

NOVEMBER 2020

REPORT

RENOVATION: STAYING ON TOP OF THE WAVE

Avoiding social risks and ensuring the benefits

Catrin Maby



FEANTSA

European Federation of National Organisations Working with the Homeless

PHOTOGRAPHY:

Cover and page 6: ©Ced Ngujo via Unsplash

Page 4: ©Reid Zura via Unsplash

Page 13: ©Milivoj Kuhar via Unsplash

Page 16: ©Science in HD via Unsplash

Page 23: ©Emily via Flickr, licensed under CC BY-NC-ND 2.0

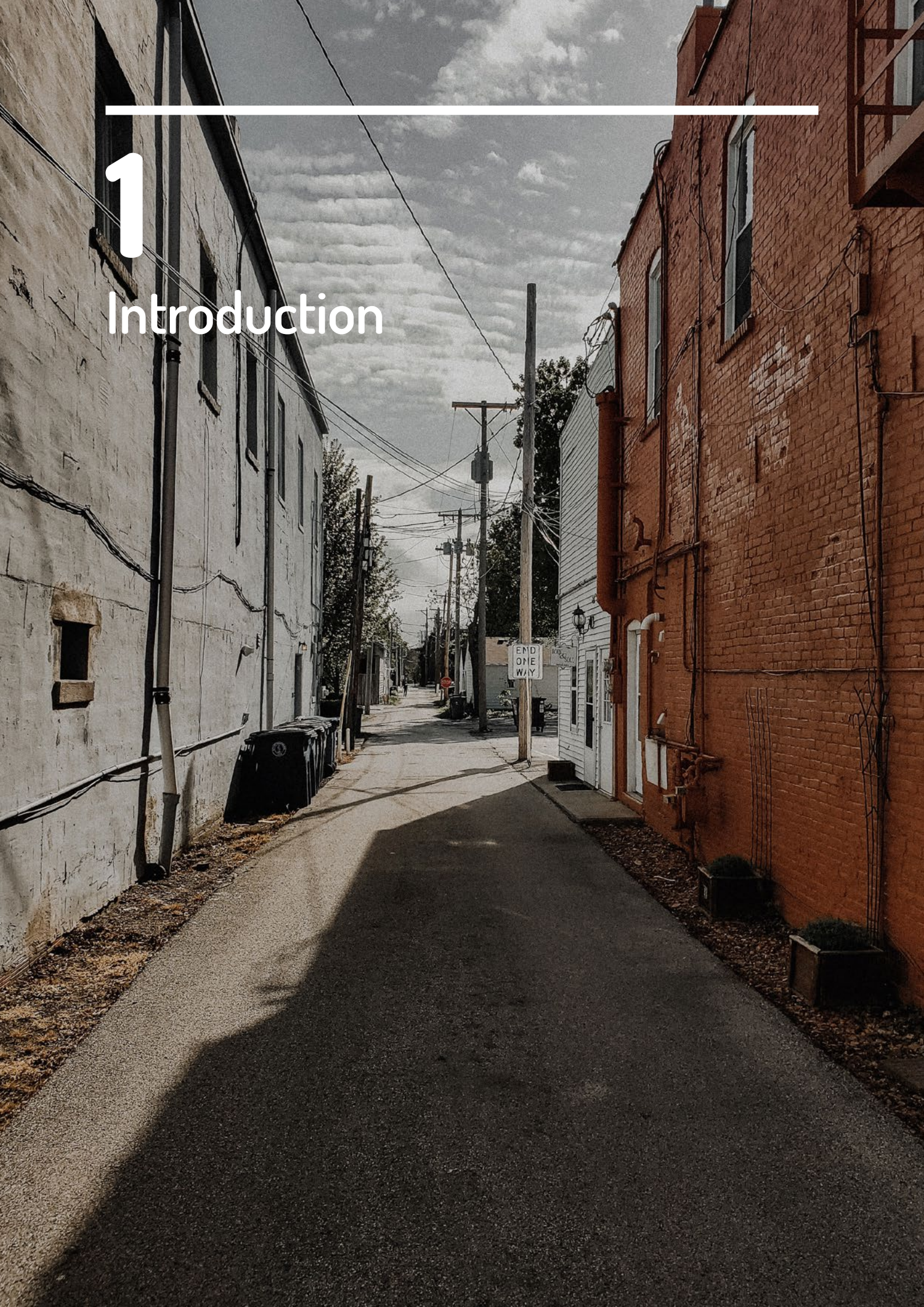
Page 26: ©Nolan Issac via Unsplash

Contents

1	Introduction	4
2	What do we know from experience so far?	6
	Energy renovation examples and studies	6
	Lessons from completed renovation projects	7
3	Programmes to support lower income home-owners to renovate	15
4	Discussion	19
	Positive social impacts	20
	Negative social impacts	21
5	Conclusions	21
	Recommendations	21
6	References	21

1

Introduction



9% of low income households in the EU live in severe housing deprivation and 40% are overburdened by housing costs. At least 700,000 people are homeless every night (Fondation Abbé Pierre and FEANTSA, 2020). The European Energy Poverty Observatory estimate that more than 50 million households in the European Union are experiencing energy poverty (www.energypoverty.eu). This means that they are not able to afford the energy they need to meet their basic household needs – for heating (or cooling), hot water, and domestic appliances. This is due to a combination of energy inefficient buildings and appliances, low household income and high energy costs.

Housing exclusion and housing quality are critical social issues for 21st century Europe, and inextricably linked to the need for an energy transition to mitigate climate change. A core element of the energy transition is to achieve a massive improvement in the energy efficiency of buildings, reflected in current EU policy: the Clean Energy Package, the European Green Deal and the Renovation Wave, launched in October 2020. The Renovation Wave has the potential to bring significant social, health, and economic benefits to lower income and vulnerable households, through improved housing conditions.

These multiple benefits and ‘win-win-win’ outcomes, cannot, however, always be assumed. The risk of unintended negative consequences has been raised by some early experiences of renovation programmes, such as increased overall housing costs. It is highly significant that affordability is included as one of the key principles of the Renovation Wave communication (European Commission, 2020).

This report was commissioned by FEANTSA to inform their work with regard to the European Renovation Wave, to highlight some of the potential social risks associated with major renovation programmes, and to identify strategies to avoid or mitigate such risks. The work draws on existing literature, and direct communications with individual housing providers, researchers and energy efficiency specialists. Examples of completed renovation programmes are used to illustrate both positive and negative factors, concluding with recommendation for a number of key principles to apply to the design of energy renovation programmes, to maximise the social benefits, and avoid the risk of negative outcomes.

The issues under consideration apply across the different housing tenures: rented properties owned by municipalities or non-profit providers with social objectives, privately-owned rentals, housing cooperatives or individual owner-occupied homes. Within these categories there are significant sub-divisions – such as the range of private landlords from the large corporations through to ‘amateur’ landlords owning as little as one property for rent. The term ‘social housing’ is not used in this report, as it can be taken to mean different things in different countries - however the provision of housing for a social purpose, to provide for those unable to access affordable housing in the private housing market, is highly relevant to the issues discussed here. Such provision would typically have rents set according to ability to pay. In the context of housing renovation, this implies that some (capital and potentially operating) costs are likely to need to be provided from sources other than rents: typically in the form of public subsidy, but in some cases through charitable support or cross-subsidy from other more profitable housing provision.

2

What do we know
from experience so far?
Energy renovation
examples and studies



In order to assess the social benefits and risks in practice, several examples of completed renovation programmes were reviewed. These examples have been selected to illustrate different impacts and outcomes, both negative and positive, and may not be typical of energy renovations in general. The information was obtained through a combination of literature review and direct communications, and the range of examples was also limited by the information available. The level of detail available for the different examples presented varied a great deal, and as such, they are not directly comparable. Some of the examples are drawn from independent studies, while others are based on information from programme managers.

