FIVE ECONOMIC REASONS
TO PRIORITISE LOW-INCOME EARNERS IN THE EU RENOVATION WAVE

Ben Quinn

FEANTSA

INTRODUCTION

Boosting the energy efficiency of buildings is crucial for the EU to meet its climate, energy, and air quality goals, necessitating a swift increase in renovation rates. Currently, Europe's buildings contribute significantly to energy consumption and greenhouse gas emissions, accounting for 40% and 36%, respectively, while over 75% of buildings are considered energy inefficient. Inefficient buildings also contribute heavily to air pollution, responsible for over half of the primary emissions of fine particulate matter (PM2.5) – with detrimental impacts on public health.[2] It is estimated that chronic exposure to such pollution leads to 400,000 premature deaths annually in the EU.[3]

The health consequences linked to inadequate buildings result in substantial welfare losses, increased healthcare spending, and diminished productivity, causing economic losses of up to half a trillion EUR annually.[4] In addition to economic impacts, inefficient and polluted buildings have dire social costs. Damp and leaky homes negatively affect educational attainment,[5] labour participation,[6] and contribute to social isolation. In 2022, over 9.3% of the European population, representing 42 million people, struggled to adequately light, heat, or cool their homes, with inadequate housing linked to 100,000 premature deaths annually.[7]

According to a Eurofund study, the economic burden of inadequate housing amounts to over 194 billion EUR per year in public health costs alone.[8] Renovating Europe's building stock, especially considering that 85-95% of these structures will likely still be in use by 2050,[1] is therefore imperative for the region's social, environmental, and economic well-being.

The renovation of Europe's building stock, alongside a transition to 100% renewable energy, offer substantial environmental, economic, and social opportunities, but especially in relation to lower-income groups (here understood as the 20% lowest income decile).[8] Environmental gains include energy savings, reduced greenhouse gas emissions, and enhanced air quality, promoting public health and aiding climate targets. Economically, renovation lowers energy costs, stimulates innovation, bolsters the construction sector, enhances energy security, and generates jobs, potentially creating 760,000 – 1,480,000 positions depending on the level of investment.[9] Socially, energy-efficient buildings contribute to improved well-being, productivity, and reduced energy poverty.

Despite the multiple benefits to be unlocked, currently only 1% of buildings undergo energy efficient renovation every year in the EU. The EU's flagship Renovation wave aims to double this rate to achieve net zero emissions by 2050.[1] However, according to some, this rate would need to reach 3% by 2035 and 4% by 2045 if climate targets are to be achieved.[10]

A multitude of factors are coinciding that are constraining a near-term surge in renovations activity, the nature of which varies depending on national and regional contexts (local refurbishments costs, percentage of low-income homeowners etc). The European construction market continues to grapple with numerous capacity constraints including labour shortages and high material costs. Couple this with several often interconnecting informational, financial, administrative, and behavioural barriers that prevent households from making energy efficiency improvements and we can begin to imagine the scale of the challenge ahead.

Many of these barriers, particularly financial barriers, are of course felt more acutely among low-income households who have very little financial capacity to fund the necessary refurbishments and tend to live in the worst-performing homes. In Flanders for

example, which is a relatively wealthy region in the European context, 47 to 59% of homeowners cannot finance a large-scale energy efficiency renovation with a large part of these owners as much as 50,000 EUR short.[11] Similarly, the percentage of homeowners unable to finance large-scale energy efficiency (combining comfort and energy efficiency) is between 42% and 47% in Brussels, and between 50% and 57% in Wallonia.[11]

To accelerate renovation, Europe relies on the Energy Performance of Buildings Directive (EPBD).[1] Enacted in 2002, this directive outlines guidelines for member states to enhance the energy efficiency of both new and existing buildings, aiming to reduce greenhouse gas emissions, promote energy efficiency, and create a sustainable built environment. After months of Trilogue negotiations, a provisional agreement on the revised EPBD was reached on December 7, 2023. The final step involves the European Parliament and Council voting on the provisional agreement for formal endorsement, with enforcement expected in 2025.

The revised agreement sets a 16% reduction in average primary energy use by 2030 and 20-22% by 2035, 55% of which must come from the reducing energy consumption in the worst performing structures, aiming for net-zero by 2050. Member States (MS) are mandated to meet these targets but have flexibility in choosing which buildings to prioritise and which political measures to enforce. To improve implementation, MS are obliged to devise national Building Renovation Plans focusing on renovation milestones, financing, and securing the availability of skilled workers to complete the renovations. In addition to these plans, MS are required to establish building renovation passport schemes, offering customised roadmaps for specific building renovations in a step-by-step format.[1]

National Renovation plans must also incorporate one-stop shops (OSS) as mandatory indicators, providing integrated solutions and assistance throughout the various steps of an energy renovation. This is particularly crucial for buildings below EPC label C, where MS must ensure homeowners receive renovation advice. This involves inviting them to an OSS either upon EPC expiration or five years after the performance certificate has been issued.[1] In addition to OSS, Member States will also be obliged to provide information pertaining to the total number of 'worst-performing dwellings' in the building stock and along with the percentage of the population affected by energy poverty.

While several positive revisions are welcomed in the Energy Performance of Buildings Directive (EPBD), concerns arise regarding the inclusion of low-income households and renovating the worst-performing dwellings. To ensure the gradual renovation of the Union's least efficient buildings, the EPBD revision outlines that a minimum of 55% reduction in average primary energy use should come from renovating these structures nationally. Importantly, "worst-performing buildings" are defined as those within the 43% lowest-performing segment of the national building stock.[1] Of course, there are significant differences in energy efficiency ratings within this segment.

This broad selection pool for Member States may lead to a focus on "mid-performing" buildings and their shallower renovations, potentially neglecting the deep renovations needed for the leakiest structures and their vulnerable inhabitants.[12]

If we are to achieve the Renovation Wave's key objectives, along with the original role of Minimum Energy Performance Standards to fight energy poverty, address unfit housing, and deliver the needed energy savings and CO2 emissions cuts in the built environment to achieve the EU energy and climate targets by 2030 and 2050, we must guarantee that all households, including low-income households, have the capacity to participate in the renovation wave. Ensuring that the most vulnerable groups are the priority beneficiaries of financial support will be key to achieving these objectives. What's more, it also makes most fiscal sense, with a two EUR return on health costs per year for every three EUR invested in renovating the worst performing dwellings.[8] Given that the health cost savings continue to accrue beyond the first

year, this equates to return on investment after 1.5 years.

