iBRoad

Individual Building Renovation Roadmaps

Factsheet: Poland

Current use of EPCs and potential links to iBRoad

Poland's residential buildings accounts for about 67% of the entire building stock. Half of the residential buildings were built before 1980 and the majority of buildings are uninsulated or insulated at sub-optimal levels. The (deep) renovation rate is currently very low. Energy Performance Certificates (EPCs) are mandatory in Poland, yet the share of issued EPCs for the residential stock is about 4%. Energy audits are rarely conducted in single-family houses due to their high cost.

Overview of the building stock

Total building floor area:
1,511 Mm²

Share of residential floor area:
67%

Number of single-family houses:
5 million (about 66% of residential buildings) (2011)

Percentage of buildings built before 1990:
75%

Average residential energy consumption:
212.11 kWh/m² (2014)

Average residential envelope performance:
1.45 W/m²ºC (2014)

Renovation rate:
0.12 (2013)

All data comes from the EU Building Stock Observatory & the Statistics Office

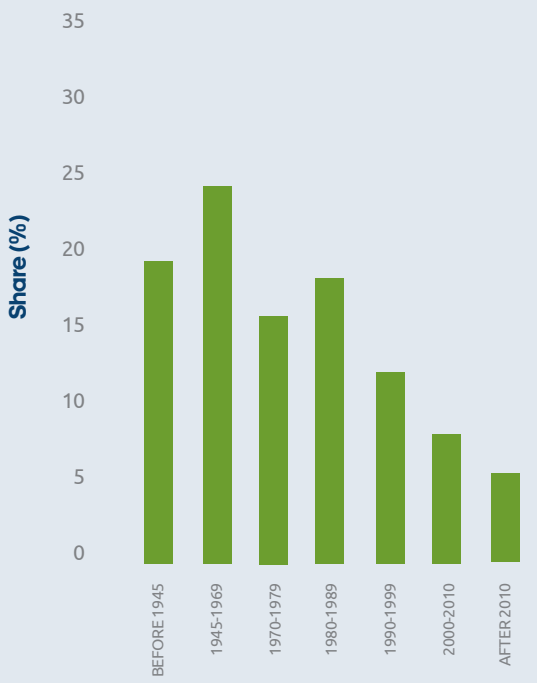

Figure 1: Polish building stock per construction year (Source: EU Building Stock Observatory)

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A decrease in the construction rate of new buildings is observed from 1980 until after 2010 (Figure 1). About 72% of the single-family houses have a low, or very low, energy performance standard [1]. The review of the 'Energy Consumption in Households' shows that the majority of single-and multi-family buildings have no insulation or are only partly insulated. More than 70% of the detached single-family houses have no or inadequate levels of thermal insulation [2]. Most of the buildings without thermal insulation were built before 1989, while only 1% of all houses in Poland can be considered energy efficient and were mainly recently built [2]. The most common heating source is coal, burned in old boilers [2] [3].

Overview of existing policies and financial schemes

The implementation of the Energy Performance of Buildings Directive (EPBD) is addressed by the Polish Government since 2015 through the national Construction Act on the Energy Performance of Buildings [4]. However, energy performance requirements for new buildings were mandatory before the implementation of the EPBD. For single-family houses, the requirements were related to either the thermal insulation of the building's envelope or the building's net energy demand. For multi-family buildings, the requirements were related to the thermal insulation of the windows and the building's net energy demand [4]. Poland introduced energy requirements for cost-optimality calculations in the beginning of 2013 [4].

Three stages of energy renovation have been identified for residential homes in Poland: light, medium and complex [2]. Light renovation includes a replacement of the heat source. The medium renovation comprises heat source replacement and the thermal insulation of windows or the façade. Complex renovations also include the use of renewables and the upgrade of the central heating system. On average, 38,000 annual renovations were carried out between 2006 and 2013 in residential buildings; 84% account for light renovation, 9% for medium renovation and 7% for complex renovation [2].

Most renovations of residential buildings only include the replacement of the heat source or the upgrade of the heating system. These methods result in general on a reduction of around 10% of the final energy demand [2].

Poland is the biggest beneficiary of EU Cohesion Policy Funds and allocates a considerable share to energy efficiency (around €3 billion has been allocated under this heading for the period 2014-2020) [6]. Several financing schemes in Poland are supporting the improvement of energy efficiency in residential buildings. The National Environmental Fund (NFOŚiGW) and the Regional Funds (WFOŚiGW) manage several schemes for residential buildings [2]. The two most important programmes are described below:

The Thermo-renovation and Repairs Fund is administered by the National Economy Bank (BGK), offers grants for the renovation and reparation of existing buildings and targets mostly multi-family and public buildings. The current annual budget is about €49 million. Between 1999 and 2014, a total of €449 million was invested in the renovation of almost 35,000 buildings [2] [7].