This highlights a lack of longer term monitoring and evaluation of energy renovation programmes, including the social impact, and the need for a more comprehensive study. The information found, does, however, indicate a number of key issues to consider as well as a need for further study and comparisons of different approaches and solutions to the problems highlighted.

All of the examples presented include energy improvements, but not all of them are mainly focused on energy. They range from specific energy renovations through to urban regeneration, with an energy renovation component.

In each of the examples below, the source of information is noted, and a list of references is provided at the end of this report.

LESSONS FROM COMPLETED RENOVATION PROJECTS

Regeneration displacing the existing population: urban renewal in Gdansk

Information source: Bouzarovski et al, 2018

Letnica is an industrial and residential district of Gdansk, Poland, which underwent regeneration between 2006 and 2014, as part of the Gdansk Urban Renewal Programme. The regeneration of the area appeared to be stimulated at least in part by the construction of a new football stadium for Euro 2012.

This district had developed from a small village in the late nineteenth century, and consisted mainly of single storey homes, heated by coal stoves. The buildings were dilapidated, with minimal changes made since the 1930s, and the combination of poor thermal insulation, inadequate heating systems, rising energy prices and low household incomes provided the conditions for energy poverty. The regeneration programme that was carried out included a mixture of housing refurbishments, and some demolition, with replacement by new blocks of apartments. Thermal insulation, gas central heating and new windows and doors were included in the refurbishment work.

The potential reduction in energy poverty and environmental pollution appears not to have been specifically quantified in advance, nor was it evaluated afterwards - with no energy audits carried out before or after the refurbishment. There also appeared to be no appraisal of options, or at least not in consultation with residents - such as the possibility of extending the nearby CHP plant to provide heating for the district. Residents were not provided with any information about whether the new heating would in fact be more or less expensive to run, nor any guidance on how to use it efficiently. A qualitative survey indicated that at least some residents preferred to continue to use coal, even after the new heating systems were installed, as they were familiar with it and felt more secure about being able to control costs due to buying it in advance, rather than getting a bill later. The social aspect of chatting to neighbours in the coal cellar was also mentioned.

Other non-energy impacts included the break-up of the community, as some residents moved to other parts of the city, when they had to move out for the renovations - some not returning because they could not afford higher rents imposed after the renovation, or because they had rent arrears and were forced to move to a cheaper area. Some chose to move due to fears about the costs of the new heating, and some because they had lost the local social networks due to the changes. The overall process of planning and communications with the community seems to have been inadequate. Overall, it is estimated that around half of the original residents did not return.

This example illustrates a number of issues: the importance of effective communications between those that are managing such programmes and the communities affected, appraisal of technical options and the running costs for residents, and advice on the use of new heating systems.

Unaffordable rents after retrofit: a study of the Gothenburg housing stock

Information source: Mangold et al, 2015

42% of Gothenburg's multi-family homes were built during 1961-75, under the Swedish Million Homes Programme, and are now a priority for energy retrofitting, as well as being occupied by increasingly socio-economically deprived households. The apartments are a mixture of owner-occupied, private rentals and municipal rentals. Heating and hot water costs are typically included with rent, and only electricity billed separately. Retrofits aim in general for a target of no more than 74kWh/m².

A study of the costs of retrofit of the housing stock in Gothenburg considered costs based on data from six pilot retrofitting projects, together with projections up until 2026, and an assessment of what the impact would be if this was paid for through rent increases.

Analysis of the pilots showed that the financial model of paying for renovation through increased rents is regressive, leading to rent levels that are unaffordable for all those earning less than 60% of the median income in Sweden, which would mean that a significant proportion of current residents could no longer afford to live there. This housing would be taken beyond the reach of all those living below the poverty line as defined at EU level. In the context of increasingly tight metropolitan housing markets in Sweden with a chronic lack of affordable housing solutions, the social impacts would be very severe.

This example illustrates the need to find a different way to pay for retrofits, to avoid unaffordable rent rises.

Progressive loss of affordable housing: the energy retrofit of apartments in Utrecht

Information source: <https://shapeenergy.eu/index.php/utrecht-netherlands/>; De Zeeuw, M., Uitdenbogerd, D., & Mourik, R. (2018).

As part of the SHAPE Energy project, a workshop was organised by the Netherlands project partner, Duneworks, to discuss the case of a planned energy retrofit of apartments in Utrecht, and what had happened in practice. The organisers had carried out preparatory engagement work to ensure that all the relevant stakeholders could be involved, in particular the tenants and the landlord. The landlord did not attend in the end, but the discussions went ahead and are described in the report by Duneworks.

The report describes how three blocks of buildings, broadly of a social housing type, and in need of (energy) retrofitting were sold to a Canadian private investment company. The investor was looking for a 5 year return, and concluded that they would need to raise rents by 30% to pay for the work. However, Dutch law requires that 70% of the tenants agrees with the retrofitting and increased rent, a law designed to protect the vulnerable tenant. In this case, the tenants did not agree. As a result the apartments are only retrofitted when the old tenant moves – after which the apartment is rented out at the new higher rent, so the new tenants must be those that can afford such rents. The existing tenants did not get the improvements made to their apartments.

The longer term impact in this case will be a progressive loss of affordable housing, and potentially a contribution to gentrification of the area.

Higher energy bills after new heating and payment arrangements: renovation of tower blocks in England

Information source: Axon and Morissey, 2020

Renovation work was carried out in 2016 to 5 tower blocks in Stockbridge, a village near Liverpool, England, including external wall insulation and a biomass group heating system, with centralised pellet boilers to provide heat for 450 homes. A

combination of European (ERDF) funding and the UK Renewable Heat Incentive scheme (a form of Feed in Tariff for renewable heat) meant that the housing association could expect a return on their investment within four years.

A study of the impacts for the residents, however, showed that the change caused at least some of them problems. They had previously had electric night storage heaters on a fixed payment arrangement whereby they paid a flat rate of £8 per week (£416 per annum) for their heating. In the lead up to the renovations they were told that the new heating would cost them in the range of £350-£450, but in practice many found it to be much more expensive, with some reporting energy bills as high as £360 in the first three months.

The study does not detail exactly why the numbers differed so much, and whether there were any technical or quality issues with the work that added to this, or perhaps a lack of accuracy in the theoretical calculations. What is clear, however, is that a key problem seems to have been in relation to communications with and ongoing support for the residents. A fundamental behavioural shift was being asked of them, in going from a flat rate payment to a metered consumption, in addition to a different type of heat provision. There seems to have been little support in how to use the new system or how to check on their meter, in order to understand how much they were using. When asked in the study about what might have helped them, residents suggested practical support, home visits to show them how to use the system, and open days.

Rent increases not matched by energy bill savings: renovation of German housing association apartments

Information source: Weber & Wolff, 2018.

A housing association in southern Germany carried out an energy renovation of 10 apartment blocks

In 2014-16. These apartments were lived in by households generally on low incomes and with a high proportion of retired people. An independent study gathered data both on the planned measures and anticipated energy reductions, and on the actual consumption over a period of six years.

Actual consumption was compared to the theoretical calculations, and it was found that less energy was in fact used prior to renovation than calculated (an average of 13%, with a range of 10-32%) – as might be expected with lower income households trying to manage on limited budgets. It was also found that, on average, less energy was used after the renovations than anticipated through calculations – and a positive rebound effect was only found in 3 of the buildings. Overall, the renovations enabled energy consumption to be reduced by 70% on average for the 10 buildings.