EU renovation funding should incorporate social conditions to guarantee that a fair portion of financing is ring-fenced for the lowest-income groups. The poorest 10-30% of households should qualify for 100% coverage of energy efficiency renovation costs, provided upfront rather than through reimbursement. Additionally, the funding available to households should be tailored to accommodate variegated income levels, decreasing as income levels rise to ensure the most effective distribution of finance.

There is, however, currently a sever lack of public funding to improve the energy efficiency of the worst-performing stock to an acceptable level. The worst performing dwellings, which are mostly inhabited by low-income households, are simultaneously unattractive to private finances (indicating the limitations of market-based solutions) and excluded from mainstream public funding sources (owing to for example eligibility criteria, post-financing mechanisms, or that households are seriously under consuming or rely on solid fuels, thus they cannot benefit from on-bill financing).

Given that there are no strict conditionalities in current energy efficiency funding schemes, these are often used for sectors other than the residential stock or frequently arrive to middle and upper classes, due to post-financing schemes and the temptation to pick the lowest hanging fruits e.g. mid-performing buildings.

While the current low renovation rate in Europe cannot be solely attributed to financial factors, as numerous causal factors intersect, including technical, administrative, bureaucratic, cultural, behavioural, legal, and informational aspects, addressing financial barriers is essential. The success of the EU Renovation Wave will largely depend on ensuring that households, particularly those with limited means, have sufficient financial resources for the required refurbishments. Reducing the disproportionate impact of financial barriers on low-income households is a key point of intervention to ensure that the rhetoric of leaving no one behind becomes a reality.

A broader inclusion of energy efficiency related co-benefits in decision making is crucial to accelerate the renovation wave. Although the literature related to co-benefits is growing, there are few examples that specifically focus on the economic co-benefits to be derived from focusing on fuel poor-households, who tend to live in the worst-performing dwellings.

Against this backdrop, this short article will outline five key economic arguments for prioritising low-income households and the worst-performing stock in public funding mechanisms related to the Renovation Wave. Including, health cost savings, fuel subsidy cost savings, economic benefits for energy providers, improved education outcomes and their impact on macro-economic well-being, and finally job creation and productivity gains.

THE FIVE REASONS:

1. HEALTH COST SAVINGS

2. FUEL SUBSIDY COST SAVINGS

3. BENEFITS FOR ENERGY PROVIDERS

4. IMPROVED EDUCATIONAL OUTCOMES AND ECONOMIC WELL-BEING

5. JOB CREATION AND PRODUCTIVITY GAINS

CONCLUSION

END-NOTES

1. HEALTH COST SAVINGS

With Europeans spending more than 90% of their time indoors,[14] both the residential and non-residential buildings surrounding us are crucial yet often overlooked determinants of health. The built environment influences our well-being, albeit unequally, through a range of factors including inadequate ventilation, poor indoor air quality, chemical contaminants from both outdoor and indoor sources, temperature extremes, exposure to noise pollution, and poor lighting.[15]

The effects of living in energy-inefficient (e.g., unhealthy) buildings can be divided into health impacts leading to a higher risk of mortality and increased morbidity rates. Respiratory and cardiovascular diseases, indoor air pollution-related illnesses, deaths from temperature extremes, and an increased prevalence of mental health issues are among the consequences.[15]

Household air pollution is currently one of the top ten risk factors for diseases including pneumonia, COPD, ischemic cardiovascular and cerebrovascular diseases, lung cancer, and cognitive decline, which may cause a heap of both social and health burdens all over the world. Furthermore, a consistent association exists between dampness and mould in indoor environments and respiratory symptoms, with people living in unhealthy buildings 40% more likely to suffer from asthma.[14] The annual financial cost linked to asthma and chronic obstructive pulmonary disease for European societies stands at a considerable 82 billion EUR.[14] Solid-fuel heating, being by far the most polluting method of domestic heating, is particularly detrimental to human health, with a US study finding that indoor wood burning raises women's risk of lung cancer by 43%.[37] The use of solid-fuel heating in the European context is more prevalent in Central and Eastern European countries, mainly attributable to higher levels of fuel poverty. Low-income households are once again disproportionately impacted with as much as half or even more in some instances relying on solid fuels to heat their homes.[38]

Substandard housing conditions heighten the likelihood of severe health issues or disability by as much as 25% in childhood and early adulthood.[15] Contravening the fundamental right of every child to an adequate standard of living necessary for their physical, mental, spiritual, moral, and social development, as acknowledged in Article 27 of the United Nations Convention on the Rights of the Child (CRC).[16]

Inefficient buildings can also negatively impact mental well-being, causing stress, anxiety, and depression due to chronic discomfort, high bills, lack of affordable warmth and thermal com-

fort, fear of debt, a sense of lacking control, and unpleasant living conditions leading to social isolation.[17]

In 2016, the World Health Organisation attributed 556,000 premature deaths in Europe to the effects of household and ambient air pollution, including indoor pollution, the latter responsible for the loss of 2 million healthy life years annually in the European Union.[18]

The disproportionate impact on low-income households not only worsens existing health and socio-economic disparities but also results in considerable health costs, exceeding 194 billion EUR annually in the EU.[8]

While it's difficult to arrive at an exact figure, the total monetised environmental, social, and economic benefits of making Europe's buildings energy-efficient are estimated at up to 291 billion EUR per year.[9] Implementing the Energy Performance of Buildings Directive (EPBD) alone is estimated to result in health cost savings of up to 925.9 million EUR per year between 2020-2030.[19]

Focusing on delivering warm, dry homes with clean heating options and addressing fuel poverty in renovation interventions can yield the greatest health cost benefits. A study using data from New Zealand's Warm Up NZ: *Heat Smart* program evaluation demonstrated significantly higher monetised benefits to be derived from energy efficiency improvements in households with low to modest incomes—amounting to USD 519 per year post-retrofitting, in contrast to the USD 183 for higher-income families.[23] In this instance, the majority (99 per cent) of the measured net benefit is a result of the improved health outcomes associated with drier, warmer more comfortable homes.[23]

