

Inadequate housing in Europe: Costs and consequences



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Cover image: Hans Dubois, Eurofound. The image is of part of the renovation project of the social housing complex 'Bosleeuw', Amsterdam West, which is described in Case study 4.

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Country codes EU28

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary

IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

List of abbreviations

ATC	Agenzia Territoriale per la Casa [Turin, Italy]
EHS	English Housing Survey
EQLS	European Quality of Life Survey
ERDF	European Regional Development Fund
EU-SILC	European Union Statistics on Income and Living Conditions
Feantsa	European Federation of National Organisations Working with the Homeless
HHSRS	Housing Health and Safety Rating System [UK]
LARES	Large Analysis and Review of European housing and health Status
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
PCA	Principal Component Analysis
PPP	purchasing power parity
REA	Rapid Evidence Assessment
SIP	Social Investment Package
UN	United Nations
WHO	World Health Organization

Executive summary

Introduction

This report aims to improve understanding of the true cost of inadequate housing to EU Member States, and to suggest policy initiatives that might help address poor quality housing along with its social and economic costs. The true impact of housing inadequacies tends to be evident only in the longer term, as do the real savings to healthcare provision, the economy and society that investment in good quality housing can deliver.

The report offers a concise overview of national priorities in the housing policies of Member States and the EU policy agenda, discusses what the research literature has to say about inadequate housing, and presents basic data about the prevalence of certain types of inadequacy in Europe's housing stock. It then develops a model that can be used to estimate what those inadequacies cost Member States.

Eight case studies of projects with diverse target groups aimed at improving inadequate housing are presented in the report, as well as the rationale behind them, how they were implemented and lessons learned.

Policy context

In its 2013 resolution, *Social housing in the EU*, the European Parliament called on Eurofound to examine the cost of inaction on inadequate housing. While housing policies are the prerogative of national governments rather than a specific competence of the EU, many Member States face similar challenges in this field. In some, projects aimed at tackling inadequate housing have provided valuable practical experience that can usefully be shared.

Key findings

- The quality of housing in Europe has been gradually improving; between 2007 and 2011, householders' satisfaction with their accommodation rose from 7.6 to 7.7.
- Inadequacies such as the inability to keep homes adequately warm still affect a substantial proportion of the population in most Member States. Some inadequacies, such as lack of indoor sanitary facilities, are close to non-existent in some countries while affecting up to a fifth of the population in others.
- Housing inadequacies have negative impacts that include ill-health or accidents, resulting in substantial healthcare costs. These costs have not been assessed for the EU as a whole and are not integrated into the planning of Member States' housing policies either.
- The annual total cost to the economies of the EU of leaving people living in inadequate housing is nearly €194 billion.
- The removal of housing inadequacies across the EU, or at least improving them to an acceptable level, would cost about €295 billion at 2011 prices.
- If all necessary improvements were completed at once, the cost to EU economies and societies would be repaid within 18 months by projected savings such as lower healthcare costs and better social outcomes. In other words, for every €3 invested, €2 would pay back in one year.

- If all the work was undertaken now, it is estimated that the savings on healthcare provision alone would be some €9 billion in the first year; this saving would continue to accrue year-on-year.
- Measures that are multifaceted and have the broad goal of engaging residents and improving their quality of life are most likely to succeed.

Policy pointers

Improving data and indicators to assist cost analysis and use of evidence

It would be useful to have comparable information on health costs across all Member States. A ‘value of life’ indicator could be considered for calculation purposes.

- Member States can be encouraged to conduct or upgrade housing surveys, including use of trained inspectors/surveyors.
- Population surveys could be refined to include measures of severity of housing inadequacies and respondents briefed to ensure questions are answered consistently within and between Member States.
- Additional questions in European and perhaps national surveys would improve knowledge of comparative housing conditions between EU Member States. For example, questions about the installation of smoke alarms, single steps between levels, holes in flooring and graspable handrails on stairs.

Translating the data into a cost-benefit message for policies

The findings of this study make it possible to suggest:

- promoting the many benefits of investing in better housing;
- considering the use of housing health and safety ratings to inform the measurement of housing inadequacies in the EU;
- adapting Cost of Inadequate Housing model for processing country-specific data and analysing the costs of inadequate housing;
- encouraging models for social and economic costs of non-action to be applied in housing policy planning.

Development of standards and metrics

Strategies and policies to tackle the problem of inadequate housing must be aware of the cost to health and well-being if no action is taken. This requires the development of standardised housing assessments to determine whether:

- dwellings provide a safe, healthy and hazard-free environment;
- regional factors such as historical construction practices, climate, the local environment, geology, cultural and economic circumstances affect how risks are being addressed;
- building codes should be enforced to ensure newly built dwellings are safe, healthy and hazard-free.

Resident engagement

Initiatives may need to consider the broader social situation of residents and to tailor solutions to the specific needs of individual households.

- If well managed and communicated, initiatives to improve even minor aspects of housing adequacy can increase trust in the agencies responsible and increase the sense of belonging in the neighbourhood. Involving community organisations and residents in the provision of information can facilitate engagement that brings an understanding of needs and preferences, and the enhanced trust this fosters can in turn help ensure positive outcomes for initiatives.
- If initiatives are spread out over longer periods of time and renovations lead to savings (such as lower energy bills), engaged residents may be willing to contribute to them financially.
- The cooperation of engaged residents can increase the efficiency of initiatives – making their homes ready for works, providing information about the buildings they live in and even providing labour.
- There is also evidence that combining housing improvement with other ‘soft’ interventions such as employment and training advice for residents can increase their buy-in and undo some of the social or economic disadvantages caused by their housing situation.
- Increased energy efficiency does not always translate into lower energy costs. It is important to focus on those interventions most likely to pay off, such as making heating systems more user-friendly, and to give more information about how to make the best use of improvements.

Introduction

Millions of citizens within the WHO European Region spend approximately 90% of their time indoors: in their homes (2/3 of this time), workplaces, schools, and public spaces. Despite undeniable improvements in the quality of indoor environments in the last twenty years, a range of health risks still exists, such as indoor air pollution, injury risks, noise, humidity, mould growth, inadequate indoor temperature, lack of hygiene and sanitation equipment, and crowding. Many of these risks are either directly or indirectly related to the quality of the building. Furthermore, problems with building quality disproportionately affect vulnerable population groups in terms of socioeconomic status or age.

(WHO Europe, 2013)

In most European countries, the post-2008 global economic crisis was intrinsically linked to housing, beginning in the property markets and construction sector, its impact seen most vividly in cases of mortgage foreclosure, evictions and homelessness, with many people having to reconsider the standard of accommodation they can afford or accepting lower standard alternatives given the costs of maintenance.

There were, of course, differences across Member States before the crisis in terms of availability and quality of the housing stock, and within country, large differences in standards of accommodation. However, the crisis has exacerbated affordability problems and changed the prospects of housing improvements for many households. It is against this background that the standard of accommodation and the prospect of maintaining and improving it may have declined, including the persistence of inadequate housing conditions for certain groups of the population. Poor housing conditions are not only associated with lower levels of health and well-being, but are part of a vicious circle which increases the risk of poverty and social exclusion. While the negative effects of poor housing have been documented on the basis of specific research projects, it is not known what costs Europe as a whole pays for inadequate housing.

One purpose of this report is to help understand how housing quality compares across EU Member States, and what the social and economic implications of poor quality housing are. What generally are the policy responses and how can early intervention measures effectively reduce the risk of inadequate housing? The European Parliament (2013a), in its resolution on Social housing in the European Union, called on Eurofound to carry out a study examining the cost of non-action on inadequate housing. A focus on costs of non-action is one of the fundamental ideas behind the agenda of social investment, advanced by the European Commission and most notably represented by its 2013 Social Investment Package. Planning of policy (based on the terms of the costs of investment, return, and prevention) requires a good understanding of the size and nature of the problem of inadequate housing.

In the public discourses on housing at both national and international level, several strands of concern persist. Information about the large numbers of unoccupied dwellings in certain states is usually contrasted with the relatively lower numbers of the homeless; also discussed is an urgent need for housing for the new influx of refugees to Europe. However, a debate on use of unoccupied housing stock has to address whether the available houses are in appropriate locations. Also, there are debates about the lack of affordable housing and an increased demand for public housing, as well

as ways to meet the increase in rental costs. Alongside considerations about availability, accessibility and affordability of housing, it is important not to neglect quality of housing, to assess its adequacy and the implications of any potential inadequacies. This report aims to map the extent of existing housing inadequacies, establish their relative importance in terms of cost to society, and to examine practical policy measures to address them.

There is awareness among social partners and policymakers that housing is a large sector that can involve and affect the economy, labour market, industry and societal change. To inform a debate on future policy priorities, this report aims to draw attention to the economic and social costs of inadequate housing and to highlight particular examples of effective preventive measures.

The report offers a concept of inadequate housing and suggests a list of particular characteristics of dwellings that can be seen as inadequacies. The key elements of inadequate housing addressed in the report cover lack of basic facilities such as a bath or indoor toilet, structural problems such as damp, leaks, rot or issues with inadequate heating, and overcrowding. It also considers affordability problems, manifested by rent or utility arrears and the housing cost overburden rate as factors that can affect the ability of residents to address the inadequacies of their dwellings.

To set the scene for the assessment of inadequate housing and policies to address the issue, the report begins by providing a concise overview of priorities in the housing policies of the Member States and in the EU policy agenda. It looks at the understanding and measures of inadequate housing found in research literature, and presents basic data about the prevalence of the features of inadequate housing in Europe.

The report then presents a model that can be used to estimate costs of inadequate housing in monetary terms at European level; a cost estimation is presented as an open model with an expectation that it can be adapted and advanced at country or regional level where relevant data about the housing stock are made available. Chapter 2 of the report presents a series of eight case studies of concrete policies that address inadequate housing; the case studies depict in detail the rationale implementation of the projects, followed by a summary of the lessons to be learnt from different initiatives.

Housing policy priorities in Member States

In 2015, Eurofound's Network of European correspondents were asked to define the three most important objectives of housing policy in their countries and to identify the key obstacles faced in providing access to affordable housing. The correspondents were requested to rely on both official policy documents and on key issues in the public discourse.