The housing association increased the rents after renovation, although not by as much as was allowed under German regulations, as they were able to offset costs to some extent across their relatively large portfolio. In spite of this and the energy savings, it was found that more than half of the resident households faced higher combined energy and rent costs afterwards.

Some of the higher costs can be attributed to an increase in energy prices, but even after taking that into account, a third of households faced higher costs after renovation. It was notable that some apartments gained and others lost from the changes, depending on position in the block: those with higher heat loss prior to renovation (such as a top floor apartment) were more likely to benefit from the improvements, which was not reflected in the rent increases.

This example illustrates the difference between modelled energy consumption and the amount of energy used by household managing on low incomes – so that while the improved energy efficiency improves living conditions, it does not necessarily mean that the residents also have energy bill savings that they can spend on higher rents.

An observation by the authors of the study was that while it is often claimed that renovations are to be cost neutral for residents, taking into account savings in energy costs together with increase in rents, in practice this is rarely actually monitored.

Rent increases, renovation and gentrification in Berlin

Information source: Intercultural Cities Policy Study, 2020; Grossman, 2019.

Further to the example above, while not focusing on a specific renovation programme, the experience of renovation and gentrification in Berlin and other German cities generates important lessons for the way in which energy renovations are managed and financed.

An example cited by Grossman (2019) is that of a building of privately rented apartments in Pankow, which was purchased and renovated by a private company in 2013, with insulation of walls, roof and cellar, triple-glazed windows, ventilation with heat recovery, and a central solar hot water system. Only one of the existing tenant households remained after the renovations. The family that chose to remain faced a 270% rent increase, as well as having water, electricity and heating services cut off, apparently to encourage them to leave.

While this may be an extreme example, it highlights a pattern in Berlin and other German cities where demand for rental apartments is high, of renovations followed by high rent increases leading to existing tenants leaving and being replaced by those able to afford the higher rents. This is an issue that relates to renovations generally, and not only to energy renovation. It is particularly relevant, however, if improved energy efficiency is used to justify higher rents.

The Intercultural Cities Policy Study on Managing Gentrification (2020) describes the shift away from publicly subsidised housing in Berlin over the past 20 years, with state-owned housing companies sold to private investors, who renovated the properties, sometimes to a luxurious standard, and raised the rents to recoup their costs. This inevitably led to displacement of long-term residents and excluding low-income households from moving into newly renovated housing. While investors did attempt to sell individual units to tenants, the take up was low as rent levels were considerably lower than financing homeownership.

An example of a different approach in Berlin is the 'Careful Urban Renewal' in Kreuzberg in the 1980s, where attention was given to the preservation of the social composition of the existing population as well as existing structures, with citizen participation and the introduction of rent caps. While this enabled lower income residents to remain, and in improved housing conditions, it is reported that the expiry of the rent caps after 15-25 years has meant that rents have risen and the improvements to the area contributed to a process of gentrification.

At the time of the Pankow example mentioned above, national building laws allowed for annual rent increases of up to 11% of the costs of modernization works. This was subsequently reduced to 8% in 2019, and in late 2019, Berlin City Council initiated a five year rent freeze.

The example of gentrification in German cities is a pattern that can be seen elsewhere in Europe, and raises questions about the way in which renovations driven by the need for climate action and to alleviate energy poverty are financed, and how this interacts with housing policy and rent control in general, as well as urban regeneration.

Participatory governance and focus on the existing community: regeneration of a Scottish housing estate

Information source: Anderson et al, 2019.

The Broomhill Estate is a housing estate owned by a non-profit housing association, River Clyde Homes, in the Inverclyde district West of Glasgow in Scotland. A regeneration of the estate was carried out in 2014-15. The buildings had deteriorated, there were high rates of vacancy (indicating that people did not want to live there) and the area was generally seen as having social problems. The story of the regeneration work has been a positive one, and this can be attributed, at least in part, to the role of the proactive Tenants and Residents Association (Broomhill Tara). Following initial consultations, the programme of more than £20m of regeneration improvements was agreed and carried out, bringing the stock up to Scottish Housing Quality Standard (SHQS) and meeting the Scottish Energy Efficiency Standard for Social Housing, including a biomass district heating system.

A governance group was set up to bring together the key partners in the regeneration, which included the Housing Association, Local Authority, and Tenants and Residents Association. This group established community regeneration goals and steered the regeneration project. During renovations tenants were moved to alternative accommodation (sometimes referred to as 'decanting').

This project has the additional advantage of an independent study by the University of Stirling, commissioned by River Clyde Homes in 2018-19. This study reported that the housing improvement works have transformed the neighbourhood, and significantly enhanced quality of living for the residents. This has included the benefits of thermal insulation and heating upgrades, noted as contributing to improved health and wellbeing. Housing improvement works included extensive internal and external upgrading of properties and common areas.

Other social impacts noted were that the decanting process was challenging, including supporting vulnerable tenants and dealing with issues such as damage to decorations as tenants returned home – but that a benefit of this process was that staff gained significant new knowledge of the situations of vulnerable tenants with complex needs and were able to provide additional support and referral to other agencies. As the estate had empty properties before the renovations, the housing association proactively marketed for new tenants, adopting what they describe as a 'sensitive lettings plan', to ensure that people wanting to move within the neighbourhood had the chance to do so, to put in place extra support for those that needed it, but also to encourage a wider pool of tenants to move there. One of the high rise blocks was designated for retirement accommodation, with the addition of a community space and a guest room.

Further positive benefits were brought by community arts and gardens projects. Employment opportunities were also integrated into the refurbishment process with 79 local people employed and 22 training places delivered by the contractors.

The evaluation of the project noted the importance of communications throughout the process (including a local housing office on the estate itself), and attention to wider community facilities as well as the renovation of the buildings.

Energy efficiency and managed energy services: renovation of Dublin housing estate

Information source: Website of Dublin Energy Agency <http://www.codema.ie/>

Cromcastle Court in Dublin, Ireland, is a housing estate owned by the City Council and rented for a social purpose. It consists of 8 blocks containing a total of 128 apartments, which were renovated in 2015. Prior to renovation, heating and hot water were provided by a group heating system (gas boilers in a boiler room in each block), with no individual unit controls. This was replaced with heat pumps, remotely controlled by the Council. Windows were replaced with double glazed units.

The heating system was provided under an Energy Services Contract for 7.5 years, with an energy service company installing, financing, operating and maintaining the equipment for an agreed period of time. The energy service company pays the energy bills, in exchange for payments based on the buildings historic energy use. Predicted cost savings to the Council were over 80,000 euros per annum.

While the information about outcomes of this project is limited, it is of particular interest as the first managed energy services contract for a Local Authority in Ireland. Early feedback from residents was positive, with increased comfort and satisfaction levels reported.

Integrating energy efficiency with the fight against poverty: Toits d'Abord (Roof First)

Information source: Housing Solutions Platform, 2019; www.fondation-abbe-perre.fr/toits-dabord

Fondation Abbé Pierre is a non-profit organization in France that works to support disadvantaged people to have access to decent housing. The Toits d'Abord programme was set up to support the renovation of homes owned by local non-profit associations, to provide affordable and energy efficient housing for lower income households. The energy targets for renovated homes are energy rating class A, B or C for buildings previously classed E, F, and G, respectively. The project's goal is to reduce tenants' energy bills to an acceptable level through the improvement of living conditions.

The programme also supports the construction of new homes, and these must be an A or B rating.