RYŚ, Thermo-renovation of Single-Family Residential Buildings is a funding programme administered by the National Environmental fund NFOŚiGW offering grants only for the renovation of single-family buildings. The budget is €95 million for the period 2015-2020, including €29 million of non-refundable forms of support. A reduction of the final energy consumption of 300,000 GJ/year and a reduction of CO_2 emissions of 25,000 tonnes/year should be achieved.

The experts' opinion*

- **The main barriers to energy efficient improvements are: high renovation costs and lack of awareness about the benefits of energy renovations [3].**
- **The average building owner does not have a good understanding of the energy performance of his/her building and doesn't know how to evaluate the energy savings. A visualisation of the energy savings and indoor air quality on the EPC could boost the demand for deep renovations.**
- **The EPC does not play an important role on the decision-making process when buying or renting a house and does not influence the transaction price as the information included in the EPC is unclear for potential investors.**
- **Most experts said that EPCs do not effectively incentivise deep renovation; however, predicting the energy costs after renovation can encourage owners to perform it.**
- **Considering that only 1% of single-family houses have adequate insulation levels, new forms of financing with progressive schemes linking higher grants to higher levels of performance would support deeper renovations [5].**

* based on interviews and feedbacks received from national experts

The implementation status of the EPC

EPCs became mandatory in 2009 for new buildings and existing buildings undergoing major renovations and when selling or renting a house [4].

There are three types of EPCs in Poland: for entire buildings, for apartments and for non-residential buildings [4]. The EPC includes information on the calculated energy performance, fuel consumption, CO_2 emissions and share of renewable energy sources in the final energy consumption (Annex).

The EPC calculation method is based on the national methodology, rooted in EN ISO 13790 and EPBD standards on indoor air quality, thermal comfort for heated and air-conditioned spaces [4]. The Ordinance of June 2014 specifies the basic requirements of the EPC, including a template on cost-effective and simplified recommendations to decrease energy consumption.

The most frequently used software tools to issue the EPC and to carry out the energy audit (beyond EPCs) are the Audytor OZC, the ArCADia Thermo and the BuildDesk Energy Certificate [8] [9] [10]. Simplified calculation tools for home-owners have been developed by manufacturers of building materials [11].

The energy expert should have an engineering degree, have completed a post-graduate course/study in the field of engineering and energy auditing for thermo-modernisation or be a licenced engineer according to the Polish law. The training course or post-graduate study must include 50 hours of training on certification methodology, calculation, regulations and assessment of buildings on thermal protection, HVAC and lighting systems. The central registry of qualified experts can be found on the website of the

Ministry of Infrastructure and Development [4].

The performance methodology of the EPC is clear and objective. The EPC scheme contains useful information for people with relevant knowledge and it is registered by the Ministry of Infrastructure and Buildings. However, the EPC is unreadable for an unexperienced user, the calculation is complicated, there is a lack of clear evaluation of the energy standard (lack of classes) and the data is not credible due to the lack of quality control [12].

FACT BOX
EPCs in Poland

Responsible authority:
The Ministry of Infrastructure and Developments (since October 2014).

Availability of a central registry of EPCs:
There is a central registry of EPCs, but it is not publicly available [4].

Number of EPCs issued:
Not known. However, since EPCs are mandatory for new buildings and considering that approximately 100,000 buildings get a construction permit every year, it can be assumed that between 2009 and 2014 more than 600,000 EPCs were issued [4].

Percentage of buildings with EPCs
Assuming that in 2011, in Poland, there were 6 million buildings, and every year around 100,000 are being built, the percentage of buildings with an EPC on the Polish market is equal to approx. 14%.

Period of validity of an EPC:
10 years

Recommendations included in the EPC:
Yes, but the list of recommendations is not standardised or predefined [4].

Energy label/continuous scale:
Linear continuous scale ranging from 0 to 1,000 (the lower the number, the more energy efficient) [13] [14].

Price range for an EPC:
For single-family buildings: €50-€100.
For apartments: €200-€400.

Median EPC:
Not available

Body responsible for performing quality checks:
There is no effective system for compliance; however, an independent control system of EPCs took place between 2013 and 2014 [14].