The most common housing policy objective among EU Member States is better accessibility to affordable housing, mentioned explicitly by correspondents in 11 countries (Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Finland, Greece, Latvia, Luxembourg, the Netherlands and Slovakia). While many of these country reports did not elaborate further on the point of affordable housing, some were more specific in explaining exactly how they would go about increasing housing affordability. This was the case for Austria, whose housing policy aims to 'reform the housing legislation to ensure access to affordable housing'. Additionally, in four countries (Croatia, Ireland, Italy and Poland), improvements in social housing were specifically cited as a primary policy objective. In Greece, a nation still grappling with the devastating fallout of the financial crisis, a detailed plan was

outlined to provide monthly rent allowance for certain families and individuals in extreme poverty, to help alleviate the financial burden of housing for those most in need, and to fight homelessness.

The second most common housing policy objective is the provision of accessible housing for the most vulnerable population groups. In nine countries (Croatia, Cyprus, the Czech Republic, Finland, Poland, Portugal, Romania, Spain and Slovenia), vulnerable groups were referred to in general without mentioning or specifically targeting one group over another. For example, housing policy in Spain aims to 'promote access to decent housing, with particular attention to housing access among the groups of the population with the lowest number of resources'. However, six countries (Cyprus, Germany, Greece, Ireland, the Netherlands and Slovenia) outlined accessible housing policy objectives that were targeted towards specific population groups like refugees, the elderly and the homeless. In addition to outlining a separate policy objective for vulnerable groups in general, Cyprus also described a policy objective for the 'provision of housing to refugees who were displaced as a result of the Turkish invasion and occupation in 1974'. Denmark took a different approach, aiming to 'avoid the growth of certain housing areas into so-called ghettos with overrepresentation of the lower social classes,' clearly referring to vulnerable groups, but with the goal of discouraging so-called 'bad neighbourhoods'.

Sustainability was the third major theme among housing policy objectives. In Denmark, France and Sweden, the general importance was mentioned of a housing policy that secures a sustainable environment or the sustainable management of natural resources. Policy documents from six countries, primarily in central and eastern Europe (Estonia, Germany, Hungary, Latvia, Lithuania, and Slovakia) pointed to a need for more energy efficient dwellings. This policy objective is a result of both environmental (reduced energy consumption) and economic (reduced utility prices to increase housing affordability) motivations. In Hungary, the primary motivation for increasing energy efficiency is economic, which links back once again to housing affordability. Hungary has the highest utility prices compared with purchasing power in all of Europe and utility costs have thus become an enormous financial burden on many Hungarian families; reducing utility prices is Hungary's most important housing policy objective because it will be the most efficient way of increasing housing affordability across the country. In addition to sustainability and energy efficiency, both Estonia and Finland also mentioned the goal of efficient planning to maximise existing land resources.

Many countries also cited problems of low quality housing (Croatia, the Czech Republic, France, Latvia and Lithuania), energy inefficiency (Estonia, Hungary and Romania), a lack of effective housing policy framework (the Czech Republic, Estonia, Latvia, Lithuania and Poland) and discrimination against vulnerable groups (Austria, Bulgaria and Sweden) as major obstacles to providing adequate housing.

In addition to the major policy objective themes mentioned above, several other patterns appeared among the 28 responses: 8 countries sought to improve overall housing quality (Bulgaria, Croatia, the Czech Republic, Estonia, Lithuania, Malta, Portugal and Spain); 7 countries sought to increase the existing housing stock or provide new homes (Austria, Finland, France, Luxembourg, Slovakia, Sweden and the UK); 5 countries looked to support rental housing (Estonia, France, the Netherlands, Slovenia and Spain); and 4 countries sought to encourage property ownership (Germany, Malta, Poland and the UK). Overall, correspondents from 17 countries mentioned high rents as an obstacle to affordable housing; 7 specifically mentioned challenges to obtain or repay loans (including the challenge of loans taken in foreign currencies); and given high prices of real estate, lack of social housing was another pervasive issue (12 countries).

In summary, the three objectives of housing policy that were most frequently mentioned were:

- better accessibility to affordable housing;
- accessible housing for vulnerable groups;
- sustainability or more specifically in most cases, energy efficiency.

The three most frequently cited obstacles preventing the provision of affordable housing across Europe were:

- high rent prices;
- insufficient social housing;
- the unavailability of loans or the inability to pay loans back.

The maintenance costs of inadequate housing and the consequences of living in such housing did not come to the fore on national agendas, and neither did policies around organising housing improvements (apart from energy efficiency goals). This report aims to shed more light on why these aspects should be addressed by policies.

Housing in the EU policy agenda

There is no doubt that, particularly in the face of economic crisis, housing is now seen as an important policy matter at both country and European level. Although housing is a policy area that is beyond the core EU competences and rests primarily with the Member States, common problems and concerns across Europe have led to more awareness and more consideration of housing at European level. Support to policies in the housing sector is part of the role of the EU Structural Funds as it relates to the multiple policy areas that deal with infrastructure development, both in increasing energy efficiency and addressing social issues. Since the focus of this report is on the social and economic implications of housing inadequacies, this review primarily highlights those housing policy aspects that are related to social and economic developments.¹

When Europe's housing ministers met in December 2013, they called upon the European Commission to ensure that 'the fight against homelessness and housing exclusion finds a place on the European agenda'. Statistics indicate that in a significant number of countries, housing costs – as a share of disposable household income – have increased since the onset of the economic crisis and, even more worryingly, the share of children living in households whose budgets are overburdened due to housing costs has increased in most Member States (European Commission, 2014). With housing costs representing the biggest expenditure item for most Europeans, housing exclusion and homelessness are seen to be one of the most salient problems of the next few years. Prevention of homelessness and access to affordable and decent housing are therefore entering the policy agenda, as are calls for targeted action to improve the quality of housing.

The European Commission's 2013 Social Investment Package calls for social investment to play a role for those people who are disproportionately affected by, among other things, bad housing. It urges Member States to address exposure to environmental hazards, overcrowding and energy poverty.

¹ The Organisation for Economic Co-operation and Development (OECD) has recently reviewed access to good-quality affordable housing, as well as overviewed policies to support access to affordable and social housing in OECD countries (Salvi del Pero, A. *et al.* (2016). Eurofound aims to further knowledge in this area by providing a specific perspective of housing quality.

The package notes that affordable and good quality housing is crucial for well-being and social participation. In its recommendation 'Investing in children: breaking the cycle of disadvantage', the Commission calls for safe adequate housing to be provided to children, stating that they should be able to live in affordable, quality housing (European Commission, 2013).

The Social Protection Committee calls for targeted measures to improve housing quality. Policies should try to raise housing quality standards to diminish the impact of the mortgage crisis and provide assistance to young parents and low-income families in disadvantaged areas (European Commission, 2014).

The European Parliament, acknowledging increasing problems in housing affordability across Europe, has drawn particular attention to social housing. A note on social housing in the EU (European Parliament, 2013b) emphasises that the housing market was hit hard by the recent recession, prompting increasing concerns. The European Commission has also been voicing concern about spending cuts or freezes on social services, including housing (European Commission, 2012, p.38) and has considered housing as a part of the Investment Plan announced at the end of 2014 (EU Task Force on investment, 2014). Support to development and improvement of housing quality is available through the EU's Regional Policy instruments (European Structural and Investment Funds) for purposes such as improving energy efficiency (European Commission, 2015), urban regeneration, and housing as social infrastructure (investment in health infrastructure, reducing health inequalities, promoting social inclusion and community services). Housing-related recommendations also appear in the regular feedback that the European Commission gives to the Member States, as part of the EU economic governance known as the European Semester.²

The consolidation of debate on housing at European level is supported by the efforts of organisations such as Housing Europe and their aim to provide a broad view of the situation in the housing sector across the continent. Their report, *The state of housing in the EU 2015*, points out several key issues affecting many countries: the burden of housing costs, especially in the crisis-ridden countries; crowding and multiple generations sharing accommodation; the 'housing trap' for people who find themselves not eligible for social housing but still struggling to meet rental prices; shortcomings in the quality of dwellings in many central and eastern European countries (Housing Europe, 2015). Other organisations such as the European Federation of National Organisations Working with the Homeless (Feantsa) have consistently worked in recent years to address homelessness, and it is one of the issues that is now also debated at EU level.

By and large, all the strands of the debate mentioned above would benefit from better information on the extent and distribution of housing inadequacies in Europe, as well as from understanding their potential consequences. It is important to consider how the quality of dwellings for various groups in society is likely to change, to what extent it will involve any housing inadequacies, and what implications these can have.

² See also general policy trends as laid out by the European Commission in its *Annual Growth Survey* and reference to housing support in the context of modernising social support (European Commission, 2014, *Annual Growth Survey 2015*, p. 12) and encouragement for social investment (European Commission, 2015, *Annual Growth Survey 2016: Strengthening the recovery and fostering convergence*, p. 9). For a concise review of EU policies that have implications for the housing sector, see Housing Europe (2015, pp. 93–106).

Inadequate housing: concepts and measures

An international perspective on definitions of inadequate housing

A clear terminology in the debate about housing (and its related social policy issues) is lacking and various terms are used to refer to housing inadequacies in policy and research literature. However, there are two particularly important reference points in defining inadequate housing.

1. **The United Nations *Right to adequate housing* (UN-OHCHR, 2009):** This classifies conventional dwellings on the basis of a list of universal characteristics of adequate housing. A conventional dwelling is defined as ‘a room or suite of rooms, located in a permanent building, with separate access to a street or to a common space, intended to be occupied by one household and equipped with basic facilities including a kitchen or other space for cooking, fixed bath or shower, toilet and piped water’; see also Commissioner for Human Rights (2009). Thus, the definition of ‘inadequate housing’ arguably applies to dwellings that do not meet these standards. This type of housing could be classified as ‘inadequate’.³
2. **Feantsa’s *European Typology of Homelessness and Housing Exclusion* (ETHOS):** This is more detailed, whereby a distinction is made between insecure housing and inadequate housing. The first refers to people who live in accommodation without certainty of staying there (temporarily living with friends or family, without legal tenancy or with illegal occupation), people living under threat of eviction and people living under threat of violence. They define inadequate housing more specifically as people living in temporary or non-conventional structures, people living in unfit housing or people living in extreme overcrowding.⁴

A relevant contribution to the consideration of inadequacies in housing in Europe has been provided by World Health Organization Regional Office for Europe (WHO Europe), which initiated a systematic review of housing inadequacies and a development of measures to assess their burden on societies (WHO Europe, 2011, 2013).

