

The labour demand effects of residential building retrofits in Poland

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The aim of the study is to assess labour demand which could be generated by accelerating the pace of thermal retrofit of residential buildings in Poland, and to determine how the additional jobs would affect the situation on regional labour markets.

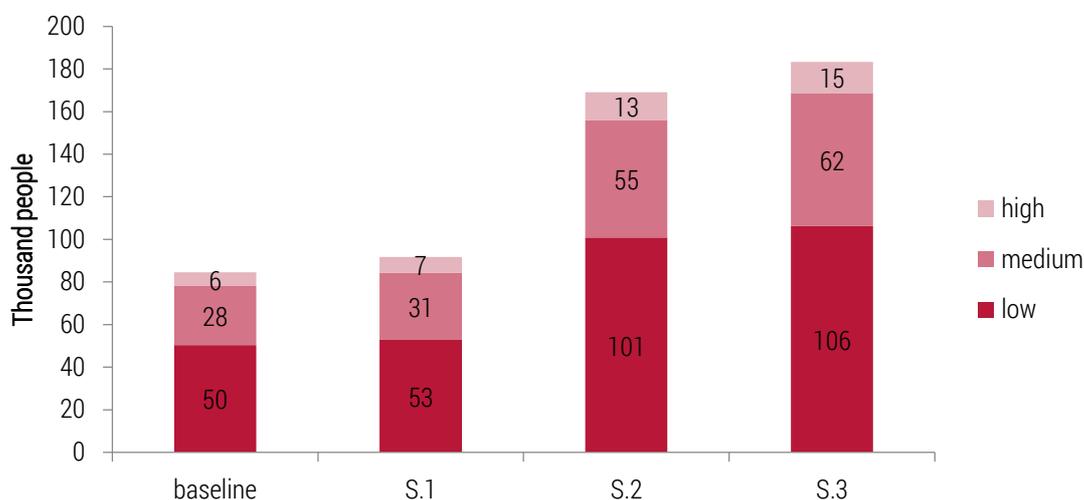
There are several arguments in favour of increasing the pace of for thermal retrofitting of residential buildings in Poland. The building sector is responsible for approx. 90% of benzo(a)pyrene emissions and for approx. 45% of PM10 particulate matter emissions, while old, solid-fuel boilers are used in a majority of the single-family buildings (SFB) in Poland. Increased retrofitting would improve air quality, reduce GHG emissions and alleviate energy poverty. Additional job creation can be a potential *co-benefits* of retrofit interventions which we quantify in this paper.

The methodology of the study differs in several aspects from most previous estimates of this kind, conducted both for Poland and for other European countries. First, our labour intensity data comes from databases employed in the industry itself. Second, we exploit the detailed nature of said data, refraining from approximate values employed in the majority of previous studies. We single out eight model types of residential buildings and estimate the labour inputs are estimated separately for each of them with a bottom-up approach. Third, we use household survey data to estimate the current rate of retrofit measures undertaken with respect to individual types of residential buildings. We use these building-specific rates to define the baseline scenario and put forward three scenarios of its acceleration. Fourth, we combine our assessments of additional labour demand with the labour supply model, and analyse the influence of various energy retrofit scenarios on unemployment at the country and regional (NUTS 2) level, and by qualification level. This is the first such study concerning Poland.

Our results shows that investments in improving energy efficiency of residential buildings in Poland can bring significant benefits for the labour market. In the most ambitious scenario (assuming a two-fold increase of the pace and a comprehensive retrofit in each building), up to 100,000 additional jobs may be created at the country level. About 80% of the demand would be generated by retrofits of single-family buildings. This results from the fact that single-family account for over 93% of the housing stock in Poland. These houses are also more likely to lack any insulation: in 2012, 50% of such buildings were not insulated, compared to less than 40% of multi-family houses.

Most of the additional jobs (57%) would involve people with low qualifications, about one third of the demand includes workers with medium qualifications, while less than 10% of the additional demand would apply to highly qualified workers. This structure of labour demand created by retrofit investments is particularly advantageous in the context of the Polish labour market. Although the average unemployment rate in Poland remains low (6.3% in 2016), it is clearly higher among persons with low qualifications (9.2%).