Furthermore, renovating the 10% worst-performing dwellings across the EU has been shown to have the highest potential for cost savings.[8] Renovating all 'severe inadequacies' in the dwelling stock to an acceptable level, representing the 10% worst-performing dwellings, would cost the EU nearly 300 billion EUR. Return on this initial investment, deriving mainly from the absence of medical costs resulting from housing inadequacies, are estimated at just under 200 billion EUR annually for the 28 EU Member States. If we consider that the health benefits of building improvements extend beyond the first year, for every 3 EUR invested in reducing housing hazards, 2 EUR are saved in medical costs, equating to an average payback period of 1.5 years.[8]

While the payback period varies across Member States, ranging from 23 years in Sweden to under one year in Greece (depending among other things on the proportion of dwellings that are 'worst performing' and the average cost of unit repair),[8] prioritising the renovation of the worst-performing dwellings is not only the most effective way to reduce fuel poverty but also produces the greatest cost savings in terms of societal medical costs at the EU level.

2. FUEL SUBSIDY COST SAVINGS

In 2022, 9.3% of the European population were unable to keep their homes adequately warm with detrimental social, environmental, and public health impacts.[7] Furthermore, 7% of the European population had arrears on their utility bills and 15% lived in inadequate dwellings with effected by leak, damp or rot[7]. Energy poverty is produced by a combination of low income, poor housing quality and high energy costs, as well as market volatility and factors attributable to general poverty, disproportionately impacting the poorest segment of the European population who spend the greatest proportion of their expenditure on energy.[39]

Within the context of the Russian invasion of Ukraine and the subsequent spike in energy prices, governments around the world have deployed a range of policies to mitigate fuel poverty, including support payments for fuel costs, social tariffs on energy prices, grant programs for expenses related to energy efficiency upgrades, and, to a limited extent, free retrofit programs for low-income households.[21]

The recent energy crisis, however, has indicated a tendency for governments to shield consumers from detrimental price impacts at the expense of commitments to phasing out subsidies. This was particularly evident in 2022, leading to a sharp increase in fossil fuel consumption subsidies and other measures to reduce energy bills for end consumers. Interventions on the demand side involved actions such as reducing VAT on electricity bills (e.g., from 21% to 6% in Belgium) and guaranteeing a “vital minimum supply” for utilities, as enacted in Spain from September 2021, ensuring vulnerable households would receive electricity supply for a 10-month period.[21]

Despite these measures being frequently defended as social or political necessities, given the hardship that full exposure to market-driven prices could have caused, it is important to consider the broader implications relating to the phasing out of fossil fuels, as well as the actual effectiveness in targeting those experiencing fuel poverty, of artificially maintaining the affordability of fossil fuels.

Across the EU additional spending to reduce energy bills amounted to 330 billion EUR in 2022, representing a significant fiscal burden for governments.[20] To put this into context, this is 30 billion EUR more than the estimated 300 billion EUR it would cost to improve to the 10% worst performing stock across Europe to an acceptable energy efficiency level.

Such heavy subsidisation is not only unsustainable from a pub-

lic-finance perspective,[40] moreover, these interventions tend to benefit better-off segments of the population rather than effectively protecting vulnerable groups. They also risk diminishing incentives for energy efficiency or transitioning to cleaner fuels, as concerns about affordability may divert attention and resources away from clean energy initiatives. Notably, only about one-third of the 651 billion EUR spent on energy subsidies in the EU from the beginning of the energy crisis in September 2021 to January 2023 was targeted to the poorest households,[40] the majority of which was dedicated to emergency support (fuel subsidies) rather than reducing energy consumption, subsidising (mostly) fossil fuel consumption in the process.[13,20]

To effectively tackle fuel poverty, resources are best directed towards promoting changes that provide lasting protection against

330 BILLION PAID
in energy bills subsidies

VS.

300 BILLION NEEDED
to improve the 10% worst perfoming housing stock

volatile fuel prices while contributing to a clean energy transition. Programs focusing on the energy efficiency retrofitting of low-income housing have proven to deliver the greatest economic benefits in this regard, with health improvements constituting up to 75% of the total return on investment for these interventions.[21] Until the benefits of energy efficiency reach the most vulnerable households, energy bill subsidies, however, remain necessary in the short to medium term. To shield the most vulnerable households from full exposure to volatile market prices and likewise to avoid subsidising the CO^2 rich, these subsidies must be strictly targeted to low-income groups. Although low-income households consume less energy in absolute terms than higher income groups, they typically spend a larger proportion of their income on energy bills relative to higher-income households. Studies show that targeted energy efficiency policies yield more substantial energy savings for low-income families. Targeting energy efficiency measures specifically for the poorest households (lowest 20% decile), could lead to the share of overall consumption spent on energy to decrease from 7.2% to 5.9% by 2030, compared to a reduction from 4.5% to 3.7% for the richest households.[22]

'...about one-third of the 651 billion EUR spent on energy subsidies in the EU from the beginning of the energy crisis in September 2021 to January 2023 was targeted to the poorest households,

the majority of which was dedicated to emergency support (fuel subsidies) rather than reducing energy consumption, subsidising (mostly) fossil fuel consumption in the process.'

In summary, energy efficiency retrofits of low-income housing present the most economical and lasting solution to the problem of energy poverty. That said, the capacity of energy efficiency measures to alleviate energy poverty is dependent on several important social conditionalities, above all else explicitly targeting the lowest income and fuel-poor households. In relation to the EPBD, studies show that the number of households that may be lifted from energy poverty across the EU is proportionate to the degree to which policy is targeted to energy poor households. In a low-impact scenario, where policies are less targeted to energy poor households, it is estimated that between 194,000 and 310,000 households could be lifted from energy poverty. On the other hand, in a high-impact scenario where policies are more precisely directed at energy poor households, the potential positive effect increases significantly. In this case, studies suggest that the number of households lifted from energy poverty could range from 5.17 million to 8.26 million across the EU. This emphasises the importance of a focused and targeted approach in policy design to maximise the impact on alleviating energy poverty at a broader scale.