Inadequacies of dwellings can be related to, but should be distinguished from, the very broad concept of affordability issues. For example, the OECD Statistics working paper (Balestra and Sultan, 2013) points to ambiguity of the term ‘affordability’ which packs various issues together: the distribution of housing prices, the distribution of housing quality, the distribution of income, the ability of households to borrow and public policies affecting housing markets. All of these factors make it difficult to interpret basic facts about housing affordability. Despite this ambiguity, which the OECD argues is linked to different understandings of the causes and drivers of housing affordability, working definitions and measures are available. At its core, the term is tenure-neutral and denotes the relationship between household income and household expenditure on housing (see also European Commission, 2013).

To define ‘inadequate housing’ for the purposes of this report, an attempt is made to link the concepts from the United Nations (UN) and Feantsa to the available data and research. Learning from the existing research and the analysis of available data can help in understanding how various dimensions of housing inadequacy could be grouped and are interrelated.

³ For application of this approach in reviewing the housing conditions in the EU context, see Eurofound’s report on living conditions of the Roma (Eurofound, 2012c).

⁴ Some experts consider the Feantsa definition as too broad for practical policy purposes (Eurofound, 2012c, p. 7).

What the research literature says about inadequate housing

To understand what types of housing inadequacies are identified in research (that may or may not follow the international frameworks), and to obtain a better understanding about what is already known of the consequences of inadequate housing, Eurofound carried out a literature review. Using Rapid Evidence Assessment (REA) methods,⁵ primary research studies, reviews and meta-evaluations were selected and assessed in a systematic way. In a very condensed form, this process can be summarised as follows:

Search for articles and select them by keywords:

- ‘housing inequality’;
- ‘housing deprivation’;
- ‘housing poverty’;
- ‘housing adequacy’;
- ‘poor housing’;
- ‘poor accommodation’.

Search in research publications databases for articles published after 2002:

- Scopus online database – initial 1,172 articles matching the above keywords;
- additional bibliographical databases:
 - International Bibliography of the Social Sciences (IBBS);
 - EBSCOhost full text databases: Econlit, SocINDEX with Full Text and Business Source Complete;
 - table of contents of 10 leading journals for the years 2010–2014;
 - Google Scholar.

Select the articles for a closer review if they cover, in relation to inadequate housing, the following:

- definitions;
- measures;
- consequences in terms of quality of life;
- consequences in terms of health.

The selection method identified 208 articles which were subjected to a further more thorough screening. This involved examining only English language articles on housing in the EU Member States that were published in peer-reviewed journals. Priority was given to articles published after 2007 and earlier articles had to have at least ten citations. Articles where the same author had published a more recent version were also excluded.

⁵ REAs use systematic review methods to search and critically appraise existing research. The aim is to be rigorous and explicit in method and thus systematic, but make concessions to the breadth or depth of the process by limiting particular aspects of the systematic review process.

In the ‘definitions’ category, only articles that provided a clear description of the meaning of housing inadequacy or related terms were synthesised. In the ‘measurement’ category, where the aim is to obtain a better understanding of how housing inadequacy is measured, the focus was limited to articles that discuss quantitative data measures or at least make reference to surveys that include measures of housing inadequacy. This explains why some of the articles included in the discussion of how housing inadequacy is measured are not included in the discussion of definitions and vice versa.

The ‘consequences for quality of life’ articles had to not only cover one of the quality of life dimensions included in Eurofound’s approach to the concept⁶ (Eurofound, 2012a), but also be linked to the features of housing inadequacy identified in the review of the ‘definitions’ articles. Articles that focused solely on energy poverty were excluded in this REA. Since the majority of research on inadequate housing is concerned with health consequences, only reviews of reviews, or earlier studies and meta-evaluations were assessed in this area because these reviews capture the most important findings. Furthermore, as ‘health consequences’ is not a country-specific phenomenon and much of the literature comes from the USA, here the scope was broadened to include studies from outside the EU.

The exercise resulted in exclusion of a further 180 articles and brought the final number of articles to be synthesised as part of this REA to 28. The topic coverage among the 28 articles is shown in Table 1.

Table 1: Topic coverage among reviewed articles

Article	Year of publication	Definition	Measurement	Quality of life	Health review
Filandri and Olagnero	2014	Yes	Yes	No	No
Haffner et al	2014	No	No	Yes	No
Sengoelge et al	2014	Yes	Yes	Yes	No
Costa-Font	2013	No	No	Yes	No
Dewilde and Lancee	2013	Yes	Yes	Yes	No
Hrast et al	2013	Yes	Yes	No	No
Kennedy and Grimes	2013	No	No	No	Yes
Thomson et al	2013	No	No	Yes	Yes
Webb et al	2013	No	Yes	No	No
Anderson et al	2012	No	No	Yes	No
Lorenc et al	2012	No	No	No	Yes
Norris and Winston	2012	Yes	Yes	Yes	No
Urbanos-Garrido	2012	No	Yes	Yes	No
Gibson et al	2011	No	No	No	Yes
Barnes et al	2011	Yes	Yes	Yes	No
Mandic and Cirman	2011	Yes	Yes	No	No
Bambra et al	2010	No	No	No	Yes
Hodgins and McKenna	2010	No	No	Yes	No
Nolan and Winston	2010	No	Yes	Yes	No
Navarro and Ayala	2008	Yes	Yes	Yes	No
Pevalin et al	2008	No	Yes	No	No

⁶ Eurofound sees quality of life as a broad concept that identifies a number of dimensions of human existence essential for a rounded human life.

Table 1: (continued)

Article	Year of publication	Definition	Measurement	Quality of life	Health review
Poortinga et al	2008	No	Yes	No	No
Bonnefoy	2007	Yes	No	No	No
Clark et al	2007	No	No	No	Yes
Norris and Shiels	2007	Yes	No	No	No
Dewilde and Keulenaer	2003	No	Yes	Yes	No
Evans et al	2003	No	No	Yes	Yes
Thomson et al	2002	No	No	No	Yes
N = 28		N = 10	N = 14	N = 14	N = 8

Note: The sum of the articles per topic is more than the total number of articles reviewed as several articles cover more than one topic.

As Table 2 shows, most of the reviewed literature on housing inadequacies addresses those inadequacies that (by and large) fall into three categories – basic facilities, structural problems and overcrowding; this was also identified by Navarro and Ayala (2008).

Table 2: Inclusion of common features in the literature

Article	1. Basic facilities	2. Structural problems	3. Overcrowding
Mandič and Cirman (2011)	Yes	Yes	Yes
Bonnefoy (2007)	Yes	Yes	Yes
Barnes et al (2011)	Yes	Yes	Yes
Navarro and Ayala (2008)	Yes	Yes	Yes
Sengoelge et al (2014)	Yes	Yes	No
Hrast et al (2013)	Yes	Yes	Yes
Filandri and Olagnero (2014)	Yes	Yes	Yes
Dewilde and Lancee (2013)	Yes	Yes	Yes
Norris and Shiels (2007)	Yes	Yes	Yes
Norris and Winston (2012)	Yes	Yes	No

The measurement items and composite indicators of housing inadequacy, in most articles, include basic facility items and a structural housing problem. It forms a core of the analysis and research discussion, which is then frequently supplemented by analysis of overcrowding and occasionally by affordability or environmental problems.

Consequences for quality of life

The literature review showed that in Europe, people who are at risk of poverty or social exclusion are more likely to live in inadequate housing. As is often the case, there are large differences between countries, with policy traditions playing an important role in explaining these differences. The paper by Dewilde and De Keulenaer (2003), for instance, finds that housing problems occupy a large part of everyday life for the poor in those countries where housing policy has not been considered an integral part of the post-war welfare state. In linking housing policy to the mainstream welfare state theory of Esping-Andersen, the authors argue that the social-democratic welfare state offers the best opportunities to improve access to adequate housing for those with lower income. Navarro and Ayala (2008) argue that the incidence of housing deprivation is strongly related to income, but that this differs depending on the housing inadequacy feature. Having poor basic facilities is most strongly

linked to low income. The researchers also note that inadequate housing is more frequent among renters and that single person households are at a greater risk than couple households. Looking at the relationship between housing conditions and homeownership in EU15 countries, Norris and Winston (2012) note that in southern European countries, inadequate housing is concentrated among the lowest income households, whereas low-income homeowners tend to enjoy relatively good housing conditions in several northern and western European countries like Denmark, Germany, the Netherlands and Sweden. These countries have unitary housing regimes (Kemeny, 1995) which have relatively high and tenure-neutral public spending on housing (each tenure form receives the same level of support) and consequently relatively high housing standards.

Another strand of research has examined the interaction of income inequality and housing inadequacy with health (Thomson et al, 2013; Sengoelge et al, 2014). The study by Sengoelge et al found a significant association between housing strain and all child mortality outcomes. Poor housing conditions are a pathway in the country-level associations between income inequality and gross domestic product (GDP). The article hopefully improves the poor evidence reported by Thomson et al in their extensive systematic review of evidence on low income and poor housing quality. The authors analysed the impact of poor housing on various outcomes. When it comes to explaining income inequality, they report that ‘a near absence of reporting differential impacts prevented analysis of the potential for housing improvement to impact on social and economic inequalities’.

The research by Urbanos-Garrido (2012) not only looked at poverty, but also analysed the role of social exclusion. The author notes that, while housing deprivation contributes to pro-rich inequality, the absence of friendship networks has a strong impact in explaining health inequalities. Because of the importance played by social exclusion, the author calls for a focus on the most vulnerable groups when looking at housing deprivation.