Figure. Number of retrofitting jobs (annual average for 2017-2021), in particular scenarios, by worker qualification level (thousand)



Baseline – maintaining the past rate of envelope retrofits (insulating walls, roofs, solid ground floors or floors over basements and replacing windows, and the rate of heat system upgrades (replacing boilers, upgrading central heating and domestic hot water systems) is lower by half than the envelope retrofit rate

S.1 – Comprehensive energy retrofitting in each modernised building

S.2 – Doubling the baseline retrofitting rates

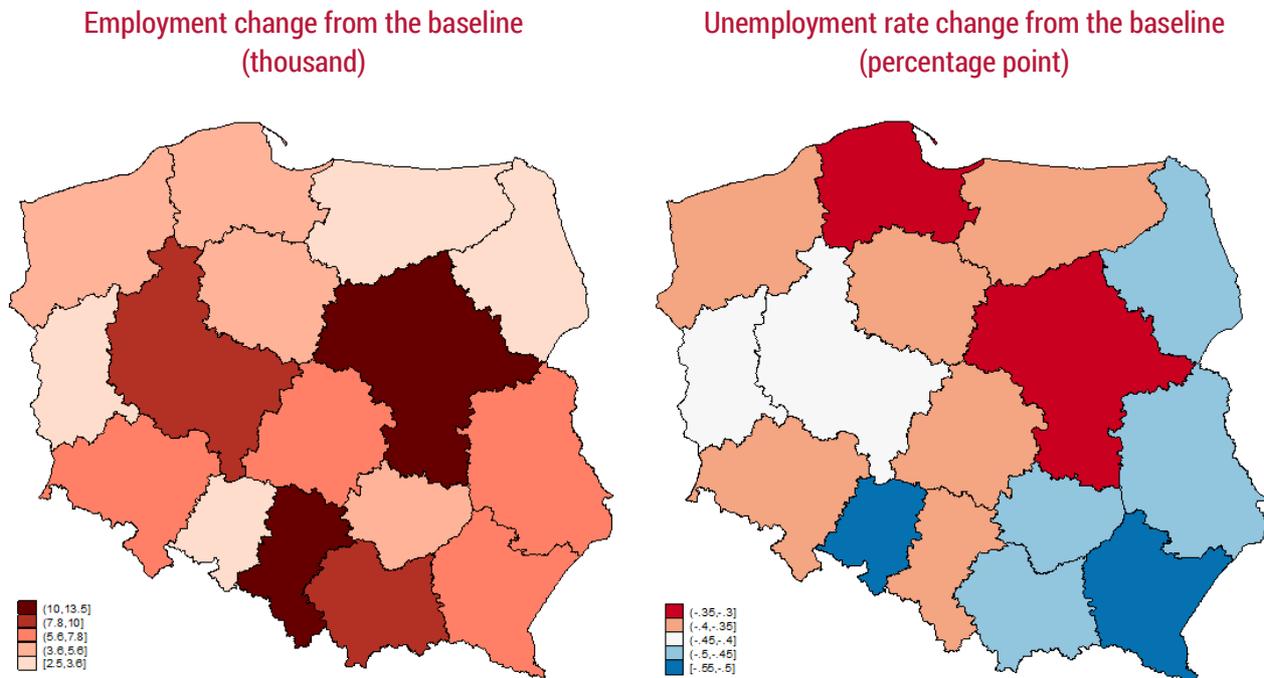
S.3 – Doubling the baseline retrofitting rates + comprehensive energy retrofitting in each modernised building

Source: own calculations.

In the most ambitious scenario S.3, the average annual decrease of the unemployment rate (for the 2017–21 timeframe) would amount to 0.4 percentage point. It would mostly benefit low-skilled workers (unemployment rate would decline by 1.0 pp.), but the situation of medium-skilled workers would also improve noticeably (unemployment rate would decline by 0.6 pp.) and less among the high skilled workers (unemployment rate would decline by 0.2 pp.).

The creation of retrofitting jobs would be the highest in the most populous regions, but the impact on unemployment rate would be the strongest in the less developed voivodships with large shares of single-family homes in total housing stock. In scenario S.3, over 40% of additional jobs would be created in Mazowieckie, Śląskie, Małopolskie and Wielkopolskie Voivodships, while only 12% of additional jobs would be created in Lubuskie, Opolskie, Warmińsko-Mazurskie and Podlaskie Voivodships. On other hand, these poorer voivodships would benefit most in terms of the reduction of unemployment rates. In scenario S.3, in Podkarpackie and Opolskie the fall of the unemployment rate would exceed 0.5 pp., in Podlaskie and Lubelskie it would exceed 0.45 pp. This effect is driven by the high share of single-family, semi-detached or terraced houses. For instance, these houses account for 98% of all buildings in Podkarpackie and Lubelskie.

Effects of the doubling the baseline retrofitting rates and comprehensive energy retrofitting in each modernised building (scenario S.3) on regional labour markets (annual average for 2017-2021)



Source: own calculations.

Our study suggests that investment in improving the energy efficiency of housing stock may have a positive impact on demand for labour, in particular of the low-skilled workers which face the highest unemployment risk. It also supports job creation in less developed regions – areas that are often overlooked in large investment projects of both the private and the public sector. This result further underlines that making up for the neglect in the Polish housing stock may contribute to social cohesion nationwide. Apart from granting individual inhabitants a higher quality of life and decreasing air pollution, it could also improve the situation on local labour markets.

The complete results of our research are published in the article:

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http://ibs.org.pl/app/uploads/2018/04/IBS_Working_Paper_02_2018.pdf