The idea is to guarantee that after payment of all housing-related bills, tenants will have at least €300 per month and per 'consumption unit' to live on. *A consumption unit is an OECD scale used to compare the living standards of households of different sizes or compositions, generally based on the following scale: 1 UC for the first adult in the household; 0.5 UC for other people 14 years of age or older; 0.3 UC for children under 14 years of age.*

Around 600 homes have been funded to be built or renovated through this programme every year since 2012, and 900-1,200 people taken out of poor housing and energy poverty. 90% of the households housed after construction or rehabilitation have **resources below** the poverty line (1,015 euros/consumption unit/month), 50% live below the high poverty line (672/UC/month). Children make up half of the people living in housing supported by the Roof First program.

The programme is funded by the energy supplier EDF and the Île-de-France administrative region. It is an example of how energy renovations and minimum energy efficiency standards can be effectively integrated into a programme that supports lower income households out of poverty, by using the basic needs of the households as the basis for the levels of subsidy needed.

An energy service model for energy renovation at scale: Energiesprong

Information source: Kumar & Friedler, 2019;
Project website at: <https://www.energiesprong.uk/>

Beginning as a government initiative in the Netherlands, this approach is being piloted now in other countries, such as France and the UK. The core

concept is to renovate existing homes to be net zero energy, through an 'industrialised' approach, using technologies prepared off-site (such as thermal facades, PV-integrated roofs and heat pump units), to massively reduce time on site – and (once sufficient volume is reached) to achieve a low unit cost. The capital costs are repaid by the residents through a fixed service charge in place of the energy bills they paid previously. Crucially, the work also comes with a 30 year performance guarantee, with heating level and hot water quantity guarantees and a set amount of electricity for household appliances.

If successful, this approach has the advantage of minimal disruption for the residents, and no requirement for them to move out during the work. By aiming for net zero energy and paying a fixed service charge, the uncertainty about future energy bills is mainly also avoided (it could still be possible to go over the guaranteed amount of electricity consumption). For the households, their home is unchanged on the inside, but much more comfortable (and low carbon).

This approach has so far been applied to groups of homes that are fairly homogeneous, and would be more difficult to apply effectively in other situations. However, the main barrier to widespread roll-out so far seems to be the cost, which has not yet come down enough to make the financial approach work, without direct additional subsidy. A recent pilot completed in Nottingham, England, in 2019, cost around £70,000 (around €77,000) per unit. It is understood that to make the model work financially without subsidy, a substantial volume of delivery needs to be achieved. The business model is also likely to be more compelling if applied to homes that have not already had partial energy improvements applied – such as the standard roof insulation and heating upgrades that have been typical of retrofit programmes in recent decades.

3

Programmes to support
lower income home-owners
to renovate



The examples above focused on major renovation projects for contiguous housing, in apartment blocks, streets and housing estates. A different approach to housing energy renovation is programmes that have been developed to support low or medium income private home owners to make improvements to their own homes, or to bring empty homes back into use. While the wider social impacts of these programmes may not become evident for some time, they have been developed to meet a recognised social need. There are several examples of programmes run at national level, such as the Habiter Mieux programme in France, Better Energy Warmer Homes in Ireland, Nest in Wales, and major housing and infrastructure programmes that specifically target energy efficiency, such as KfW in Germany. The examples below are of interest in that they offer practical solutions to fill particular gaps in provision.

Creating structures for action in buildings with multiple owners: the REELIH Project

Information source: Housing Solutions Platform, 2019; www.habitat.org; <https://getwarmhomes.org>

This project in Armenia, Bosnia and Herzegovina, and Northern Macedonia is set against the context of the large scale privatisation in the early 1990s of high density housing built and previously managed and maintained by state authorities. Provided by Habitat for Humanity and USAID, REELIH supports individual homeowners in apartment blocks to mobilise to collectively manage and improve their buildings, forming homeowner associations as legal entities to enable them to do so.

The buildings are generally energy inefficient and expensive to heat, and in need of repairs and maintenance. The project has worked with local governments to provide subsidies for energy improvements and helped to establish homeowner associations to facilitate practical implementation of the work, and to enable them to act together to obtain finance. Habitat for Humanity is also working on homeowner legislation in the three countries. Results reported are that more than 3,800 individuals have improved living conditions, and energy bills are reduced by up to 50%.

Community empowerment and training: Just a Change, Portugal

Information source: www.justachange.pt

Just a Change is a non-profit organization addressing housing deprivation in Portugal, through mobilizing and supporting local working groups to renovate homes for vulnerable people. The work involves general housing renovation, typically for homes in very poor condition, but includes energy efficiency measures, such as efficient water heaters and solar panels. They have developed an eco-manual to guide their work.

Protecting affordable housing supply: Green Housing Preservation Program, New York City

Information source: www1.nyc.gov/site/hpd/services-and-information/green-housing-preservation-program-ghpp.page

This New York City Government programme provides low- and no-interest loans to finance energy efficiency and water conservation improvements, treatment of lead-based paint hazards, and rehabilitation work. The aim of the programme is not only to reduce greenhouse gas emissions and reduce running costs, but also to ensure the physical health of buildings, and to preserve safe affordable housing for low- and moderate-income households. Eligible buildings are multi-family buildings between 3 units and 50,000 square feet (approximately 50 units). The work must include energy efficiency measures that are projected to save at least 20% in annual energy (heating and electric) usage. Loans are for up to 50,000 US Dollars per unit.

This programme is an example of 'proactive preservation' of affordable housing, involving proactive outreach to identify buildings in need of broader rehabilitation work, and then working with those building owners to provide subsidies in exchange for entering into affordability regulatory agreements to help preserve housing affordability, with a focus in areas with gentrification and displacement.

The loans tend to be treated as 'forgivable' for lower income owners, so that they may actually function as a grant, where owners find themselves unable to repay.

Renovating empty homes for low income households: Social Rental Agencies

Information source: Housing Solutions Platform, 2019; <https://www.fedais.be>; <https://www.fedsvk.be/>; www.pandschap.weebly.com

Social rental intermediation is a relatively new way of mobilising private market rental stock for social purposes in Europe but has a long tradition in Belgium (Fédération des Agences Immobilières Sociales/ De federatie van de SVK's). The idea is to incentivise private owners to make parts of their private rental stock more affordable and accessible to vulnerable people. Common incentives include support in renovation design, management as well as support in accessing subsidies for renovation.

An example of an organization that work through social rental agencies is Pandschap (The Pledge) in Flanders. This is a cooperative with a social purpose, which aims to create high quality and affordable rentals in Ghent. They offer to take on empty properties on a long lease, which they renovate at no cost to the owner, and rent out to lower income households. The owner benefits from the building being renovated and maintained for them, and ultimately regains possession of an improved property.

This approach enables lower income households to live, with affordable rents, in homes that have benefitted from a good quality energy efficiency renovation.

4

Discussion



POSITIVE SOCIAL IMPACTS

Reduced risk of energy poverty

Households on low incomes living in energy inefficient homes are at risk of energy poverty, which can affect their health as well as comfort, and lead to energy bill arrears or other debts, or going without other basic needs (Williams et al, 2015).

Conversely, the potential benefits to be derived from energy efficiency improvements to housing are considerable: improved comfort and reduced energy costs, as well as the reduction in carbon emissions linked to climate change. A further social benefit is more usability of all parts of the home, where before it might only have been possible to keep one room warm enough, to sit still in for long. This makes it easier for members of the household to have a quiet place to study, or to work from home as is increasingly the norm.

Some of these benefits from improved energy efficiency are indicated in the examples above, but an extensive literature on this topic also exists, developed over several decades, with the concept of energy poverty and the relationship to home energy efficiency discussed and analysed since the 1980s and 90s in some countries (Atanasiu et al, 2014; Boardman, 1991; Thompson et al, 2017; Koh et al, 2012).