3. BENEFITS FOR ENERGY PROVIDERS

Investing in energy efficiency, especially in low-income households, can also lead to direct financial gains for energy providers.[24] While it might seem counterintuitive for energy suppliers to actively reduce energy demand through efficiency measures—essentially selling and distributing less of their primary product—offering energy as part of an energy service presents a potentially profitable business avenue. This is particularly relevant given the global rise in energy demand and increasing concerns about energy security, as we saw so clearly in Europe in recent times.

The dramatic increase in energy bills across Europe in 2022, owing to Russia's full-scale invasion of Ukraine, saw an increase in the percentage of households with arrears on utility bills. A Eurofound study revealed that 16% of people in the EU reported being in arrears on their utility bills, with the number rising to 50% in Greece in 2022.[44] Although the Eurofound study was self-reported, this compares to an average of 6.2% of the EU reporting arrears on their utility bills in 2021.[45] In the Netherlands, for example, arrears increased from 1.2% in 2021 to a record high of 3.9% in 2022, marking the highest level since the European Commission initiated tracking these statistics in 2005. Similarly, the UK experienced an increase from 4.7% to 7.1%, while Germany saw a rise from 2.4% to 4.0%.[46]

Reducing the level of arrears on utility bills is particularly important for the financial viability of utility providers. Energy debt reached its highest ever level in the summer of 2023 - amounting to 2.6-billion-pound sterling in the UK for example, resulting over 30 suppliers going out of business [41] – owing to a rise in wholesale energy prices and the wider cost of living crisis. As is often the case, utility providers recoup these losses through the pricing of their services, resulting in temporary increases in consumer bills proportionate to the level of customer debt. The losses associated with bad debt are therefore paid for by those who can least afford it, reducing household expenditure for essential goods and services even further, and leading to unsafe levels of energy expenditure in low-income households to reduce energy bills.[41]

By reducing energy consumption, improvements in energy efficiency make gas and electricity bills more affordable for households. This financial relief for customers results in several co-benefits for energy providers, including lower costs related to billing arrears, reduced spending on notices and collection agencies, lower credit management costs, fewer bad debt write-offs, and fewer service disconnections due to non-payments.[17] These positive impacts are particularly noticeable among low-income

‘Energy debt reached its highest ever level in the summer of 2023 - amounting to 2.6-billion-pound sterling in the UK for example, resulting over 30 suppliers going out of business.’

customers who often face challenges in managing their energy bills. Energy efficiency programs targeted at these households have been shown to decrease customer default rates by 25% or more.[24] Furthermore, a study conducted in Cincinnati low-income weatherisation program (many of the empirical studies are from the United States) reported a reduction of over 60% in the average arrears of 2,400 participating households following energy efficiency improvements.[25]

Similarly, evaluations of the US Weatherisation Assistance Program (WAP) found a significant decrease in the percentage of households encountering difficulties in paying their bills, dropping from 75% to 58%.[17] The disconnection rate was halved, and the percentage of those paying less than the full bill amount decreased from almost half to just over one-third.[17]

In short, investing in energy efficiency, especially in low-income households, not only reduces energy bills and overall households’ energy consumption but also brings potential financial benefits for energy providers.

4. IMPROVED EDUCATIONAL OUTCOMES AND ECONOMIC WELL-BEING

A growing body of empirical evidence shows quite clearly that energy poverty has a detrimental impact on educational attainment, correlating to fewer years spent in school, increased drop-out rates, and overall decreased academic achievement relative to those from fuel secure households, with negative repercussions for earning capacity later in life.[26]

Although energy poverty disproportionately impacts low-income segments of society, income levels are not the only predictive factor. There are several additional factors that intersect to produce energy poverty, including housing condition, owner or renter status, educational attainment, labour force status, heating system efficiency, fuel cost and various socio-demographic and geographic factors. Tackling energy poverty will therefore require a multifaceted approach.[26]

That said, the location and condition of a child's house correlates closely to their physical, cognitive, and emotional development, which in turn directly impacts their educational outcomes.[27] Concrete evidence exists that demonstrates how healthy homes play a crucial role in decreasing absenteeism from school and work.[17] Inadequate housing conditions, including issues like roof leaks and broken heating, ventilation and air conditioning systems (HVAC), are associated with negative impacts on adolescent math and reading skills.[28] The causal link between educational outcomes and building condition is particularly evident in efficiency retrofit programs, which have been shown to improve respiratory health in child occupants, resulting in a significant reduction in school absences.[29] Notably, a 15% decrease in school absenteeism has been observed among children in homes that underwent energy efficiency upgrades.[30]

Whether people live in an overcrowded home is another important element of determining housing condition. In Europe in 2022, almost 17% of the population were living in such a home, with the highest rates observed in Latvia (41.7%), Romania (40.5%) and Bulgaria (36.2%), and the lowest in Cyprus (2.2%), Malta (2.8%) and the Netherlands (2.9%).[42] Studies show that adolescents living in overcrowded conditions are less likely to graduate from high-school by age 19 and are more likely to have fewer years of educational attainment by 25 relative to peers living in non-crowded conditions.[43]

The correlation between housing conditions and educational outcomes can largely be attributed to the negative health impacts associated with poorly insulated and inadequate dwellings, which in turn results in more days out of school due to illness and impaired cognitive and behavioural functioning.[27] Poorly insulated homes can also lead to thermal discomfort and reduce the capacity of children to engage effectively in educational activities. In addition to negative health impacts, families in fuel poverty often face the difficult choice between allocating limited funds to cover energy costs or other essential expenses, such as food e.g. 'heat or eat dilemma'. This financial strain can impact a family's ability to invest in educational opportunities or extracurricular activities that enhance a child's learning experience. Energy poverty also increases the risk of electricity disconnection, resulting in an environment inconducive to learning through, for example, insufficient lighting.