In terms of income, the literature review shows that the incidence of inadequate housing is unevenly distributed among people in the lower income quartiles. In addition to suffering from numerous other problems, people living in poverty are more likely to have to spend a large portion of their income on housing.

Adequate housing is of particular relevance for the elderly (three of the reviewed articles focus specifically on this group). Hodgins and McKenna (2010) explain that assisting housing maintenance and facilitating comfort are pertinent housing policy priorities for older people. In a similar vein, Costa-Font (2013) points to the underlying preference for ‘ageing in place’ which requires giving older people help with house repairs and making improvements in socio-environmental conditions that enable them to remain in their home for longer. This concern about the quality of housing for the quality of life of older people is shared by Nolan and Winston (2010). However, based on their analyses of EU Statistics on Income and Living Conditions (EU-SILC) data for Ireland, they identify a need to distinguish and study the different dimensions of housing-related deprivation as appropriate policy responses will vary across these dimensions which reflect different phenomena and causal processes.

Policy messages

The policy messages, distilled in the research literature in relation to inadequate housing, include the following key points.

- The likelihood of experiencing housing deprivation is higher for both homeowners and renters in countries with more income inequality. With income inequality on the rise in Europe, the finding

that relative income differences influence access to decent and affordable housing is important and policy-relevant (Dewilde and Lancee, 2013).

- There is a need to design policies that are differentiated according to the different classes of problems and social groups affected (Navarro and Ayala, 2008).
- Tackling differences in housing conditions at country level within and between European countries may mitigate the negative consequences of income inequality on child health and safety (Sengoelge et al, 2013).
- There is a need for improved policy implementation regarding housing maintenance and facilitating home comfort for the older population (Hodgins and McKenna, 2010; Costa-Font, 2013).

Housing as a social determinant of health

It is understood that the so-called social determinants of health are the sum of the conditions in which people grow up, live, work and age. All of these have an impact on physical and mental health. Social determinants of health not only include the quality of early years care and education as well as the presence of employment and market income, but also the often neglected environment in which people live. Housing in that sense is one of the key social determinants of health. Each aspect of housing – both sanitary, structural and comfort – can have a direct or indirect impact on health and well-being, including physical and mental health, in the immediate and longer term.

Over the last four or five decades, there has been a growing interest in evidence on the relationship between housing conditions and the health of occupants. The evidence base is extensive and includes:

- reviews on the relationship (Ranson, 1991; Burrige and Ormandy, 1993; Ineichen, 1993; AJPH, 2003; Howden-Chapman and Carroll, 2004; Reviews on Environmental Health, 2004);
- several conferences demonstrating the wealth of international studies (University of Warwick, 1986–2006 and World Health Organization (WHO) 2002 and 2004);
- analyses of data sources (Marmot et al, 1991; Sandel et al, 1999; Attanasio and Emmerson, 2001; Ormandy, 2009; Ridge, 2009).

Many research designs directly measuring the impact of inadequate housing on health are ex-post facto designs or natural experiments. This means that, for example, residents' health or their use of medical services is measured before and after major works on their homes were carried out, for instance when a town council decides to refurbish social housing. The number of intervening and confounding variables (such as lifestyle and working conditions) in data that were not designed for the purpose of housing health analysis, however, often makes it difficult to demonstrate clearly measurable 'cause and effect' relationships (Thomson et al, 2002). Nevertheless, there is a wide range of other evidence (so-called 'grey evidence') relating the condition of buildings (including houses) to health and safety (DCLG, 2008). In addition, many practical developments are accepted as being beneficial without the need for research or proof, such as child safety locks for windows and cut-off devices for gas appliances.

Housing conditions that can have an effect on health and/or safety include:

- dampness and mould growth, which can exacerbate respiratory conditions such as asthma and bronchitis;

- inadequate ventilation reducing indoor air quality and allowing a build-up of pollutants;
- energy inefficiency resulting in low indoor temperatures (cold homes);
- poor sound attenuation allowing noise to penetrate;
- poor design making it difficult to maintain a clean and healthy indoor environment;
- features that increase the likelihood of accidents such as falls;
- poor design and layout of kitchens increasing the possibility of accidents with hot liquids;
- faulty equipment with an increased likelihood of a fire starting and spreading.

Ideally, it should be possible to carry out normal day-to-day household activities without unwanted and potentially harmful side effects. The US National Center for Healthy Housing (NCHH) website,⁷ for example, proposes seven characteristics of a healthy home:

- **dry:** damp dwellings provide an optimum environment for mites, cockroaches, rodents and moulds, each of which are associated with asthma and allergies;
- **clean:** clean homes reduce the possibility of pest infestations and exposure to contaminants;
- **pest-free:** studies have shown a causal relationship between exposure to mice and cockroaches and asthma in children (although health problems can also be exacerbated by pesticide residues, which can pose a risk of neurological damage and cancer);
- **safe:** the majority of children's physical injuries occur in the home and falls are the most frequent cause, followed by injuries from objects, burns and poisoning;
- **contaminant-free:** exposures include lead, radon, pesticides, volatile organic compounds (VOCs) such as formaldehyde, carbon monoxide, oxides of nitrogen, and second-hand tobacco smoke;
- **ventilated:** studies have shown that a supply of fresh air improves respiratory health;
- **well-maintained:** poorly maintained dwellings are at risk from moisture and pests.

In 2002–2003, WHO Europe organised and coordinated the Large Analysis and Review of European housing and health Status (LARES) study (Ormandy, 2009). It obtained data from 8,519 individual residents in 3,373 dwellings in 8 European cities: Angers (France), Bonn (Germany), Bratislava (Slovakia), Budapest (Hungary), Ferreira do Alentejo (Portugal), Forlì (Italy), Geneva (Switzerland) and Vilnius (Lithuania). This study made a major contribution to the evidence on the links between housing conditions and the health and well-being of the occupants through its unique cross-disciplinary approach to data analyses. The LARES report also provided evidence of the relationships between health and indoor air quality, dampness (Nafstad et al, 1998; Wickman et al, 2003; Belanger et al, 2003), thermal comfort (Eurowinter Group, 1997; Keatinge and Donaldson, 2000; Wilkinson et al, 2001), noise and domestic accidents.

There is also evidence to suggest that the social cohesion of the community, and the sense of trust and collective worth, depends to some extent on the quality of the immediate environment. In addition, evidence suggests that the quality of urban design and maintenance can have an impact on social, mental and physical health. Poorly planned or badly maintained residential areas that

⁷ <http://www.nchh.org/WhatWeDo/HealthyHomesPrinciples.aspx>

lack public services, greenery, parks, playgrounds and walking areas, have all been associated with a lack of physical exercise, increased prevalence of obesity, cognitive problems in children, and a loss of the ability to socialise.

Symptoms of neighbourhood decline affect residents through both visual mechanisms (litter and pollution) and social mechanisms (segregation, loitering and increased insecurity). The urban planning and layout may lead to an increased dependence on individual transportation, resulting in increased pollution and noise exposure, and endangering or isolating those likely to be more susceptible such as the very young, the elderly, and those with functional limitations.

Apart from understanding causal relationships between inadequate housing and health impairments or other social consequences, policy planning could benefit from estimates of the cost of deteriorated health and the likely cost of making the housing adequate, reducing hazards, and the costs to individuals and society, which is a focus of Chapter 1 – Economic and social costs of inadequate housing.

Prevalence of inadequate housing across Member States

Two major sources that provide data about housing characteristics and cover all the EU Member States are EU-SILC and the European Quality of Life Survey (EQLS). The EQLS makes it possible to measure the prevalence of (self-perceived) inadequate housing on the basis of the UN definition, as the survey asks (Q19)⁸ whether people experience a range of problems with their accommodation. These cover the characteristics of a conventional dwelling and in addition capture overcrowding (referred to by Feantsa) through self-reported lack of space.

On the basis of the EU-SILC data, collected by the statistical offices of the Member States, inadequate housing is measured in terms of overcrowding and the following poor amenities in the household: a leaking roof; no bath/shower; no indoor toilet; or a dwelling that is considered too dark. Eurostat uses the above information to produce an indicator of severe housing deprivation, defined as the rate of population living in overcrowded dwellings while having at least one of the aforementioned inadequacies. The EU-SILC ad hoc module on housing (2007 and 2012) includes additional information on deficiencies that help to assess the state of housing using the UN definition of a conventional dwelling (UN-OHCHR, 2009). The affordability aspect is represented by the housing cost overburden rate.⁹

The Third EQLS, carried out by Eurofound in all 28 EU Member States in 2011, includes nine items that measure housing inadequacies. To see how the individual inadequacies relate to each other, these nine items were entered into a principal component analysis (PCA). As Table 3 shows, the nine items fall into four distinct groups.

⁸ See Third EQLS questionnaire, available on the Eurofound website.

⁹ See *Housing statistics* (Eurostat, 2015).

Table 3: Features of housing inadequacy – PCA

Factor	Variables	Eigen value	Factor loading
Basic facilities	Q19d. Lack of indoor flushing toilet	2.3	0.93
	Q19e. Lack of bath or shower		0.93
Affordability	Q60a. Rent or mortgage arrears	1.6	0.89
	Q60b. Utility arrears		0.89
Structural problems	Q19c. Damp or leaks		0.78
	Q19b. Rot	1.2	0.75
	Q59a. Can't keep home adequately warm		0.54
Lack of space	Q19f. Lack of space to sit outside	1.0	0.80
	Q19e. Shortage of space		0.74
Total variance explained:			69%

Source: EQLS 2011, EU28, Eurofound calculations.

The analysis in Table 3 shows that the various inadequacies fall into the following four inadequacy types: basic facilities; structural problems; lack of space (proxy for overcrowding); and affordability. Specific inadequacies are associated with each other; for example, damp or leaks, rot and heating problems are more likely to come together than other inadequacies, and therefore can be seen as a certain type of issue and grouped together in the category of structural problems.

