of €16-18 billion till 2030. This is 16-17% of the total funding needed to renovate 50% of country building stock. The final cost of building the LNG terminal in Świnoujście was €866 million, including EU co-financing over €211 million. At the same time planned support for renovation of single-family buildings is only €43 million.

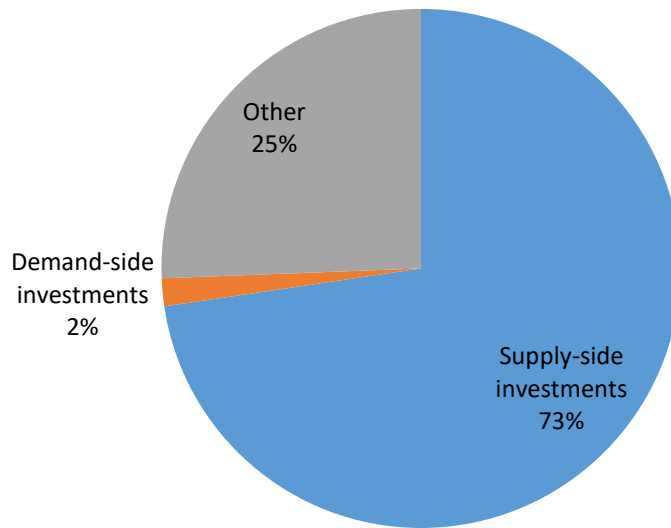
The Efficiency First principle should be systematically applied by introducing the requirement to provide a cost-benefit analysis comparing supply-side investments with demand-side alternatives (e.g. build new gas pipeline vs. investing in deep renovation to decrease gas demand). Additionally the non-energy benefits (e.g. reduced air pollution) should be included.

The lack of a strategic approach to building renovation is combined with scarce project financing by the EFSI in Poland. This is in stark contrast to other EU countries. For example, Finland has five energy-related EFSI projects, of which three invest in energy efficiency of buildings. Also, the use of ETS revenues for demand site infrastructure could be increased. A well designed redistribution of auction revenues may become an impulse for the modernization of the Polish economy, especially in selected areas of building energy efficiency (single-family renovation programme) and energy supply.

Our analysis of the energy priorities of three international financial institutions (EIB, EBRD and the World Bank) shows that almost 73% of their energy investments are directed to supply-side infrastructure, gas, heat and electricity (**Error! Reference source not found.**). Reports [36] have shown that once built, the

new infrastructure has a lifetime of 40 years or more. While additional supply-side investments are required in Poland to ensure a stable energy supply, the central focus should shift to measures that lower the overall demand and improve air quality.

Figure 20-- Energy priorities of international financial institutions (EIB, EBRD, KfW and the World Bank). 'Other' includes renewables, financial framework, smart meters etc.



However, to stimulate a healthy and vigorous investment climate for building energy efficiency in Poland, several barriers must still be overcome.

❖ **Uncertainty is holding back private investments**

Financial and political uncertainty in Poland makes long-term investments riskier. To bolster private investments in the energy renovation of the building stock, confidence in the market and the surrounding political system is essential. High interest rates and energy subsidies are hampering private investments by making the opportunity cost for energy renovations more expensive. The high level of grants is hindering the creation of more innovative financial tools and, therefore, not triggering energy service companies, especially in the case of public buildings. In many cases, grants increase risk-aversion and create disincentives for the blending and aggregation of projects.

Local experts also suggest that the biggest barrier is the lack of reliable business models and the perceived economic risk due to uncertainties of what future legislation will look like.

❖ **Silos are hindering effective governance of funding streams**

Most of the interviewees noted that EU funds could be used more effectively. The link between the allocation of funding streams and national overarching strategies (such as the National Renovation Strategies for the EU countries) was described as weak, if not non-existent.

In addition, responsible agencies often work in silos, for example, the individuals responsible for the National Renovation Strategies are not the same as those managing EU funds. Without a successful

coordination and knowledge sharing, crucial synergies might be neglected. Lack of effective collaboration horizontally (among ministries) and vertically (between regional, national and local level) hinders a comprehensive approach to the energy challenge. Breaking down these silos would increase understanding and generate synergies.

Red tape or excessive administrative requirements also have a negative effect on the governance of funds. Greater flexibility (for example, shifting allocated Cohesion Policy Funds from public buildings to residential buildings) could be beneficial, if well planned and managed.

It is essential that the EU and its Member States take advantage of the upcoming Multiannual Financial Framework review and the Smart Finance for Smart Buildings strategy to frame the discourse and address these barriers. A strong link between the National Renovation Strategies and the use of funding streams is essential to ensure that the funding is allocated effectively. To boost building renovation, additional efforts to mitigate grant dependency and leverage private funds for demand-side infrastructure in Poland are needed.