Educational attainment correlates strongly to earning capacity and labour participation later in life, being a key variable in generational economic mobility.[31] Across all EU28 Member states, albeit with significant differences between countries, income levels increase proportionately as education levels rise.[32] In Belgium for example, the average income for persons with primary education as of 2024 is 21,438 EUR, increasing by 35% to 29,032 EUR for persons with upper-secondary and non-tertiary post-secondary education, and by 64% to 35,236 EUR for those with tertiary education.[32]

Educational attainment level is also associated with a higher risk of unemployment. On average in Europe, the unemployment rate of persons with low qualifications (primary level, lower secondary) is 2.1 times that of persons with intermediate qualifications (upper secondary) and 3.3 times that of persons with tertiary qualifications (third level).[33]

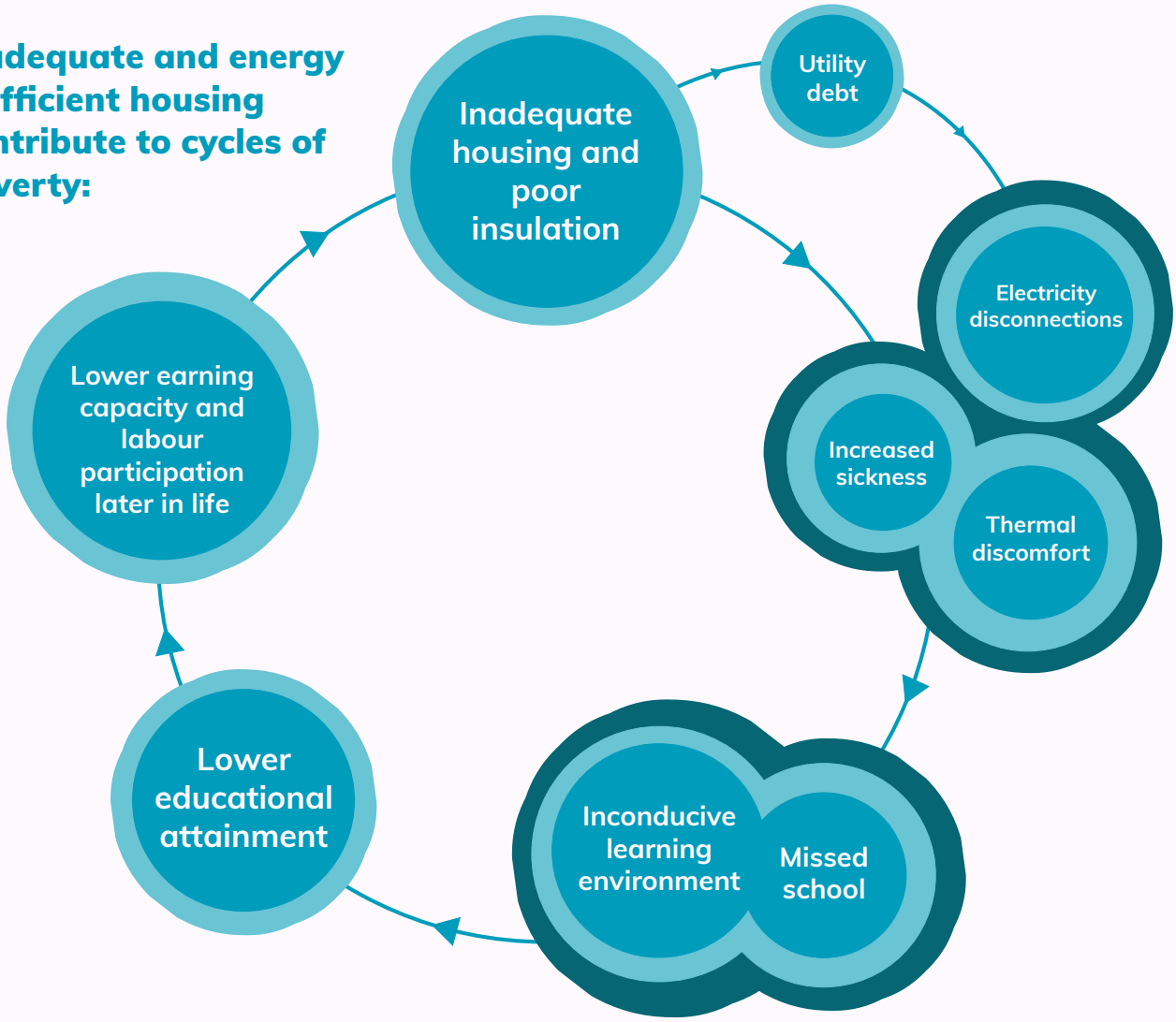
Energy efficiency improvements in the residential stock, along with more general improvement of housing conditions, offer a key point of intervention to reduce education inequalities and enhance the economic prospects of disenfranchised groups.

In addition to individual gains, educational quality and achievement have long been recognised as an important determinant of both national and EU level economic well-being and social

cohesion.[34] In rudimentary terms, the macroeconomic literature emphasises three key mechanisms in which education impacts economic growth. Firstly, as a component of the labour force and factor of production, it contributes to overall production and boosts GDP through increasing aggregate economic inputs. Secondly, education fosters innovation, leading to the development of new technologies and products, fuelling faster economic growth. Lastly, education facilitates the diffusion and transmission of knowledge, supporting the understanding and implementation of new technologies, further promoting economic advancement.[34]

While it's challenging to precisely measure the monetary returns on education investments and improved educational standards, studies show that a 25-point increase in education achievement of all 15-year-old students across the EU, based on the Programme for International Student Assessment (PISA), could potentially contribute 71 trillion EUR to the present value of EU GDP compared to the current situation (based on 2019 figures).[34] In comparison, the more modest EU objective of reducing low achievement to 15 percent by country would have a lesser impact, amounting to only 5 trillion EUR.[34]

Inadequate and energy inefficient housing contribute to cycles of poverty:



5. JOB CREATION AND PRODUCTIVITY GAINS

And finally, investments in energy efficiency, help to stimulate the economy through both job creation and productivity gains.[35] Depending on the levels of investment, increasing building renovations could create between 760,000 – 1,480,000 new jobs. It is estimated that for every one million EUR invested in the energy renovation of buildings 18 local, long-term jobs in the EU are generated. The specific number of jobs created per one million EUR investment varies across the EU based on national circumstances and employment costs, for example, in Croatia 29 jobs are estimated to be created, Estonia (17 jobs), Finland (16 jobs), Italy (15 jobs), and Spain (18 jobs).[47]

Upwards of 75% the jobs created are expected in the construction sector.[9] Given that small and medium-sised enterprises (SMEs) constitute 99% of construction companies in the EU and contribute to 90% of sector employment,[1] a boosted renovations market is likely to primarily benefit these enterprises. Consequently, many new jobs will be created at the local and regional levels, a scenario that is especially beneficial for low-income segments of the population.