The analysis above echoes what has already been observed in the research literature and suggests that EQLS housing inadequacy items do measure issues across the main housing inadequacy domains (basic facilities, structural problems and overcrowding). While the analysis confirms that these elements of inadequate housing are indeed, with affordability, four independent types, it is worth considering affordability separately rather than treating it as a part of one list of dwelling-related problems. Including it makes analysis of inadequate housing by poverty and socioeconomic status difficult, as these dimensions are then already embedded in the definition. Furthermore, affordability problems as represented by the two EQLS items (arrears on rent/mortgage and utility bills) are likely to demand different policy responses and interventions than those needed to improve a dwelling's quality.

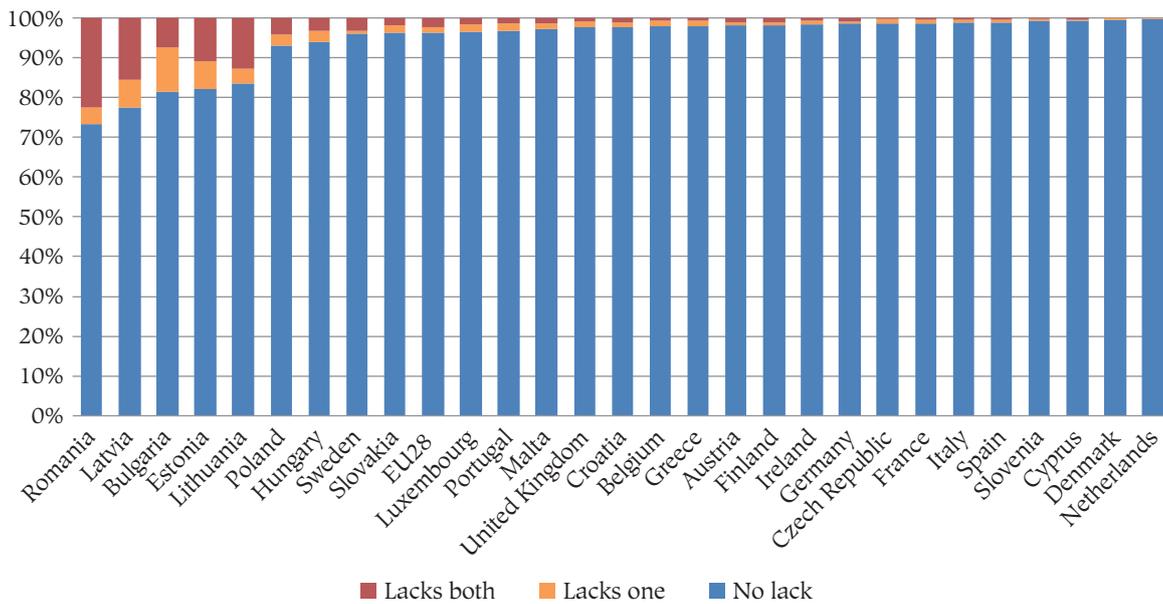
The three main housing inadequacy areas – basic facilities, structural problems and lack of space (as a proxy for overcrowding) – are discussed separately in the following three sections by briefly describing each area¹⁰ and then presenting the prevalence of housing problems across Member States graphically.

¹⁰ More detailed information about the distribution of each individual item is reported in the Third EQLS overview report (Eurofound, 2012a).

Lack of basic facilities

The Third EQLS overview report notes that only 3% of the EU population lives without basic facilities, although behind the EU averages there are large country differences (Eurofound, 2012a). As can be seen in Figure 1, basic facilities are absent, especially in Romania, where 22% of the population lack both an indoor toilet and bath/shower. Similar problems are encountered in Bulgaria and the Baltic states.

Figure 1: Lack of basic facilities: indoor flushing toilet and bath or shower

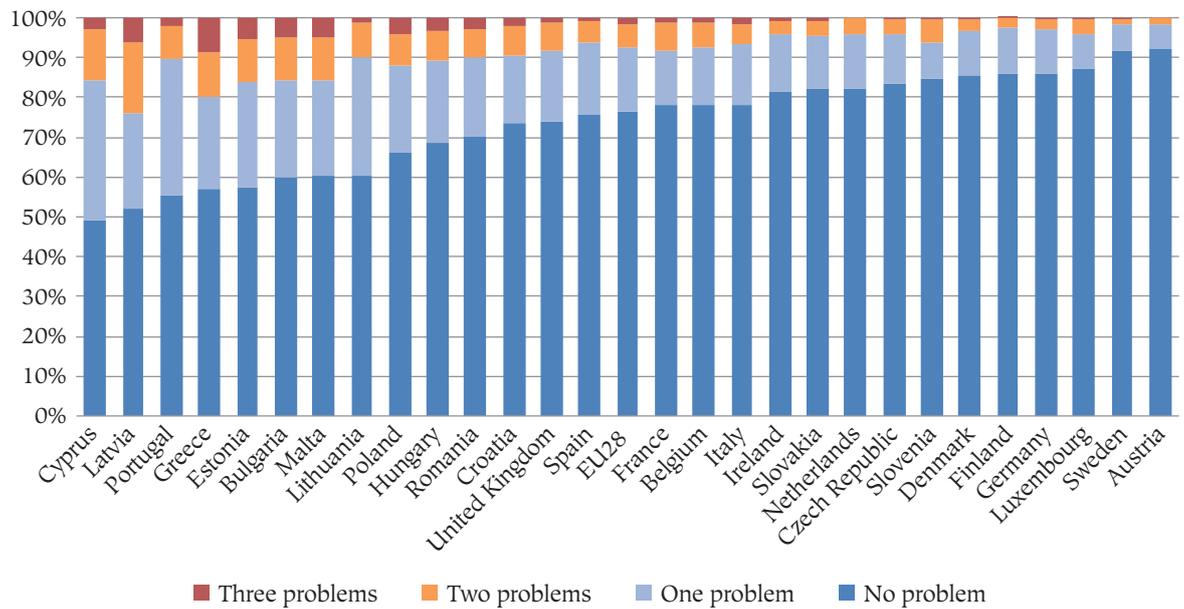


Source: EQLS 2011.

Structural problems of dwellings

The presence of structural problems is more common with, on average, 12% of EU residents reporting damp or leaks in walls and roofs and 9% living in accommodation with rot in windows, doors or floors. 14% of residents indicate that they cannot afford to keep their home adequately warm (Eurofound, 2012a). Structural problems are, on average, most common in Cyprus where 51% of dwellings have a structural deficiency. Structural problems are least common in Austria and Sweden, where 92% of residents reported no problems, as shown in Figure 2.

Figure 2: Structural problems in dwelling



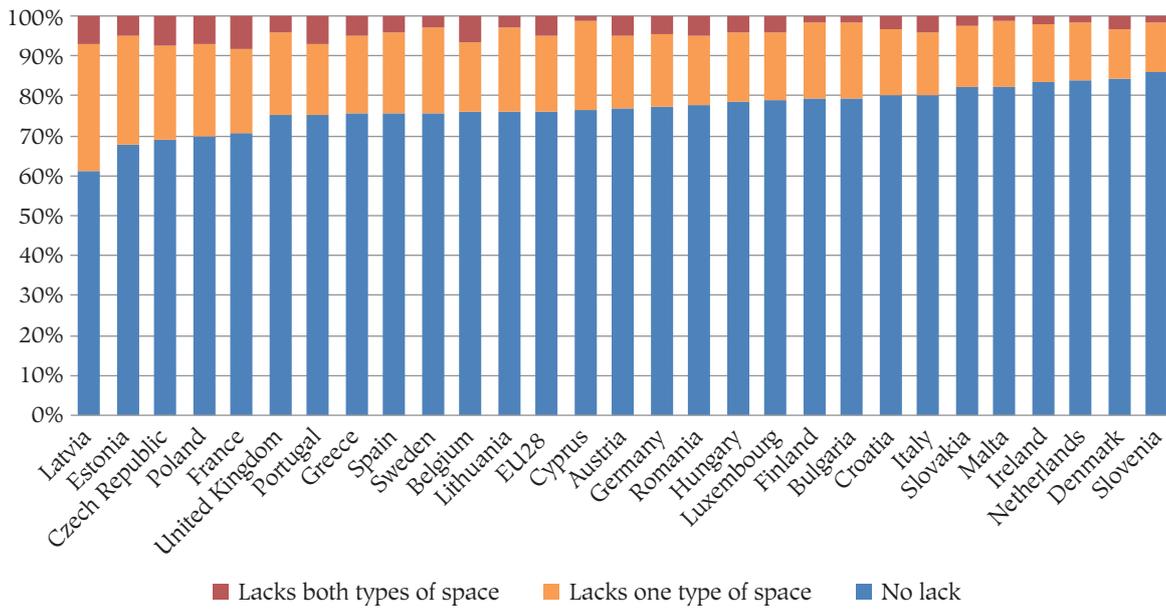
Note: Problems include: damp or leaks; rot; and 'can't keep home adequately warm'.

Source: EQLS 2011.

Lack of space

Shortage of space is the most commonly reported housing inadequacy in the EU; 15% of EU residents on average report 'shortage of space' and 14% do not have a garden, balcony or terrace (Eurofound, 2012a). Inadequacies in terms of space are most often reported in Latvia, where 31% report one of the two overcrowding problems and a further 7% report both, shown in Figure 3. It is least common in Slovenia where 86% of the population report no problems regarding space.