Reduced rent arrears and voids benefitting social landlords

There are also benefits to landlords of rented properties. A 2015 study in the UK (Sustainable Homes, 2016) found that energy efficiency improvements reduced rent arrears, and voids (empty homes) – with obvious financial benefits for landlords. Specifically, it was noted that there was a correlation between the energy efficiency of the homes and the number of days that homes remained empty, with more energy efficient homes void for a shorter length of time: 31% less time on average for energy rating band B properties compared to those in bands E and F.

Neighbourhood stabilisation and wider community benefits

The example of the Broomhill estate in Scotland highlights some of the wider community benefits that can be gained through renovation works – if attention is given to this, and communities are listened to and able to engage with the process at an early stage. The Letnica example, on the other hand, appears to illustrate an area regeneration programme where the needs of the existing residents were not taken into account – and perhaps were not a primary concern.

Israel's 'Project Renewal', a major regeneration programme in the 1970s and 80s, was built on the premise that neighbourhood deterioration was a result of both physical and social factors, and as such the programme to alleviate such problems must also address both physical and social needs. The focus was on improving existing homes and conditions for the existing populations of the neighbourhoods involved, and the conclusion of the evaluation study was that although it could not be said that it abolished poverty or transformed these neighbourhoods into highly desirable areas to live in, it did reduce inequalities and avoided further deterioration, so creating a stabilising effect. (Carmon and Hill, 1988)

This highlights the benefits of such an area-based approach, and how the focus on the needs of the existing population (rather than just the buildings) might help avoid the population displacement effects of gentrification.

The study does, however, note that there can be positive and negative aspects to taking an integrated 'area-based' approach: providing equal resources for all in an area designated for regeneration avoids stigmatising individual households – but could be seen as stigmatising the whole neighbourhood, as well as being unfair on those in neighbouring areas who narrowly miss out. Better off members of the chosen area may benefit where less well-off outside the area do not. (ibid). In terms of social integration, drawing boundaries will also never be fully representative of human interaction between streets and quarters, and even towns.

A factor in the success of such programmes in stabilising the community is the degree of resident participation in planning and implementation of regeneration and renovation work – empowering the community to improve their neighbourhood, as opposed to having it done to them by external authorities. In the Project Renewal example, local committees consisting of 50% local residents steered the work, and residents also participated in decision making about their own apartments and surroundings.

In relation to community engagement in renovation and regeneration, a distinction should be made between participation and consultation, in order to avoid a basic ‘box ticking’ approach being accepted as the norm. Participation implies an active role in both planning and implementation, while consultation can be simply presenting plans and enabling feedback with limited opportunities to change them (or even just a yes/no response). It is also essential that engagement is done in a transparent and realistic way: being very clear what actual options there are, why energy renovations are happening and what the changes will mean for the residents. In Broomhill, the Tenants and Resident Association was involved from the outset, and proactive in getting the improvements done – but it was also important that the ongoing communication and support was there for residents, with a local housing office opened and staffed on the estate.

Local job creation and economic benefits

Further potential benefits of major energy renovations are the opportunities presented for local job creation and training in construction skills, particularly those of low carbon renovation. In Project Renewal, residents contributed through voluntary work, but also as paid employees, with priority given to local applicants. The Broomhill Estate renovation also provided local jobs.

A word of caution is necessary here. The Renovation Wave communication (European Commission, October 2020) anticipates an additional 160,000 ‘green jobs’ could be created in the EU construction sector by 2030, noting that more than 90% of the operators are SMEs. Retrofit and renovation work presents a fantastic opportunity, but where an interesting market opportunity opens

up, bigger corporations tend to act to dominate the market, squeezing out the smaller, locally active, businesses – public procurement processes may favour such big corporations. While this still provides employment, it misses the chance for the smaller enterprises active in everyday home renovation and repair work to develop capacity in the relevant low carbon renovation technologies and techniques – which would then be available to take advantage of trigger point opportunities that occur when homeowners call them in for work not directly related to energy renovation.

Some housing providers may have their own direct labour organisations, which provide local employment. Very low carbon renovation tends to demand a relatively high level of knowledge and skills, because of the sensitivity of detailing, so guidance and top-up skills training should be made available for SMEs and entrepreneurs as the industry mobilises for the challenge ahead.

Providing decent housing conditions for low income households

The examples provided by Toit d’Abord and Just a Change show the value of integrating energy efficiency into renovation work, especially where lower income and otherwise vulnerable households are concerned. In some cases, this may be providing homes for those that have previously been homeless, and without savings or other resources to fall back on if energy bills are unexpectedly high. The way in which energy is paid for is also a factor here, so that households are able to budget effectively.

NEGATIVE SOCIAL IMPACTS

Basing rent increases on unrealistic energy savings

The risk to existing tenants of rented properties that is most commonly mentioned in relation to renovation is where a landlord raises the rent after the work has been done, and the tenant is unable to afford the increased rent. This can lead to them developing arrears for their rent, which could lead to eviction – or choosing to leave as they foresee not being able to afford the rent.

Another consequence might be the tenant getting into debt to the energy supplier, not being able to feed or clothe the household adequately, or reducing their use of energy (where they are able to) – the stark choice of ‘heating or eating’.

In theory, improved energy efficiency can reduce the energy costs for the tenants, and they may then be able to afford higher rents. This theory may be used to justify rent increases, and as a basis for calculating the level of increase to apply. For lower income households this is a high risk strategy, as energy bill savings cannot be assumed to happen in practice, for several reasons:

- ▶ Without a good quality and accurate energy assessment, any estimates of energy savings could be wildly inaccurate, and irrelevant to the home in question. In a housing block, different homes have different heat loss characteristics due to position in block and orientation – some have more heat loss surfaces, solar gain or cooling effect due to exposure.
- ▶ Energy assessments in current use are generally tied to the production of an Energy Performance Certificate, which has been designed as an asset rating to be issued at the time of sale or rental of a property, to comply with the specific national transposition of the Energy Performance of Buildings Directive. These assessments tend to be based on as simple as possible a level of detail in terms of data about the building, to keep down the cost of carrying them out. Even if carried out to a good standard according to the rules of the rating system, they may not be accurate enough to base a rental contract on.
- ▶ Even a detailed energy assessment uses a standardised model for occupancy – numbers and times in the home. In practice this will be different for different households, and there can be a social correlation between those that are at home most and those that are on the lowest incomes, due to sickness or disability, retirement, unemployment or caring for young children. In some cases such households will also need to use more energy, for extra laundry or because they need more warmth to stay well and comfortable.
- ▶ The technologies installed may not perform as well as anticipated, for a variety of reasons,

including product and installation quality, but also where management decisions are taken at some level to cut costs. Effective quality control, clear and transparent processes and honest and open communications are crucial – with health and safety at stake as well as the economic risks to vulnerable households, without the elasticity in their budgets to cope with unexpected costs.

- ▶ Households on a low income may be cutting back on energy use (such as heating) because they cannot afford the bills. After improvements they may take the benefits in increased comfort, rather than reduced energy use. Furthermore, where before they found the heating both expensive and inadequate, they may react to their improved circumstances by using the heating much more – without anticipating the actual running costs.

The differential between the calculated energy use, which is typically based on a modelled assumptions about heating and energy use patterns, and the actual usage by a household, has been called the ‘prebound effect’ (Sunikka-Blank and Galvin, 2012). This effect was indicated in the study described above of an energy renovation in southern Germany. In this case the energy savings were still high, but not high enough to compensate for the increased rent.

- ▶ Households in energy inefficient housing may have adopted a strategy of heating a single room at a time, with point heaters. A renovation providing whole home heating may actually raise their energy bills because they are unable, or not sure how, to make this choice after improvements – while still managing on a very small budget.