What's more, relative to many other sectors, energy efficiency generates more employment opportunities for workers without higher education.[19] For instance, studies show that when compared to the fossil fuel and utility sector, a higher percentage of jobs are available to low-skilled workers (48% compared to 42%).[19] Energy efficiency programmes also generate more employment opportunities with above-average earning potential for low-skilled workers (29% compared to 13% in the fossil fuel sector).[19]

According to the American Council for an Energy Efficient Economy, the average wage in this sector surpasses the national median by 4,900 USD. Notably, 75% of employees in clean energy have middle-wage employment, a significant contrast to the national median where only 20% fall into this category.[19]

Through the creation of employment opportunities, particularly for low-income segments of the population, investments in energy efficiency can have a substantial positive effect on fiscal budgets, such as a reduction of unemployment and social benefits, and increased income taxes.[35]

The improved occupant health, well-being and living comfort to be derived from energy efficiency improvements of residential buildings can also have positive employment effects related to productivity and reduction in work absenteeism.[36]

In a study that examined the effect of high-efficiency buildings on health and labour productivity outcomes in Germany and Hungary it was found that German workers stand to gain 5.2 productive days per year, and Hungarians 2.2 days, by avoiding sick days through the experience of living in high-efficiency buildings.[36] Through high-efficiency retrofits in the tertiary building sector (businesses, commercial real estate, public buildings, hospitals, etc), German and Hungarian workers can gain 2.4 and 1 productive days a year, respectively, again by reducing illness related time off work. The cumulative monetary value of these gained days is substantial, reaching up to 337 million EUR per year from the residential building sector alone in Germany, with an additional 398 million EUR from the tertiary building sector. In Hungary, the figures stand at 7 million EUR from residential buildings and 3 million EUR from the tertiary sector. If these cost savings were ring-fenced for energy efficiency improvements, comprising insulation, installation of windows and heat-pump, they could finance the renovation of just under 300 buildings. In addition to reduced absenteeism, the avoidance of mental stress can result in significant financial gains for the workforce. In Germany, this translates to a potential 95 million EUR per year, while in Hungary, it amounts to 2 million EUR, reflecting the positive impact of working in high-efficiency tertiary buildings on overall work performance.

Of course, the fiscal benefits of employment creation and productivity gains can only be realised if the current labour shortages in the construction sector across the EU, especially in relation to energy-efficiency retrofitting, are tackled. To realise the ambitious EU renovation wave targets it is estimated that 35 million buildings will need to renovate by 2030, creating at least 7 million job openings over that period, many of which will be in the construction sector.[48]

At the same time vacancies in the construction sector have been steadily growing over the last decade. According to employment projections, "employment in the construction sector is expected to decrease by around 1% between 2021-2035".[48] In the Netherlands, for example, 27,000 positions remained unfilled in the construction sector in the last quarter of 2022. And in Spain, it is estimated that as much as 500,000 workers are needed in the sector in the short

'Through the creation of employment opportunities, particularly for low-income segments of the population, investments in energy efficiency can have a substantial positive effect on fiscal budgets, such as a reduction of unemployment and social benefits, and increased income taxes'

and medium term to meet demand for energy-efficiency renovation.[48]

The availability of skilled labour, particularly plumbers, electricians, carpenters and insulation operatives, to carry out these retrofits is therefore among the biggest barriers to meeting renovation targets. Consequently, there has been increased, and very much needed, emphasis on the specific skills needed in sustainable new construction and the retrofitting of homes, along with the delivery of retrofitting courses and upskilling and re-skilling of workers.

Although addressing skill shortages are essential, skills mismatches are only one – albeit important – contributing factor behind the lack of labour supply. The persistent labour shortage in the construction sector is a multifactorial issue which includes economic, social, and demographic factors that differ depending on the national, regional, and local context. The European Labour Authority has identified several causal factors including, the structural changes to the economy, technological change, gender imbalances in a historically male dominated industry, the transition to a climate-neutral economy, population ageing, terms and conditions of employment or employers' and workers' preferences.

Reversing the tide on labour shortages in the construction sector will be a crucial element in building the infrastructural capacity needed to renovate the European residential building stock and, to realise the many co-benefits for low-income households and the fiscal budget alike.

CONCLUSION

To quickly conclude, prioritising the worst-performing stock and low-income earners in the EU Renovation Wave is not only an environmental imperative but the most effective and economic way to realise the multiple co-benefits of energy efficiency. This article has presented five key arguments for prioritising low-income households and the worst-performing buildings.

Firstly, focusing on renovating the 10% worst-performing dwellings can lead to substantial health cost benefits, with a potential payback period of 1.5 years and significant savings, particularly for the EU's most vulnerable populations.

Secondly, tackling fuel poverty directly through energy efficiency measures can result in significant savings compared to interventions on energy bills, which have amounted to 330 billion EUR in 2022 alone. Redirecting resources towards energy efficiency retrofits of low-income housing, specifically the 10% worst-performing dwellings, presents an effective, lasting solution to energy poverty.

Thirdly, and albeit counter-intuitively, energy providers stand to gain financially from reduced energy consumption, translating into lower billing arrears, reduced credit management costs, and enhanced customer relations, particularly among low-income customers. Reducing energy disconnections, in addition to obvious benefits for end users, can limit the associated reputational damage for energy providers; an important factor to consider in a competitive market.

Fourthly, targeted energy efficiency interventions of inadequate dwellings have significant capacity to improve health with important repercussions for educational achievement and earning capacity in later life. In addition to enhancing economic prospects for marginalised communities and individuals, the improved educational outcomes to be realised through improved housing conditions have wider implications for public expenditure at the national and European level.