Penalties for qualified experts for non-compliance:
Exclusion is the only possible sanction [4]

Number of certified energy experts:
10,593 (2014) [4]

Requirements to become a certified energy expert:
EPCs are issued by an expert who is registered in the official list of experts managed by the ministry.

Indicative cost of training for energy experts:
Since every engineer can automatically be an energy certifier, almost no training is organised.

The experts' opinion

- **The calculations included in the current EPC scheme are complicated and the use of a scale (indicator without classification) does not allow for the determination of the energy class of the building. The introduction of discrete energy classes linked to final or net energy demand, and the estimation of operation costs in comparison to other buildings can contribute to making the EPCs more useful.**
- **The graphic design of the EPC is not always understandable by the user. An improved design of the EPC could make it more user-friendly.**
- **The EPC should also include recommendations on how to improve the energy efficiency of buildings along with a potential calculation of savings.**
- **There are too many licensed people issuing EPCs: this does not allow for a quality control process, and results in low quality outputs.**

Current status of energy audits and potential market for iBRoad

This section concerns is about energy audits and tools, which are not included in the EPC framework. The audit described here is not identical to the energy check needed to issue an EPC

Energy audits are voluntary and rarely performed in single-family houses due to the high cost and the complexity of the relevant documentation [3]. Energy audits are mostly performed in multi-family buildings and are commissioned by housing corporations [12].

Most financing schemes that support the improvement of the energy efficiency of existing buildings require the preparation of an energy audit. The fund for 'thermo-modernisation and repairs' of the Bank Gospodarstwa Krajowego has been a driver for energy audits in multi-family buildings and other housing facilities. The form of the audit is specified in the Regulation of the Ministry of Infrastructure and Development. The energy audit verifies the actual energy savings and helps choose the optimum renovation variant [6].

The Ministry of Environment developed in 2014 a website called 'the house that saves for me' for home-owners including basic information on the energy efficiency of buildings and a simplified calculator for energy savings [4].

The experts' opinion

- Introducing recommendations for deep energy renovation in EPCs would be welcomed as it will provide additional practical knowledge to the investor, under the condition that it won't affect the price of the EPC. In the current EPC scheme, experts often do not provide recommendations and, even if they do, the owner wouldn't know how to implement them.
- People in Poland know what measures would improve the energy efficiency of their houses, but don't know which would be the most cost-effective for them. This disadvantage has a negative impact on the number and quality of renovations across Poland. The tools elaborated during the iBRoad project would be helpful in solving this problem by giving useful information and suggesting step-by-step measures to improve energy efficiency and achieve deep renovation.

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All of iBRoad's reports, analysis and evidence can be accessed from **ibroad-project.eu**.

iBRoad project partners

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Annex

Polish Energy Performance Certificate

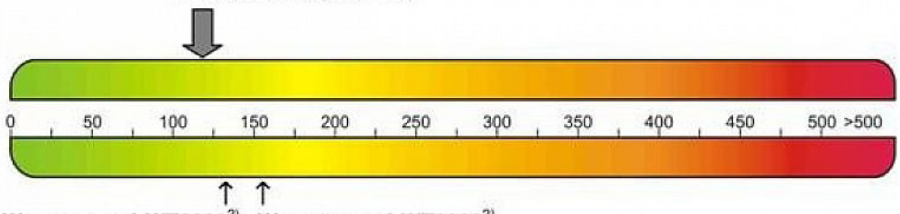
ŚWIADECTWO CHARAKTERYSTYKI ENERGETYCZNEJ
dla budynku mieszkalnego nr .....

Ważne do:

Budynek oceniany:		
Rodzaj budynku		fotografia budynku
Adres budynku		
Całość/Część budynku		
Rok zakończenia budowy/rok oddania do użytkowania		
Rok budowy instalacji		
Liczba lokali mieszkalnych		
Powierzchnia użytkowa (A_t, m^2)		
Cel wykonania świadectwa	□ budynek nowy □ budynek istniejący □ najem/sprzedaż □ rozbudowa	

Obliczeniowe zapotrzebowanie na nieodnawialną energię pierwotną[1)]

EP - budynek oceniany
123,2 kWh/(m^2rok)



Wg wymagań WT2008[2)] budynek nowy

Wg wymagań WT2008[2)] budynek przebudowany

Stwierdzenie dotrzymania wymagań wg WT2008[2)]

Zapotrzebowanie na energię pierwotną (EP)			Zapotrzebowanie na energię końcową (EK)		
Budynek oceniany	**123,2**	kWh/(m^2rok)	Budynek oceniany	**111**	kWh/(m^2rok)
Budynek wg WT2008	**130,0**	kWh/(m^2rok)			