In planning for a recent new build project in Chichester, England, designed to provide temporary accommodation for homeless people, consideration was given to the fact that residents may be unused to managing household budgets and using heating controls, so it was decided to keep it as simple as possible. Electric night storage heaters were chosen, along with high levels of fabric energy efficiency, and with a large PV array on the roof (information provided by sustainability consultant, Paul Ciniglio).

- ▶ A new and unfamiliar heating system can be confusing and difficult for a household to manage efficiently until they get used to it – which can lead to very high energy bills. This is particularly difficult if moving to a very different type of technology from the user's point of view: such as from a stored heat or low temperature system to a quick response direct acting one. The Stockbridge example of changing from electric night storage heaters to biomass district heating is an example.
- ▶ Problems can also arise where residents move from a flat rate payment to a metered system, which also happened at Stockton – or from paying for energy in advance to paying on credit – such as through quarterly billing. The residents in the Letnica regeneration programme were used to buying coal in advance, and not all were comfortable with moving to paying for gas on credit.

These last two points highlight the importance of advice and support for residents when their homes are being renovated, and the need for such advice to be both expert and consistent, as well as accessible over a period of time, not just as a one-off contact. Advice and behavioural support, when requested, should be a standard part of every renovation programme, and not treated as a 'nice to have' optional extra. There should not however be an expectation that households on low incomes are to be more exemplary in their energy use behavior than anyone else – advice should rather be designed to be enabling and empowering, so that households can get the best out of the equipment they have installed in their homes – such as heating, hot water and lighting controls, as well as smart meters and devices.

The advice aspect is referenced in the Renovation Wave Communication as part of the provision of one-stop-shops to support homeowners and SMEs through renovation projects (European Commission, 2020). Reference is also made to social enterprise partners training unemployed people to become energy poverty advisers. It would be good to see the latter effectively linked to the one-stop-shops, as while such initiatives can have positive outcomes, on their own they are not the basis for a fully developed and resourced energy advisory facility – rather they may be an extra element to

one that is staffed by professional advisers, able to support and manage the volunteers. It is also not clear if the one-stop-shops envisaged will provide post-renovation advice on use of equipment and controls.

A different way to approach the issue of payment methods and budgeting is to have the rent and energy bills paid together at a flat rate. This is used in many district and group heating schemes, where there is no individual metering, and has also been used in the past in some electric storage heating installations, where off-peak electricity is provided at a cheaper rate at certain times. A modern development of this is the managed energy services approach, with a guarantee of a certain level of service for a fixed fee, such as the Dublin example above, and the Energiesprong concept. This approach has the benefit of certainty for the occupant (although use of electricity for appliances is still a bill to be paid based on usage, or at least beyond a fixed maximum). It has the disbenefit, though of being a bill that a tenant in difficult circumstances cannot choose to cut back on, in favour of buying food. Such an approach needs, therefore, to be aligned with actual incomes and welfare support levels to avoid creating new hardships. The sticking point is whether the total cost of the 'warm rent' is a manageable one.

Landlords financing renovation costs through rent increases

This leads back to the issue of rent levels, and how improvement works are paid for. A landlord may seek to raise rents to recoup the costs of the improvements. In rented properties where the energy bills are paid by the tenants, there is a 'split incentive', such that a landlord invests in improvements, but a tenant benefits from any subsequent energy savings. This creates an underlying tension in relation to achieving a direct return on investment in energy efficiency measures. Where housing provision is managed on a commercial basis, this means that the return is sought in other ways – higher rents, or selling the properties, having realised a higher asset value.

So how can landlords pay for improvements in a way that does not negatively impact on tenants? In the provision of housing for a social purpose, aiming

to provide for those not catered for by commercial housing markets, it is arguable that requiring such a return on investment is irrelevant – the return is in the provision of quality housing and social benefit. This requires the availability of capital for such social objectives, hence such housing providers have traditionally been public or other non-profit bodies, able to raise such funds or borrow at low rates. Even where such housing providers are required to run as businesses, if they have a wide portfolio, they may be able to use profits from higher rent housing to fund improvements in other properties.

This becomes more complicated beyond the defined sector of housing for a social purpose, where tenants are generally protected from high rent rises, or indeed from eviction. In the wider private rented sector, the question of housing quality and rent levels is inextricably linked to the question of regulation – how much, how little, and how to enforce it. The proportion of housing for a social purpose in different European countries varies a great deal, and the vast majority of households do not benefit from the protection that it can afford – doubtless including very many households on low incomes, or who may find themselves struggling financially at some point in their lives. The role of public authorities in ensuring the provision of good quality housing cannot be limited to a defined sector of the population, who have had the good fortune to gain a protected tenancy in a limited non-profit housing sector.

The Utrecht and Berlin examples (with similar stories coming from other parts of Germany) are an indication of just how high rent increases after renovation can be, and that such homes will clearly not continue to be affordable to lower income households after renovation. In these two cases, there seems to have been no intention to continue to provide for the lower income market – but the southern German example shows how the calculations can be wrong, even with no intention to ‘renovict’.

Protection against unaffordable rent rises might take several forms. The German example (where a maximum percentage of the costs of the modernisation works can be recouped through rents) is tailored more to the needs of the housing provider

than the resident, and has led to renovictions. A simple approach taken in some countries is to require a period of time before increases can be applied – at least where public funding is involved. For example, under the Welsh Government energy efficiency programme Nest, a private landlord can only obtain grant funding for a maximum of 3 properties and is not permitted to put rent up for one year afterwards. In this case it is the tenant that makes the application, with eligibility based on being on welfare benefits, and it can go ahead if the landlord gives permission for the work to be done. This kind of approach means that the initiative comes from the tenant themselves, and avoids the risk of immediate renoviction, but it does not offer long term protection. A combination of adequate funding and long term rent protection is needed to protect vulnerable and low income tenants.

In Austria, where there is a high proportion of rented housing, the Wohnbauförderung funding programme for general renovation has strict energy criteria. This is a fundamentally different approach to programmes focused only on energy improvements. An advantage of this approach is that it shifts the focus away from an expectation that rent increases may be set against running cost reductions, and energy is treated as just one part of the quality standard expected. This would be a better fit with the progressive application of minimum energy performance standards in housing to meet climate change objectives, applying the same minimum standards across all housing, rather than treating higher energy efficiency as a luxury item and a reason to charge higher rents.

Rent increases cannot of course be considered entirely independently of basic rent levels. Ultimately adequate affordable (rental) housing provision may only be assured through setting fair rent criteria, based on a range of housing quality criteria, including energy efficiency or energy running costs, with increases related to inflation.

Loss of affordable housing supply

An option sometimes taken by housing providers to finance renovations is to sell some properties to raise funds for improving others – but this means the loss of units of affordable housing, unless it is replaced with new building. On a wider scale,

this can lead to a loss of affordable housing on the market, whether in one area or community, or even a whole city. There is a powerful argument therefore that this needs to be part of an integrated housing policy, which considers the demographics and the socio-economic factors that affect where people want and need to live, along with housing costs and where public subsidy and other interventions are needed. A key part of this is likely to be quite simply a need for a greater supply of housing with social purpose, controlled rents and quality standards.

A clear forward plan for increasing minimum energy performance standards, as part of a framework for housing quality standards, across all housing sectors, would give housing providers the opportunity to plan ahead, and avoid the incentive to push housing from one sector to another (such as from social to unregulated private renting, or from private renting to holiday accommodation, or owner-occupation).

Gentrification, population displacement and loss of community and local social networks

The provision of housing with social purpose in large scale developments or 'estates', brings its own social impacts, and these are not always positive. Grossman (2019) highlights the social segregation that can result from this, as well as from the effects of the private housing 'market forces'.