Finally, investments in energy efficiency, especially when socially targeted, can stimulate the economy by creating new jobs and increasing productivity through improved health. Crucially, energy efficiency offers greater employment opportunities for well-paid jobs for low-income segments of the population. Investments in energy efficiency can therefore have a substantial positive effect on fiscal budgets, such as a reduction of unemployment and social benefits. Furthermore, energy-efficient buildings contribute to improved occupant health and productivity, reducing sick days. If socially targeted this could improve labour participation and productivity among low-income earners with positive implications for the wider economy.

In essence, prioritising energy efficiency renovations for the most vulnerable populations and the least efficient buildings is not only a socially responsible choice but an economically sound strategy with far-reaching positive impacts on public health, education, employment, and fiscal budgets. The potential returns, both in monetary, environmental, and societal terms, highlight the urgency and significance of advancing the Renovation Wave with a clear focus on inclusivity and environmental justice.

END NOTES

1 Council of the European Union. Proposal for a Directive of the European Parliament and of the Council on the energy performance of buildings (recast). 14 December 2023. https://www.consilium.europa.eu/en/press/press-releases/2023/12/07/fit-for-55-council-and-parliament-reach-deal-on-proposal-to-revise-energy-performance-of-buildings-directive/

2 European Environment Agency. Emissions of the Main Air Pollutants in Europe. 12 Sept 2023. Emissions of the main air pollutants in Europe (europa.eu)

3 European Environment Agency. The Air Quality in Europe Report Series. 2020. Air quality in Europe - 2020 report — European Environment Agency (europa.eu)

4 OECD and European Union. Health at a Glance: Europe 2020: State of Health in the EU Cycle, OECD Publishing, 2020, Paris, https://doi.org/10.1787/82129230-en

5 Howden-Chapman, P., et al. Tackling cold housing and fuel poverty in New Zealand: A review of policies, research, and health impacts. Energy Policy, vol. 49, Elsevier Ltd., 2012, pp. 134-142, www.sciencedirect.com/science/article/pii/S0301421511007336.

6 Chapman, R., et al. Retrofitting housing with insulation: A cost benefit analysis of a randomised community trial. Journal of Epidemiology and Community Health, vol. 63, no. 4, BMJ Publishing Group Ltd., 2009, pp. 271-277, www.ncbi.nlm.nih.gov/pubmed/19299400

7 EURtat. 9% of EU Population Unable to Keep Home Warm in 2022. 11 September 2023, News Article. 9% of EU population unable to keep home warm in 2022 - EURtat (europa.eu)

8 Eurofund. Inadequate Housing in Europe: Costs and Consequences, Publications Office of the European Union, 2016, Luxembourg. DocHd-I2OnPN-PRINTRDY-01tmpTarget (europa.eu)

9 Shnapp, S., Paci, D., & Bertoldi, P. Untapping Multiple Benefits: Hidden Values in Environmental and Building Policies, EUR 30280 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19983-0, doi:10.2760/314081, JRC120683

10 BPIE (Buildings Performance Institute Europe). The Make-or-Break Decade: Making the EPBD Fit for 2030. 2021, https://www.bpie.eu/publication/the-make-or-break-decademaking-the-epbd-fit-for-2030/

11 Albrecht, Prof. Dr. J., and Hamels, S. (2020). The Financial Barrier to Climate and Comfort Renovations. Brussels: Agoria. https://www.agoria.be/en/services/expertise/green-transition/climate-neutral-construction/the-financial-barrier-to-climate-and-comfort-renovations

12 Climate Action Network Europe (CAN). November 2023. Social Safeguards are the Cornerstone of a Bold and Fair Buildings Directive. https://caneurope.org/social-safeguards-epbd/

13 Bajomi, Anna, et al. The People Behind the Buildings: Why We Must Get It Right in the EPBD. Euractiv, 12 May 2023, https://www.euractiv.com/section/energy/opinion/the-people-behind-the-buildings-why-we-must-get-it-right-in-the-epbd/.

14 Fraunhofer. Healthy Homes Barometer: Buildings and Their Impact on the Health of Europeans. 2017. https://www.researchgate.net/publication/317256481_Healthy_Homes_Barometer_2017_-_Buildings_and_Their_Impact_on_the_Health_of_Europeans

15 Health and Environment Alliance. Healthy buildings, healthier people. 2018. https://www.env-health.org/healthy-buildings-healthier-people/

15 United Nations. Convention on the Rights of the Child. Article 27. Adopted 1989. https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child

16 Payne, C., et al. Capturing the 'Multiple Benefits' of Energy Efficiency in Practice: The UK Example. ECEEE, London, 2015. https://www.energysavingtrust.org.uk/sites/default/files/reports/1-424-15_Payne.pdf

17 World Health Organisation. "United Nations agencies urge Europe's action on 1.4 million annual deaths from polluted environments." 2019.

18 European Commission. The Macroeconomic and Other Benefits of Energy Efficiency. Contract no. ENER/C3/2013-484/03/FV2015-523. https://energy.ec.europa.eu/system/files/2017-02/final_report_v4_final_0.pdf

19 IEA. Fossil Fuels Consumption Subsidies 2022. International Energy Agency, Paris, 2023, https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022.

20 Grimes, A. et al. "Cost Benefit Analysis of the Warm Up New Zealand: Heat Smart Program," 2011, www.motu.org.nz/files/docs/NZIF_CBA_report_Final_Revised_0612.pdf.

21 Coalition for Energy Savings. 2030 EU Energy Efficiency Target: The Multiple Benefits of Higher Ambition. https://www.camecon.com/what/our-work/2030-eu-energy-efficiency-target-multiple-benefits-higher-ambition

22 Telfar-Barnard, L. et al. The Impact of Retrofitted Insulation and New Heaters on Health Services Utilisation and Costs, Pharmaceutical Costs and Mortality: Evaluation of Warm Up New Zealand: Heat Smart, 2011, report to the MED (Ministry of Economic Development). www.motu.org.nz/

23 IEA. Evaluating the Co-Benefits of Low-Income Energy-Efficiency Programmes. International Energy Agency, Paris, 2011, https://www.iea.org/reports/evaluating-the-co-benefits-of-low-income-energy-efficiency-programmes

24 Drakos, J. Low-income weatherisation benefits for consumers and utilities in Cincinnati, Ohio. Presentation at the IEA Roundtable on Energy Provider and Consumer Benefits: IEA Study on Capturing the Multiple Benefits of Energy Efficiency, IEA, Natural Resources Canada, Canadian Gas Association and Canadian Electricity Association, Ottawa, 15-16 October 2013.