Figure 3: Lack of space: shortage of space and lack of space to sit outside

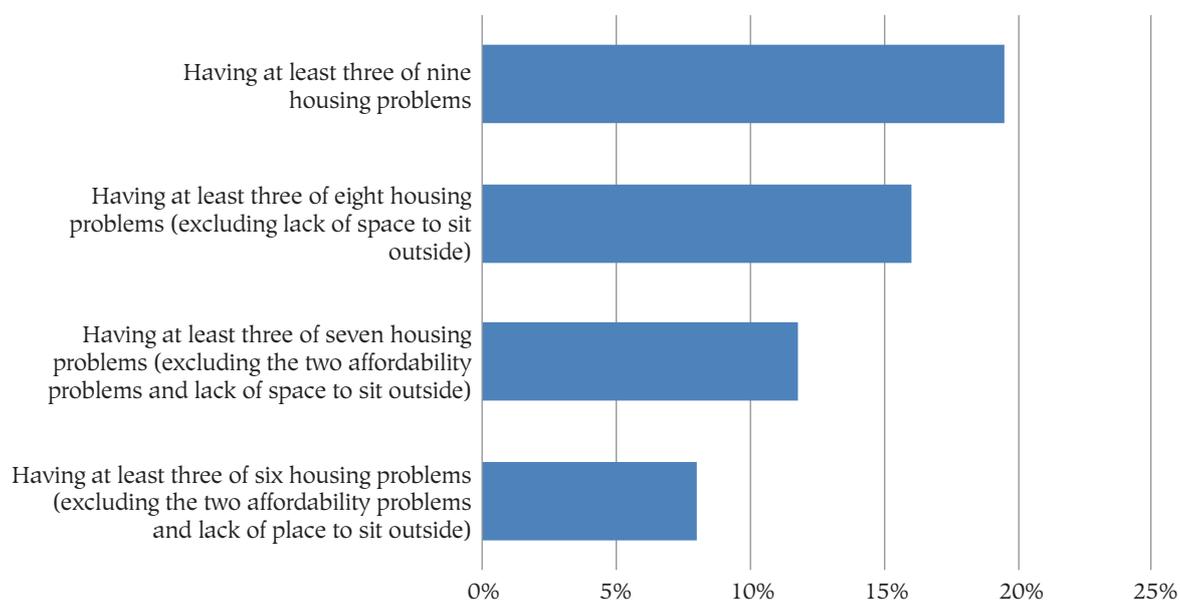


Source: EQLS 2011.

The level of housing inadequacy in perspective

The overall prevalence of housing inadequacy can also be assessed by comparing the number of existing housing problems against the entire list of available information. If a threshold of three or more housing-related problems is chosen as a definition of serious housing inadequacy, the proportion of the population who experience it can be assessed. However, as shown below, this will depend on how broad a set of housing problems is considered.

Figure 4: Proportion of EU population with three or more housing inadequacies



Source: EQLS 2011, EU28.

Figure 4 gives useful background for a discussion of the extent of problems when identifying housing inadequacy. This overview suggests a couple of conclusions. It may be worth narrowing down an area or type of inadequacy to focus on: in this way, the extent of a problem can be measured more precisely and policy responses are likely to be more effective if they target a set of closely interrelated problems. However, the review of the proportion of the population experiencing inadequacies against a larger set of potential problems shows there is a considerable proportion of the population to whom housing is a problem in multiple ways (at least three problems of various types).

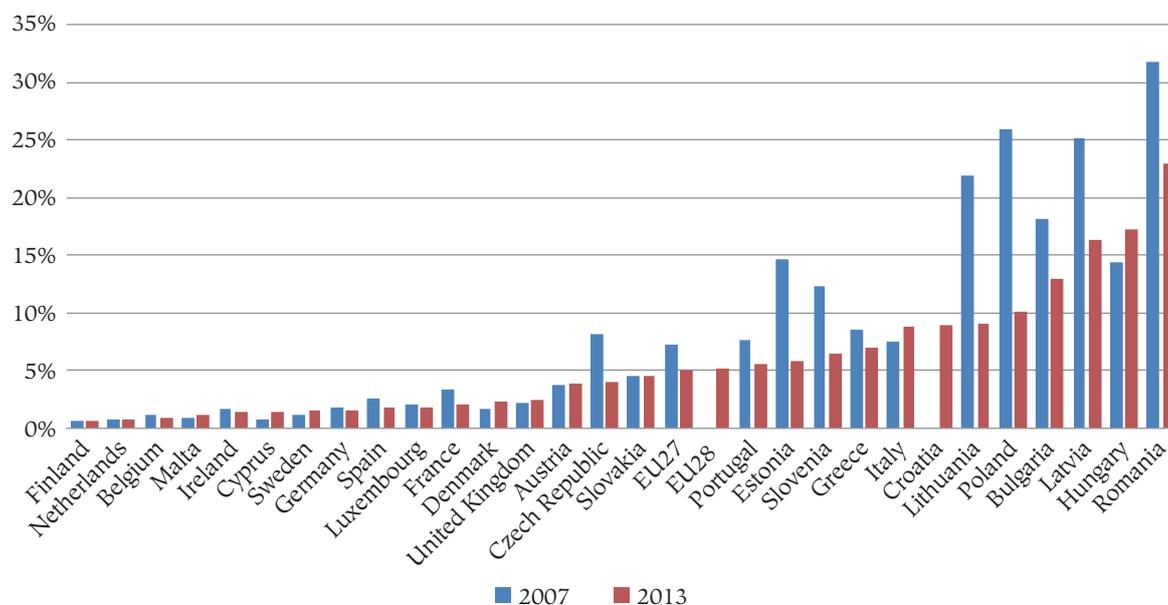
Further analysis focuses on the dwelling characteristics directly, so that the factors that are of a physical and technical nature can be addressed in a focused, targeted way.

Severe housing deprivation (EU-SILC)

The severe housing deprivation rate, as reported by Eurostat on the basis of EU-SILC data, is defined as the percentage of the population living in an overcrowded dwelling (defined on the objective basis of availability of rooms for inhabitants; see Eurostat's housing statistics for details), while also exhibiting at least one of four housing deprivation measures: a leaking roof, damp or rot; no bath/shower; no indoor toilet; or a dwelling that is considered too dark. On average, 5% of EU residents suffered severe housing deprivation in 2013. The proportion of the affected population is highest in

Romania (23%), followed by Hungary (17%) and Latvia (16%), as shown in Figure 5. By contrast, severe housing deprivation is below 1% in Belgium, Finland and the Netherlands (Eurostat, 2014).

Figure 5: Severe housing deprivation rate, 2007 and 2013



Source: EU-SILC (ilc_mdho06q)

Eurostat notes that:

Although severe housing deprivation is still most common in many of the eastern EU Member States, large improvements are being noted in this region. Overall, in the 12 countries that joined the EU since 2004, the rate fell by nearly nine percentage points since 2007 (from 22% to 13%).

The only exception is Hungary, where severe housing deprivation has increased by nearly three percentage points since 2007. Italy is the only other country where an increase of more than one percentage point (+1.8) was noted between 2007 and 2013 (Eurostat, 2015).

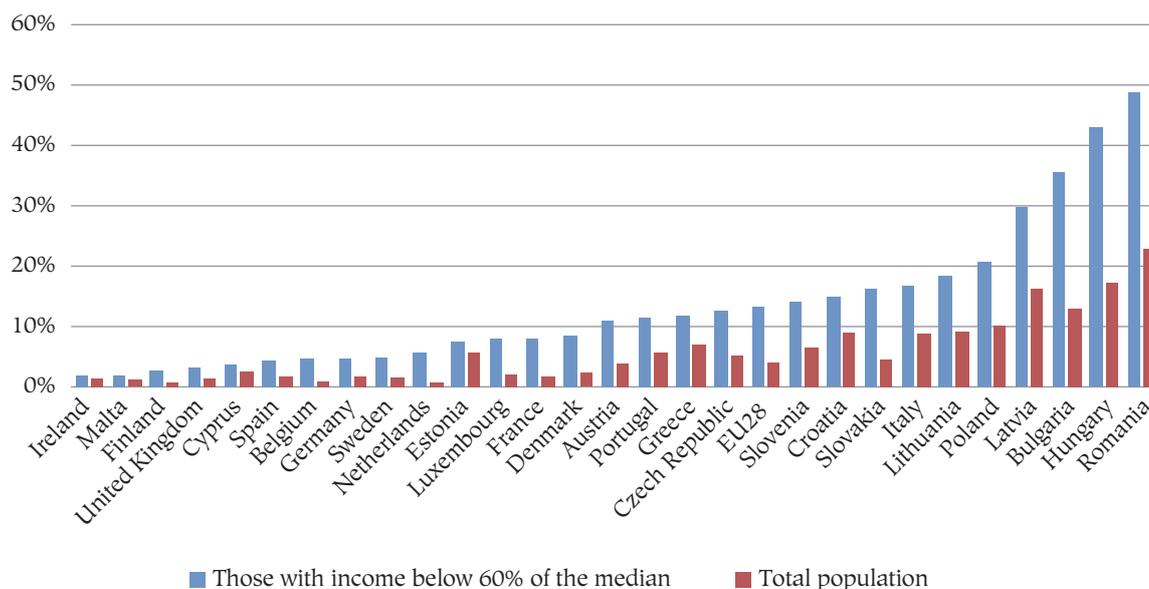
Overall, severe housing deprivation fell in the European Union by two percentage points between 2007 and 2013. In a similar vein, the EQLS found a positive trend in people's overall satisfaction, with accommodation satisfaction improving between 2007 and 2011 (from 7.6 to 7.7). As the Third EQLS overview report notes, this improvement is confirmed by an observed decrease in reported problems such as 'shortage of space' and 'lack of place to sit outside' (Eurofound, 2012a). This can be explained by real improvements of the dwelling: the mean number of reported rooms per member of the household increased from 1.6 to 1.9. 'Lack of indoor flushing toilet' and 'lack of bath or shower' both became rarer (both decreased from 4% to 3%) (Eurofound, 2012a).¹¹

¹¹ There are several reasons that prompt the authors to put EQLS and EU-SILC data together when seeking an overview of the situation to understand changes in Europe. EU-SILC has the advantage of larger sample sizes and therefore higher precision of estimates than EQLS. EQLS is an input-harmonised survey, while some researchers suggest the comparability of EU-SILC indicators across countries can be affected by different formulations in the national questionnaires. Comparability of the results of housing module results may also be affected by differences in some national questionnaires in 2007 and 2012 (Lelkes and Zolyomi, 2015, p. 4).

Risk factors for housing inadequacy

The average improvement in housing quality has not reached all parts of the population and there are marked differences, for instance, across income groups as shown in Figure 6.

Figure 6: Severe housing deprivation rate among total population and those with below 60% of median income



Source: EU-SILC data for 2013.