Where housing policies have succeeded in achieving at least a degree of social integration, such as the Swedish 'Housing for all' model, the way in which renovation costs are shared can bring renewed segregation, as illustrated by the Gothenburg study (Mangold et al, 2015). This study also notes that the high rent increases that would result from the required level of renovation are part of an argument made for less renovation and deregulation of the housing market – even to the extent of letting residents choose the level of renovation and associated rent increase. This seems both impractical (many measures need to be done on a block by block rather than individual apartment basis) and inequitable – as well as simply side-stepping

the need for action on climate, and creating lock-in effects.

The issue of population displacement resulting from renovations and regeneration is a classic example of unintended negative consequences. Increasing the value of housing is cited as an argument in favour of energy renovations, as it implies that there can be a financial return on investment. Lower income households do not, however, have the same range of choices as wealthier ones – so the logical conclusion of this argument is that more vulnerable populations become displaced to the lower standard (and lower energy efficiency) housing (Grossman, 2019). The risk of displacement is particularly high in inner city areas, where very high profits may be made, attracting speculative investment. Conversely, based on asset value alone, it is hard to justify the cost of energy renovations in areas of very low house values – which could lead to a lack of improvements to housing in such areas.

Energy improvements are just one part of building renovation, which in turn is just one aspect of neighbourhood regeneration. While energy renovations are not in themselves the driver of population displacement and gentrification, the risk is that renovation driven by the need for the energy transition might help to accelerate it, as illustrated by some of the examples described, unless a more holistic approach is taken. On a regional or national scale this has to be part of a more integrated approach to housing, environmental and economic policy – so that each are not having to compensate for the deficiencies in the other after they have delivered unintended negative consequences. On a neighbourhood level, the examples of the Scottish Broomhill Estate and Israel's Project Renewal help to show how this might be avoided at least in part by a focus on the needs of the existing population, rather than only on the buildings (or even only some of the buildings) – looking also at community facilities, green spaces, mobility, and employment – and working with the community throughout the process, rather than just doing things 'to' it.

5

Conclusions



Energy renovations are just one aspect of housing renovation, which in turn is just one part of the complex issues surrounding area regeneration. The purpose of this report is to identify key issues and recommendations from recent experience and research in this field to inform the implementation of the recently launched European ‘Renovation Wave’. It is hoped that this will assist in ensuring that emerging programmes benefit as much as possible from this knowledge base, to promote the benefits and avoid any unintended negative consequences from this positive action to mitigate climate change.

RECOMMENDATIONS

Integrated policy

- ▶ An integrated approach to housing, environmental, economic and social welfare policy and planning;
- ▶ Forward plans to enable the lowest income groups to benefit from the gradually increased minimum energy performance standards – across all sectors;
- ▶ Forward plan to ensure a joined-up approach to tackling homelessness and housing exclusion with improving energy performance of buildings, underpinned by housing rights for all;
- ▶ Integrate building energy performance into mandatory housing quality standards;
- ▶ Develop transparent systems for fair rents and effective rent controls;
- ▶ Ring-fence public funds for housing for social purpose to non-profit providers;
- ▶ Prohibit sale of housing for social purpose into the private market for the long term;
- ▶ Ensure that vulnerable lower income households are protected against financial risk, particularly in the context of the liberalisation of energy markets.
- ▶ Monitor and evaluate the impact of renovations on lower income households, including actual comfort conditions and energy cost savings.

Providing quality housing for all

- ▶ Support small scale retrofit projects, such as those that target renovation of scattered housing for low income group, to facilitate social inclusion
- ▶ Provide support to grass roots civil society organizations and local authorities so that they can enable renovation work and access to the various support mechanisms for the most excluded households.

Be realistic about the need for climate finance

- ▶ Public authorities to develop long term investment plans to finance low carbon, quality controlled housing with social purpose;
- ▶ Financing for deep retrofit of private housing to be based on tried and tested systems that collect back money at a very slow rate;
- ▶ Accept that the scale of energy renovation and the capital costs of this cannot be filled by private market interests, rather it is a matter for specific climate finance, recognising the global impacts;
- ▶ In developing national and local programmes, test for perverse incentives – where market interventions result in unintended negative consequences.

Ensure technical quality

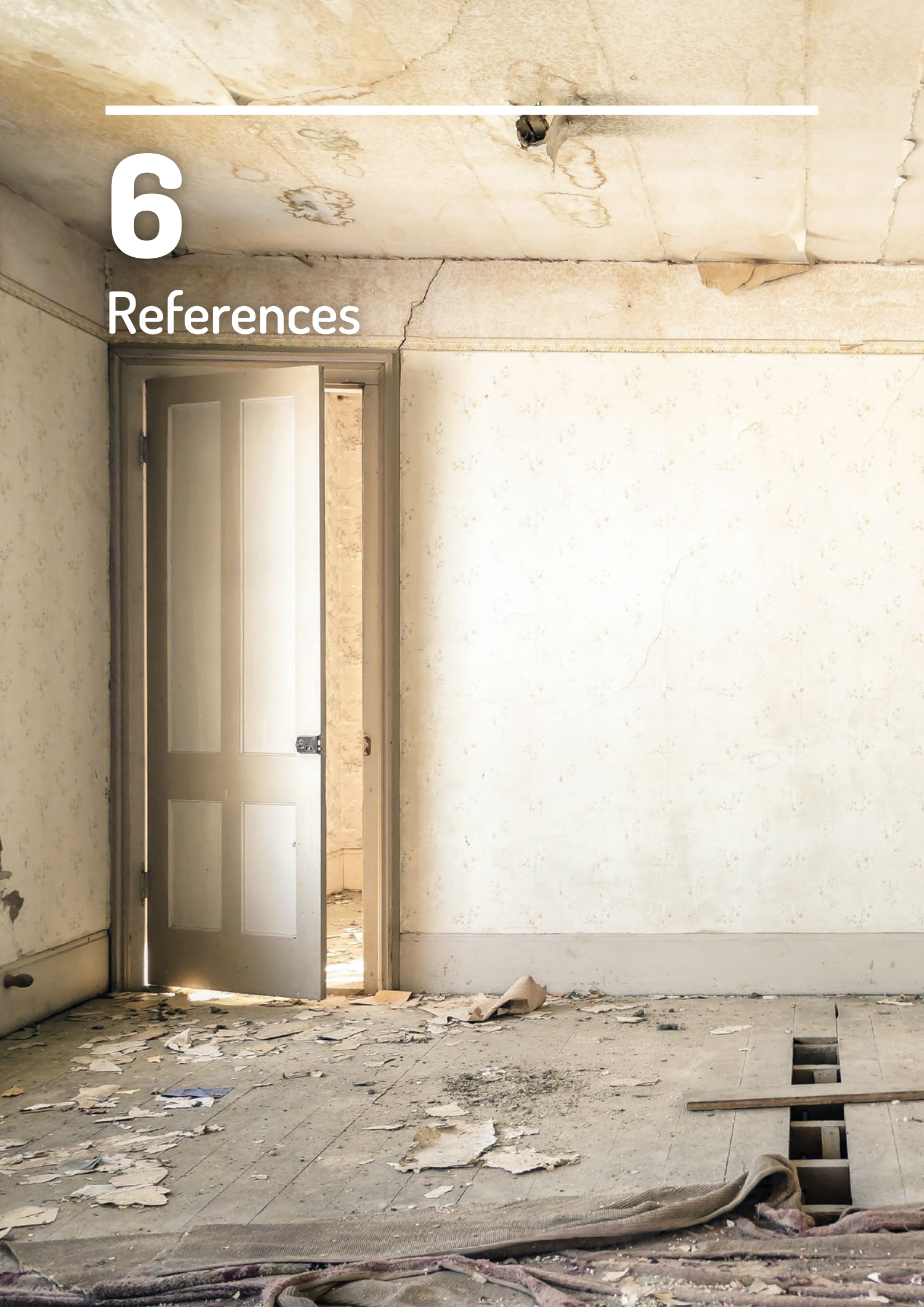
- ▶ Carry out full energy assessments and quantification of energy costs for renovations, with realistic occupancy patterns for lower income households;
- ▶ Align costs and subsidies with minimum welfare level incomes;
- ▶ Provide user friendly controls and advice and support for households – over period of time, not just on handover;
- ▶ Carry out energy cost and comfort monitoring over at least 3 years post renovations, to assess real outcomes and fine-tune future programmes.