25 Katoch, Om Raj, et al. Energy Poverty and its Impacts on Health and Education: A Systematic Review. International Journal of Energy Sector Management, April 2023. (PDF) Energy poverty and its impacts on health and education: a systematic review (researchgate.net)

26 Habitat for Humanity International. How Does Housing Affect Children's Education? https://www.habitat.org/our-work/impact/research-series-how-does-housing-affect-childrens-education

27 Coley, R. L., Leventhal, T., Lynch, A. D., & Kull, M. (2013). Relations between housing characteristics and the well-being of low-income children and adolescents. Developmental Psychology, 49(9), 1775-1789. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3766502/

28 Howden-Chapman, P., et al. "Tackling cold housing and fuel poverty in New Zealand: A review of policies, research, and health impacts." Energy Policy, vol. 49, Elsevier Ltd., 2012, pp. 134-142. www.sciencedirect.com/science/article/pii/S0301421511007336.

29 Free, S., et al. "Does more effective home heating reduce school absences for children with asthma?" Journal of Epidemiology and Community Health, vol. 64, no. 5, BMJ Publishing Group Ltd., 2010, pp. 379-386. http://jech.bmj.com/content/64/5/379.full.pdf+html

30 Koisova, E., Masarova, J. Analysis of Impact of Educational Attainment on Economic Performance in Visegrad Group Countries. Research Reviews of Czestochowa University of Technology, no. 51, 2023, pp. 80-91. ISSN: 2083-1560. 10.17512/znpcz.2023.3.06

31 EURtat. Mean and median income by educational attainment level - EU-SILC survey. Online Data Code: ilc_di08, Last Update: 20 Feb. 2024, 23:00. EURtat. 10.2908/ilc_di08

32 Network of the European Public Employment Services. Unemployment risk decreases with increasing level of educational attainment, August 2023. PES Network, https://www.pesnetwork.eu/2023/08/11/unemployment-risk-decreases-with-increasing-level-of-educational-attainment

34 Hanushek, Eric A., and Ludger Woessmann. A quantitative look at the economic impact of the European Union's educational goals. Education Economics, vol. 28, no. 3, 2020, pp. 225-244, doi: 10.1080/09645292.2020.1719980.

35 Finn, Owen, and Paul E. Brockway. Much Broader Than Health: Surveying the Diverse Co-Benefits of Energy Demand Reduction in Europe. Sustainability Research Institute, School of Earth and Environment, University of Leeds. https://www.sciencedirect.com/science/article/pii/S2214629622003930

36 Chatterjee, Souran, and Diana Ürge-Vorsatz. Measuring the Productivity Impacts of Energy-Efficiency: The Case of High-Efficiency Buildings. Journal of Cleaner Production, vol. 318, 2021, article number 128535, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2021.128535.

37 Mehta, Suril S., et al. "Indoor wood-burning from stoves and fireplaces and incident lung cancer among Sister Study participants." Environment International, vol. 178, 2023, article number 108128. ISSN 0160-4120, https://doi.org/10.1016/j.envint.2023.108128

38 Baborska-Narozny, Magdalena, et al. "Climate justice: air quality and transitions from solid fuel heating." Buildings and Cities 1.1 (2020). https://doi.org/10.5334/bc.23

39 Energy Poverty Advisory Hub (EPAH). Handbook 1: A Guide to Energy Poverty Diagnosis. https://energy-poverty.ec.europa.eu/discover/publications/publications/energy-poverty-advisory-hub-epah-handbook-1-guide-energy-poverty-diagnosis_en

40 Sgaravatti, G., S. Tagliapietra, C. Trasi, and G. Zachmann. "National Policies to Shield Consumers from Rising Energy Prices." Bruegel Datasets, 4 November 2021. https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices.

41 Ofgem. Ofgem Explores Options Amid Rising Consumer Debt. 12 Oct. 2023. Ofgem explores options amid rising consumer debt | Ofgem

42 EURtat. Housing in Europe – 2023 Interactive Edition. European Union, ISSN: 2600-3368. https://ec.europa.eu/EURtat/web/interactive-publications/housing-2023#about-this-publication

43 Solari, Claudia D., and Robert D. Mare. "Housing Crowding Effects on Children's Well-being." Social Science Research, vol. 41, no. 2, 2012, pp. 464–76. Available at: 10.1016/j.ssresearch.2011.09.012.

44 Eurofound. Fifth Round of the Living, Working and COVID-19 E-survey: Living in a New Era of Uncertainty, Publications Office of the European Union, Luxembourg, 2022. https://www.eurofound.europa.eu/en/publications/2022/fifth-round-living-working-and-covid-19-e-survey-living-new-era-uncertainty

45 See Indicators | EU Energy Poverty Observatory

46 Allianz. Averting Gasmageddon and Securing a Just Transition. September 2022. Allianz, https://www.allianz-trade.com/content/dam/onemarketing/aztrade/allianz-trade_com/en_gl/erd/publications/the-watch/2022_09_01_Just-Transition.pdf.

47 Renovate Europe. Building Renovation: A kick starter for the EU recovery. https://www.renovate-europe.eu/wp-content/uploads/2020/06/BPIE-Research-Layout_FINALPDF_08.06.pdf

48 Euractive. Shortage of labour in the construction industry FIEC (European Construction Industry Federation). October 2023. https://pr.euractiv.com/pr/shortage-labour-construction-industry-255982

PHOTO CREDITS

Cover: brussels50s60s.be.

This report was published thanks to the vital financial support of the European Climate Foundation (ECF).

FEANTSA

European Federation of National Organisations Working with the Homeless

194 Chaussée de Louvain, 1210 Brussels, Belgium
T +32 (0)2 538 66 69 • information@feantsa.org

www.feantsa.org

Follow us
/FEANTSA_ORG

Like us
/FEANTSA

Follow us
@FEANTSA

Connect with us
FEANTSA