Data from the EQLS confirm findings reported in the literature review about which groups in the population are disproportionately affected by housing inadequacies. Navarro and Ayala (2008) for instance show that the incidence of housing deprivation is strongly related to income, but that this varies depending on the housing inadequacy feature. Poor basic facilities are most strongly linked to low income. The EQLS shows that close to half of the people in the lowest income quartile in Romania (47%) and Bulgaria (44%) lack an indoor flushing toilet. In a study covering the EU15, Norris and Winston (2012) note that in southern European countries, inadequate housing is concentrated among the lowest income households, whereas low-income homeowners tend to enjoy relatively good housing conditions in several northern and western European countries such as Denmark, Germany, the Netherlands and Sweden. The EQLS shows that 40% of people in the lowest income quartile in Greece live in homes with damp or leaks, compared with just 4% in Sweden (in 2011). Lelkes and Zolyomi (2015) also confirm that the poor are disadvantaged in all countries where housing inadequacies were measured (through analysis of EU-SILC 2007 and 2012 module). They conclude by saying:

This signals their cumulative disadvantage and the necessity of coherent policies for social inclusion, including not only the alleviation of monetary poverty but also the improvement of the housing problems, especially for the low-income groups.

Lelkes and Zolyomi (2015, p. 12)

The EQLS data also show a strong link with physical health, which is confirmed in research literature (found during the REA in health reviews). The systematic review of the literature carried out by Thomson et al (2013), for instance, concludes ‘that improved health is most likely when the housing improvements are targeted at those with poor health and inadequate housing conditions, in particular inadequate warmth’ (Thomson et al, 2013, p. 6). The EQLS shows that especially ‘damp or leaks in walls or roof’ and ‘rot in windows, doors or floors’ are associated with low health satisfaction, even after taking into account the other problems and income levels. People experiencing problems with damp in their dwelling rate satisfaction with their health at 6.7, while those who do not experience such problems rate it at 7.4. For rot in windows, doors or floors the difference in health satisfaction is similar: 6.6 compared with 7.4 (Eurofound, 2012a).

Economic and social costs of inadequate housing

Very few data are available on the cost of inadequate housing across Europe. One study in England has looked in detail at the health costs associated with poor housing and the potential cost of mitigating this risk through repairs. This chapter considers how the English data and methodology can be applied across the 28 EU Member States by using the EQLS data on inadequate housing as a starting point. It is acknowledged that England is not necessarily representative of every Member State, either in terms of the cost to repair problems or in the cost of health issues arising from these problems. However, through the use of cost comparator indices, this analysis aims to provide a credible first attempt at pricing the burden of inadequate housing across Europe.¹²

Measuring inadequate housing

Housing costs represent the biggest item of expenditure for most Europeans, while housing exclusion and homelessness are one of the most salient problems of recent years (Healy, 2003; Norris and Shiels, 2007; Harvey, 2008). Housing inadequacies lead to substantial and multiple impacts on health (Bentley et al, 2012; Bloze and Skak, 2012; Urbanos-Garrido, 2012; Verhaeghe and Tampubolon, 2012) and have many other consequences, such as poor educational attainment (Gibbons and Machin, 2008; Sykes and Kuyper, 2009), crime, lack of well-being (Bonnefoy, 2007; Lorenc et al, 2012) and problems for social cohesion (Bonnefoy, 2007; Egan et al, 2008). The costs incurred by bad housing and poor neighbourhoods vary greatly and therefore are difficult to measure, especially when consequences may only be seen in the long term. Calls for targeted action to improve access to decent housing and prevention of inadequate housing are likely to be more effective if they employ evidence to demonstrate costs and potential gains involved.

As pointed out in the Introduction, there are three common themes running through the literature on housing inadequacy: lack of basic facilities, structural problems and lack of space. However, the indicators used vary greatly between research studies, having been driven by the availability of data, typically from social surveys, rather than measured through bespoke inspections by trained professionals.

There are two approaches to the assessment of housing conditions: the detailed assessment of an individual dwelling through an inspection or physical survey, and a local or national sample survey of residents of the housing stock.

Individual inspections are used to determine the state and condition of the individual dwelling and whether its condition requires remedial action or improvement. The detail, focus and approach of the survey will depend on the reason for the assessment. For example, an individual dwelling can be assessed to determine its financial value or whether it is providing a safe and healthy environment for the occupying household or potential occupants. Most assessments will focus on any applicable controls, for example building codes, other legal standards, or requirements. Apart from problems identified by respondents in surveys, an inspection by a trained professional could obtain more details of housing inadequacy, including the underlying reasons as well as the potential hazards for the health of residents.

¹² This chapter is based on a background study commissioned by Eurofound and carried out by BRE in 2015 as a part of the project. The report, Nicol et al, 'The cost of poor housing in the European Union' (forthcoming) is available on demand from Eurofound and is expected to be released by BRE online.

Sample surveys are geared to providing information to inform policies and strategies. They provide data on local or national housing conditions and can be used to monitor the effectiveness of housing programmes. A nationally representative survey collects information on the housing situation to give a wider picture, for example, of what level of comfort, eventual problems and potential hazards can be observed in dwellings. The type of information collected cannot be as detailed or precise as data and measurements collected by a housing inspection. Sample surveys are not intended to provide information for the purpose of necessary improvements for an individual dwelling. However, they can be used for investigating the relationship between housing conditions and the social and economic costs to society attributable to the risks posed, and the cost of removing, or at least reducing, those risks. For the data sources on housing conditions in the EU, see annexes of Eurofound's background study, Nicol et al (forthcoming).

The first requirement is an estimate of the costs associated with living in inadequate conditions. This would assist the formulation of policy decisions about where best to invest to reduce the burden of inadequate housing. A methodology to consider these costs is introduced here, based on the research conducted in the UK on the cost of poor housing (Roys et al, 2016). It considers the background literature on the direct and indirect costs of inadequate housing and provides an estimate of the financial burden associated with such housing. The most important costs are medical, but there are many other secondary costs involved. The major part of this chapter focuses on healthcare costs and establishes a starting point until more accurate data become available from Member States.

What makes up the cost of inadequate housing – outline of a model

Types of costs

One of the most comprehensive reviews of inadequate housing (Ambrose et al, 1996) provides a matrix of costs, categorising them in terms of their impact on individual households and society, and their measurability. These costs might also be classified further in a number of ways such as: social or economic; direct or indirect; quantifiable or unquantifiable; borne by the resident or borne by others; applicable to an individual home or applicable to housing environments, the community or society.

Such heuristics and definitions necessarily overlap and there is no agreed approach to their application to housing inadequacies. Table 4 suggests that there are a considerable range of costs which might be associated with inadequate housing, independent of the way it might be defined.

Table 4: Costs associated with inadequate housing

Residents' costs	External costs
Annual loss of asset value if owned (H)	Annual loss of asset value if rented (H)
Poor physical health (H)	Higher health service treatment cost (H)
Poor mental health (M)	Higher mental health service treatment cost (H)
Social isolation (NQ)	Higher care service treatment cost (M)
Higher home fuel bills (H)	Higher building heating costs (H)
Higher insurance premiums (H)	Higher external insurance premiums (NQ)
Uninsured content losses (M)	Uninsured external losses (M)
Under-achievement at school (NQ)	Extra school costs/homework classes (H)
Loss of future earnings (M)	Loss of talents to society (NQ)
Personal insecurity (NQ)	High policing cost (H)
More accidents (M)	High emergency service costs (H)
Poor hygienic conditions (NQ)	High environmental health costs (H)
Costs of moving (M)	Disruption to service providers (M)
Adopting self-harming habits (M)	Special healthcare responses (H)
Cost of repair, maintenance and improvement (H)	Government and EU programmes (H)

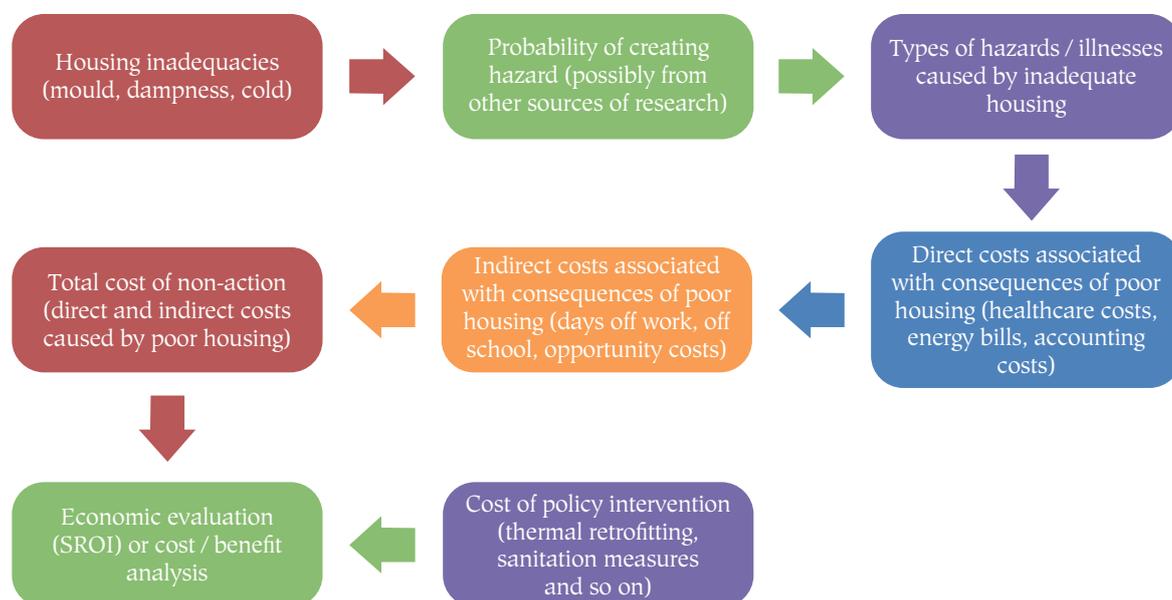
Note: The table indicates whether the cost can be quantified (H). It also identifies costs that could be quantified given better data (M), and costs that exist but are probably non-quantifiable (NQ).