Communities and people, not just buildings

- ▶ Tailor building renovations and regeneration to the needs of the existing populations;
- ▶ Build in community participation in renovation planning as a standard quality issue, not a 'nice to have' extra;
- ▶ Listen to residents – provide locally accessible channels for communications throughout renovations;
- ▶ Build energy communities practice into all renovations as standard quality issue, taking into account the full range of options and levels, from community ownership of renewables supply to joint procurement;
- ▶ Provide expert advice and support to residents on use of new technologies and payment methods, as standard practice for all renovations, taking into account major behavior shifts required, such as the change from:
 - ▶ Stored heat or hot water to provision on demand (or vice versa)
 - ▶ Payment up front to on credit
 - ▶ Radiant to convected heat (or vice versa)
 - ▶ Risk of under-heating to risk of over heating
 - ▶ Draughty fabric to specific decisions about, or fully controlled, ventilation
- ▶ Tailor procurement processes to ensure local jobs, and that local small businesses are able to participate fully in renovation work;
- ▶ Provide locally available technical guidance and top-up skills training for very low carbon renovation.
- ▶ Take proactive measures to ensure that renovation of residential buildings does not become an instrument of displacement, gentrification or renoviction

6

References



Ahrendt, D., Dubois, H., Ezratty, V., Fox, T., Jungblut, J.M., Nicol, S., David Ormandy, D., Pittini, A., Roys, M., Sennett, J. (2016). *Inadequate housing in Europe: Costs and consequences*. Eurofound: European Foundation for the Improvement of Living and Working Conditions, Luxembourg.

Anderson, I., Tokarczyk, T. & O'Shea, C. (2019). *Transforming Broomhill: Community Regeneration Evaluation*. University of Stirling, Scotland.

Atanasiu, B., Kontanosiou, E., & Mariottini, F. (2014). *Alleviating fuel poverty in the EU*. Building Performance Institute Europe, Brussels.

Axon, S., & Morrissey, J. (2020). *Just energy transitions? Social inequities, vulnerabilities and unintended consequences*. Buildings and Cities, 1(1), pp. 393–411. DOI: <https://doi.org/10.5334/bc.14>

Boardman, B. 1991. *Fuel Poverty: from cold homes to affordable warmth*. Belhaven Press. London.

Bouzarovski, S., & Cauvain, J. (2016). *Spaces of exception: Governing fuel poverty in England's multiple occupancy housing sector*. Space and Polity, 20, 310–329. DOI: <https://doi.org/10.1080/13562576.2016.1228194>

Bouzarovski, S., Frankowski, J. & Tirado Herrero, S. (2018). *Low Carbon Gentrification: when climate change encounters residential displacement*. International Journal of Urban and Regional Research, 42: 845-863. <https://doi.org/10.1111/1468-2427.12634>

Carmon, N & Hill, M. (1988). *Neighbourhood rehabilitation without relocation or gentrification*. Journal of the American Planning Association 54(4): 470-481. [https://DOI:10.1080/01944368808976673](https://doi.org/10.1080/01944368808976673)

European Commission. (2020). *A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives*. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM (2020) 662 final.

Fondation Abbé Pierre and FEANTSA. (2020). *Fifth Overview of Housing Exclusion in Europe*. <https://www.feantsa.org/public/user/Resources/resources>.

Grossman, K. (2019). *Energy efficiency for whom? A conceptual view on retrofitting, residential segregation and the housing market*. Sociologia urbana e rurale. N 119. 2019. 78-95.

Housing Solutions Platform. (2019). *50 Out-of-the-Box Housing Solutions to Homelessness and Housing Exclusion*.

Hyland M., Lyons R., Lyons S. (2013). *The value of domestic building energy efficiency - evidence from Ireland*. Energy Economics, 40: 943-952, 2013.

Intercultural Cities Policy Study. (2020). *Managing Gentrification*.

Klinsky, S & Mavrogianni, A. (2020). *Climate Justice and the built environment*. Buildings and Cities, 1(1), 412-428.

Koh, L., Marchand, R., Genovese, A., & Brennan, A. (2012). *Fuel poverty: perspectives from the front line*. Centre for Energy, Environment and Sustainability, University of Sheffield.

Kumar, C. & Friedler, C. (2019). *Reinventing retrofit: how to scale up home energy efficiency in the UK*. Green Alliance, London.

- Mangold M., Österbring M., Wallbaum H., Thuvander L., Femenias P. (2016). *Socioeconomic impact of renovation and energy retrofitting of the Gothenburg building stock*. Energy and Buildings, 123: 41-49. doi: 10.1016/j.enbuild.2016.04.033.
- Oorschot, L & Konstantinou, T. (2017). *Retrofit for continuity! Sustainability and gentrification of tenement apartment blocks in Dutch cities from inter and post war period*. In M. Young (Ed), *Living and Sustainability: An Environmental Critique of Design and Building Practices, Locally and Globally* (AMPS Proceedings Series; Vol 9) Architecture_MPS.
- Sovacool, B. K., Hook, A., Martiskainen, M., & Baker, L. (2019). *The whole systems energy injustice of our European low-carbon transitions*. Global Environmental Change, 58. doi: <https://doi.org/10.1016/j.gloenvcha.2019.101958>
- Sunderland, L., Jahn, A., Hogan, M., Rosenow, J. and Cowart, R. (2020, May). *Equity in the energy transition: Who pays and who benefits?* Brussels, Belgium: Regulatory Assistance Project.
- Sunikka-Blank, M., & Galvin, R. (2012). Introducing the prebound effect: The gap between performance and actual energy consumption. Building Research & Information, 40(3), 260–273.
- Sustainable Homes. (2016). *Touching the voids: The impact of energy efficiency on social landlord income and business plans*. London.
- Thomson, H., Snell, C. & Bouzarovski, S. (2017). *Health, well-being and energy poverty in Europe: a comparative study of 32 European Countries*. International Journal of Environmental Research and Public Health, 14, 584.
- Walker, G., & Day, R. (2012). *Fuel poverty as injustice: Integrating distribution, recognition and procedure in the struggle for affordable warmth*. Energy Policy, 49, 69–75. DOI: <https://doi.org/10.1016/j.enpol.2012.01.044>
- De Zeeuw, M., Uitdenboger, D., & Mourik, R. (2018). *Problematiek rond particuliere verhuurders en het verduurzamen van hun vastgoed (Problems around private landlords and the sustainability of their property)*. Input for the SHAPE ENERGY workshop. Eindhoven, March 2018.
- Weber, I and Wolff, A. (2018). *Energy efficiency retrofits in the residential sector – analysing tenants’ cost burden in a German field study*. Energy Policy 122 (2018) 680-688.
- Williams, N., Royston, S., Ayre, D., & Royston, S. (2015). *The debt trap - show some warmth: Exposing the damaging impact of energy debt on children*. London: The Children’s Society.
- World Health Organisation. (2019). *Healthy, prosperous lives for all: the European Health Equity Status Report*. WHO Regional Office for Europe, Copenhagen.



**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

Like us



Follow us



Connect with us