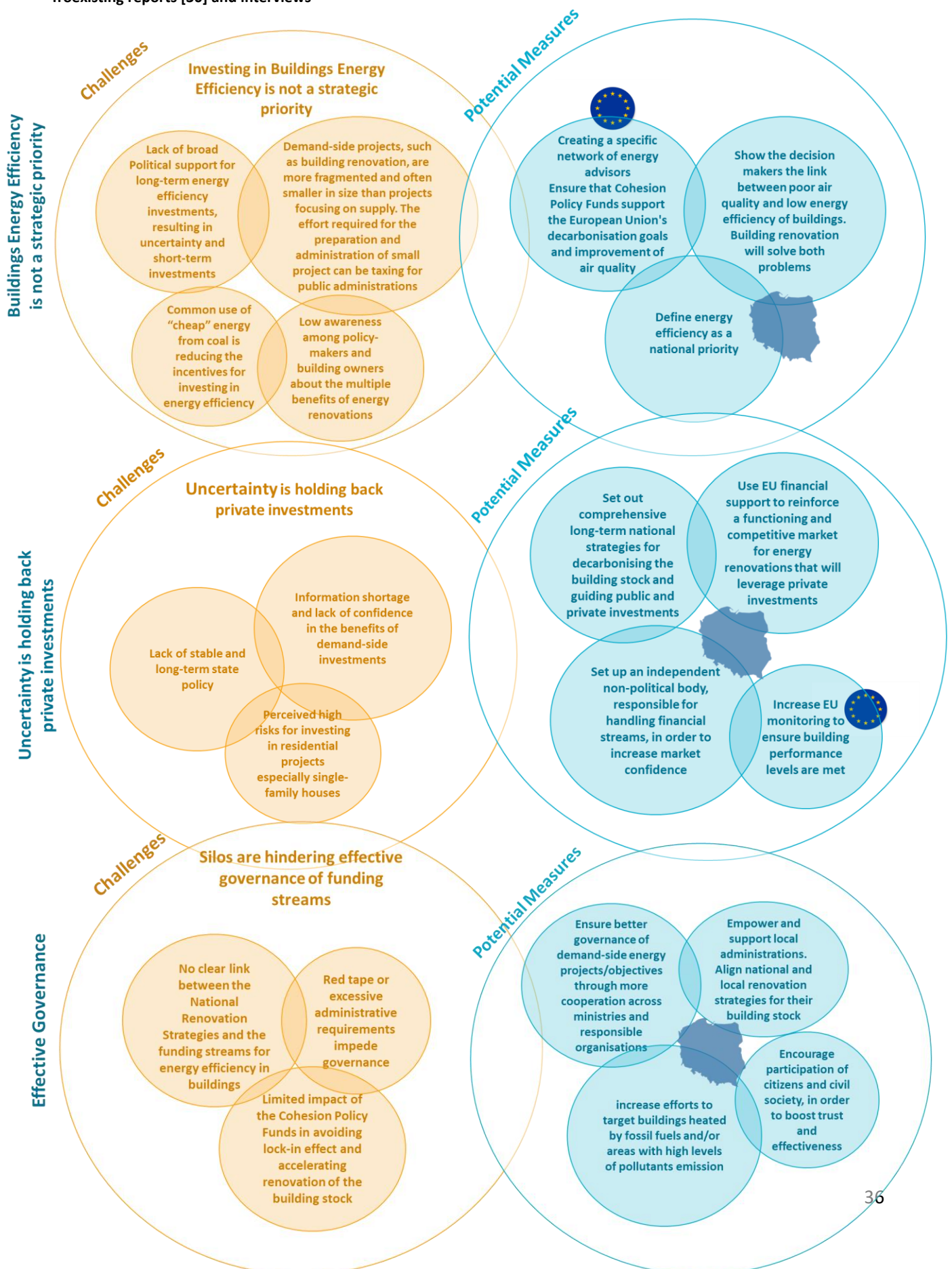
A good example is JESSICA 2, which allows the use of EU structural funds in a repayable system, i.e. with loans, guarantees, giving the opportunity to better utilise structural funds and attract financial institutions, banks and entrepreneurs, *inter alia* through public-private partnership. In the Wielkopolska region, the programme financially supports the implementation of energy efficiency projects, including loans for projects that increase energy efficiency in multifamily and public utility buildings.

The interest rate on loans is:

- 0.5% per annum, if the results of the verified energy audit confirm the possibility of achieving savings in energy consumption at the level of 25% to 40%;
- 0.25% per annum, if the results of the verified energy audit confirm the possibility of achieving savings in energy consumption at the level of 40% to 60%;
- 0.15% if the results of the verified energy audit confirm the possibility of achieving savings in energy consumption of 60% or more.

The bank does not charge commissions and fees. The loan repayment period may be up to 20 years.

Table 7 - Challenges and potential measures to overcome the lack of investments in energy efficiency of buildings. The potential measures are derived from qualitative interviews with local experts. The challenges have been identified from existing reports [30] and interviews



REFERENCES

- [1] GUS, "Statistical yearbook of the Republic of Poland. Zamieszkane Budynki, Narodowy Spis Powszechny Ludności i Mieszkań 2011", 2013
- [2] NAPE, Kwalifikacje zawodowe i kadry dla zielonego budownictwa, Build Up Skills, 2012
- [3] European Environment Agency, Air pollution fact sheet 2017 – Poland, Copenhagen 2017
- [4] Ministry of the Environment, National Air Protection Program until 2020 (with a view until 2030), Warsaw, 2015
- [5] European Environment Agency (EEA), Observed concentrations of PM2.5 and BaP in 2015, Copenhagen 2017
- [6] Central Statistical Office, Energy consumption in households in 2015, Warsaw 2017
- [7] European Commission, "Multiannual financial framework 2014-2020 and EU budget 2014," 2013.
- [8] European Commission, "A budget for Europe 2020 – Part II: Policy Fiches," COM(2011)500, 2011.
- [9] European Commission, "Energy efficiency in public and residential buildings - Final Report WP8," 2015.
- [10] European Commission, "ERDF/ESF/CF Priority theme overview 2007-2013," Available: http://ec.europa.eu/regional_policy/en/policy/evaluations/data-for-research/, Retrieved: 10/04/17.
- [11] European Commission DG REGIO, "Data for research - Categorisation Data," Retrieved: 04/04/17, Available: http://ec.europa.eu/regional_policy/en/policy/evaluations/data-for-research/.
- [12] European Commission DG Regio, "Data for Research - Climate tracking," Available: http://ec.europa.eu/regional_policy/en/policy/evaluations/data-for-research/, 2015.
- [13] BPIE, "Factsheet: Reducing energy poverty with national renovation strategies: a unique opportunity," 2017.
- [14] European Parliament, Council of the European Union, "Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency," <http://data.europa.eu/eli/dir/2012/27/oj>, 2012.
- [15] BPIE, "Financing building energy performance improvement in Poland", 2016
- [16] MR, "Call results under Measure 4.2 Energy efficiency - type of projects - Thermo-modernization of public utility buildings under the REGIONAL OPERATIONAL PROGRAM OF MAZOWIECKIE REGION 2014-2020", 2017
- [17] BPIE, "Proposed support mechanism for the renovation of single-family buildings", 2016
- [18] EUR-LEX, "European energy programme for recovery," 2015.
- [19] European Investment Bank, Press Release: European Energy Efficiency Fund EEEF launched, Available: http://europa.eu/rapid/press-release_BEI-11-98_en.htm?locale=en, 2011.
- [20] Gaz System, <http://www.gaz-system.pl/wsparcie-z-ue/europejski-program-energetyczny-narzecz-naprawy-gospodarczej-eepr/>
- [21] Combines, „Combining energy services with subsidy schemes to finance energy efficiency in Central Europe”, 2013

- [22] European Commission, DIRECTIVE 2009/29/EC, EUR-Lex: Available: <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32009L0029>, 2009.
- [23] Ecologic Institute, "Smart Cash for the Climate: Maximising Auctioning Revenues from the EU Emissions Trading System - An analysis of current reporting by Member States and options for improvement," MaxiMiseR project, December 2016.
- [24] "EU ETS Handbook," European Commission, 2015.
- [25] Forum Energii, "ETS revenues as a source of financing the low-carbon modernization of Poland", 2016
- [26] European Investment Bank, "EFSI Project List," Available: <http://www.eib.org/efsi/efsi-projects/>.
- [27] European Commission, "Commission Staff Working Document on the Implementation of the European Energy Programme for Recovery and the European Energy Efficiency Fund," SWD(2016) 374 final, 2016.
- [28] European Commission, "Indicative Country Strategy Papers 2014 - 2020," Retrieved: 23/04/17, Available: https://ec.europa.eu/neighbourhood-enlargement/instruments/overview_en.
- [29] European Commission , "Neighbourhood Investment Facility - Strategic Orientations 2014-2020," 2014.
- [30] BPIE, "Building renovation strategies under the spotlight," 2016.
- [31] World Bank, "Poland Catching Up Regions Program: EE Diagnostics", 2017
- [32] European Bank for Reconstruction and Development, "Project Summary Documents", Available: <http://www.ebrd.com/work-with-us/project-finance/project-summary-documents.html>.
- [33] European Investment Bank, "Projects", Available: <http://www.eib.org/projects/>.
- [34] World Bank, "Projects & Operations", Available: <http://projects.worldbank.org/>.
- [35] BPIE, "Buildings renovation strategy: road map 2050", Kraków 2015
- [36] WWF, "EU gas Infrastructure and EFSI: time for change," 2017.