Source: Ambrose et al (1996).

To apply these costs to specific housing, it is essential to know what condition the dwelling is in, what problems exist and whether these can be mitigated. In addition, an assessment of investment would need to determine how much it would cost if nothing gets done and how much it would cost to reduce or remove these problems.

Improving housing inadequacies will involve expenditure, but will also deliver savings which can be regarded as benefits; a comparison of the costs with benefits can give an appreciation of returns to social investment. The relationship between the various steps (and inputs) of cost analysis can be summarised in the flow diagram in Figure 7.

Figure 7: Total appreciation of costs and benefit relationships



Source: Eurofound (elaborated in-house in 2014).

Housing inadequacies such as mould, dampness and cold or structural damage may increase the probability of a series of hazards, such as asthma, rheumatism, allergies, lung diseases or even a heart attack. Each hazard incurs direct costs ranging from healthcare bills and higher energy bills in winter, to other costs such as damage to property. In addition, indirect costs are also associated with hazards and their consequences: days off work due to illness and the consequent lost earnings; money that cannot be spent or saved because it has to be spent on fuel; long-term future consequences such as poor labour market outcomes for children growing up in poor housing and missing school for long periods due to ill-health related to poor housing. For more information, see Nicol et al (forthcoming) for types of costs and for health risks related to various inadequacies.

Housing and health costs

The causal relationship between housing problems and poor health outcomes is difficult to establish. As well as the inadequacy of housing, many other factors such as poverty, deprivation, unemployment, drug and alcohol abuse could lead to similar outcomes; often residents in inadequate housing have lifestyle problems, are in poor health and could not afford better housing.

While it is broadly recognised that these costs exist, it is impossible to ascribe most of them to particular inadequacies in the home. Nevertheless, where housing inadequacies have been tackled through repairs, there is growing evidence that a reduction of risk follows.

Some studies on the relationship between housing and health

Living in inadequate housing increases risks to health and safety and negatively affects well-being. If the risk is realised there will be costs for medical care, which may vary with the type of treatment. Sickness and disablement will mean that school or work days are lost, which has an impact on skills, education, and personal income. Lawson (1997) argues that the National Health Service (NHS) in the UK spends about one-fifth of its clinical budget on trying to cure illnesses actually caused by unemployment, poverty, bad housing and environmental pollution. The UK Audit Commission (2009) stated: 'Every £1 spent on providing housing support for vulnerable people can save nearly £2 in reduced costs of health services, tenancy failure, crime and residential care'.

More specifically, the costs to the NHS for treating ill-health resulting from sub-standard housing have been estimated at GBP 2.4 billion per year (National Housing Federation, 1997) revised up to GBP 2.5 billion in 2010 (National Housing Federation, 2010). The latter figure compares with the range of GBP 2.3 billion to GBP 3.3 billion quoted for the annual impact of smoking on the NHS (Scarborough et al, 2011).

The issue of quantifying the effect of poor housing was taken up in Australia by Berry (2002), who comments that 'sufficient evidence exists to suggest that by seriously attacking the issue of insufficient affordable housing ... government can materially alleviate a range of economic and social problems, while reducing the cost to taxpayers, in the longer term'. Furthermore, a paper on home injuries in the USA calculated the medical costs of home injuries to be some USD 11.8 billion per annum, of which some 16% could be attributed to falls on stairs and steps (Zaloshnja et al, 2005).

This cost to the health services, and potentially the cost to society, only remains if the health and safety risk is not mitigated. Therefore, making improvements and repairs to housing has the potential to turn these annual costs into a benefit. The cost of repair should be included in any assessment of the cost of inadequate housing. Good information is available in the UK from national housing surveys on the cost to repair hazards that impact health. However, similar information for other European countries is not as extensive or even available. Beyond the direct medical costs, the other social and economic impacts of inadequate housing are much more difficult to identify and measure.

Capturing (assessing) hazards to health – the UK Housing Health and Safety Rating System (HHSRS)

Following several studies into the effectiveness of the existing statutory standard for housing, in 1998 the UK government commissioned the development of a new approach. The underlying concept was to focus on the potential threats to health and safety posed by the characteristics and condition of a dwelling. The development started with an extensive literature review of medical, architectural, engineering and building-related sources.

This produced a list of 29 potential hazards, partially or completely attributable to the condition of a dwelling. The review also provided details of the potential health outcomes from each of these hazards. The wide range of differing health outcomes were grouped into four classes of harm (1 Extreme, 2 Severe, 3 Serious, 4 Moderate). This differentiation was based on the degree of incapacity caused, irrespective of whether the outcome was an injury, health condition, or illness (Raw et al, 2000). Only outcomes serious enough that the victim would (or should) seek medical attention were used, as only these provide evidential data. A methodology was developed to allow the comparison of the likelihood and severity of harm from these 29 hazards; the 29 hazards and the health risks associated with them are listed in annexes of Nicol et al (forthcoming).

The UK's 2004 Housing Act introduced the HHSRS as the basis for local authority action to address housing conditions in its area. It was brought into effect in April 2006 and the HHSRS became the prescribed method for assessing housing conditions, and the precursor to determining whether local authorities should exercise their duties and powers to deal with unsatisfactory housing conditions. At the same time, the HHSRS was incorporated into the English Housing Survey (EHS), providing data on the general state of the housing stock to inform policies and to monitor the effectiveness of those policies. The HHSRS can not only determine the severity of threats to health and safety, but can also be used to judge the effectiveness of remedial action by assessment before and after works have been carried out. These two assessments, the pre-remedial and post-remedial action assessments, form the basis of any HHSRS-based cost-benefit analysis.

Estimating the cost of inadequate housing

To relate housing deficiencies or inadequacies to health issues in an informative way, relevant information on both housing conditions and health conditions is necessary. A comprehensive exercise of this type has been carried out in the UK by developing a health and safety rating system for housing (see box on the UK HHSRS).

To estimate specific costs of inadequate housing, a numerical scoring system has been developed to enable the widely differing hazards and the health outcomes to be compared – the higher the score, the greater the risk. Every risk is associated with a likelihood of occurrence and a series of health outcomes with different weightings according to the severity of the harm caused if the risk is realised. In addition, a spread of harm is calculated, reflecting what the most probable outcome is. The risks, likelihoods and spread of the harm are assessed according to the HHSRS system by trained surveyors that participated in the EHS data collection process.

The cost associated to any particular health hazard is determined by considering the probability of harm occurring in one given year, on the basis that the people in one household will live in this same dwelling for the whole year. This probability is multiplied by the representative cost values at each level of harm, in proportion to the likelihood that each harm outcome might occur.

An example of this estimation procedure is presented in detail in Nicol et al (forthcoming).

Cost of repair

This report has considered the health costs, direct and societal, associated with exposure to hazards related to inadequate housing. By also considering the cost of repairs, it is possible to begin to understand what benefits society can achieve by addressing them. Such an understanding can help drive the policies that promote improvements to housing conditions.

The EHS quantifies the cost of repairs and the types of improvement required to the national housing stock and reports on a range of costs using a national specification of quantities. This includes the cost to reduce extreme (HHSRS Category 1) hazards to an acceptable level. It is the latter set of costs which are most useful for this study because they are directly related to housing inadequacies.

Every intervention will be unique and the work undertaken will depend on the problem being addressed, the specification of work, who is doing the work, the availability of labour, to what standard, whether it is a one-off job or part of a scheme, who is paying for it, where it is, and so on. The work may be undertaken by the household themselves, the landlord, the municipality, the state or some other agency.

The average cost for each inadequacy will be made up from many different jobs, depending on the situation. Many inadequacies can be dealt with at a relatively small cost, for example, installing handrails in the homes of elderly people living with dangerous stairs. Other issues, such as energy efficiency improvements, space problems and the eradication of dampness are, on average, more expensive. The example from the UK offers some typical costs for work which inform the average costs for removing housing inadequacies.

Low-cost work includes:

- Relocate cooker (GBP 157)
- Install two wired smoke detectors (GBP 194)
- Install handrail to staircase (GBP 295)

Medium-cost work includes:

- Replace lead piping (GBP 1,890)
- Rewire house (GBP 3,657)
- Redesign staircase (GBP 4,325)

High-cost work includes:

- Refit kitchen (GBP 7,000)
- Damp remedial works (GBP 10,940)
- Solid wall insulation (GBP 20,000)¹³

¹³ These are unpublished BRE calculations using the EHS data in relation to costs in 2011.

There are countless examples across Europe of the costs of individual projects and schemes. For example, energy efficiency improvements in a block of some 100 flats in Lithuania, including external insulation and district heating replacement, had an average cost of €500 per unit. The costs for improvements vary greatly across Europe and are strongly linked to wage differentials and the price of materials. Timber may be more expensive in Cyprus than in Poland, while the wage for a builder is much lower in Portugal than in Ireland. Therefore such price differences need to be taken into consideration. The purchasing power parity (PPP) construction indicator¹⁴ shows that costs vary significantly across Europe. The same job in Sweden will, on average, cost 1.6 times more than the EU average and 4.2 times more than in Romania.

Benefits of housing improvement

When improvements are undertaken, many of the consequential health costs will be avoided and will thus now be viewed as savings or benefits. The UK NHS refers to such prevention as ‘upstream investment’, which suggests that ‘downstream’ there will, perhaps, be less to pay for treatments, new hospital buildings, emergency services, aftercare and so on.

Some of the benefits will not just be a removal of potential costs, but added benefits to households, the economy and society. These will be particularly apparent when large schemes and initiatives are involved. They include: an improvement in well-being, an improvement in socioeconomic status, increased employment opportunities, better performance for individuals and housing areas, and the stimulation of the local economy.

Many intervention studies have demonstrated that general well-being improves when housing is improved (for instance, Howden-Chapman et al, 2007). This is particularly the case when areas are turned around and people subsequently feel valued, where previously there was apathy or embarrassment. Every home improvement scheme will create employment and might even boost the general economy. Some renewal schemes have purposely provided training and jobs for local unemployed residents, which ticks many boxes. With new confidence comes an increase in investment in the local economy.

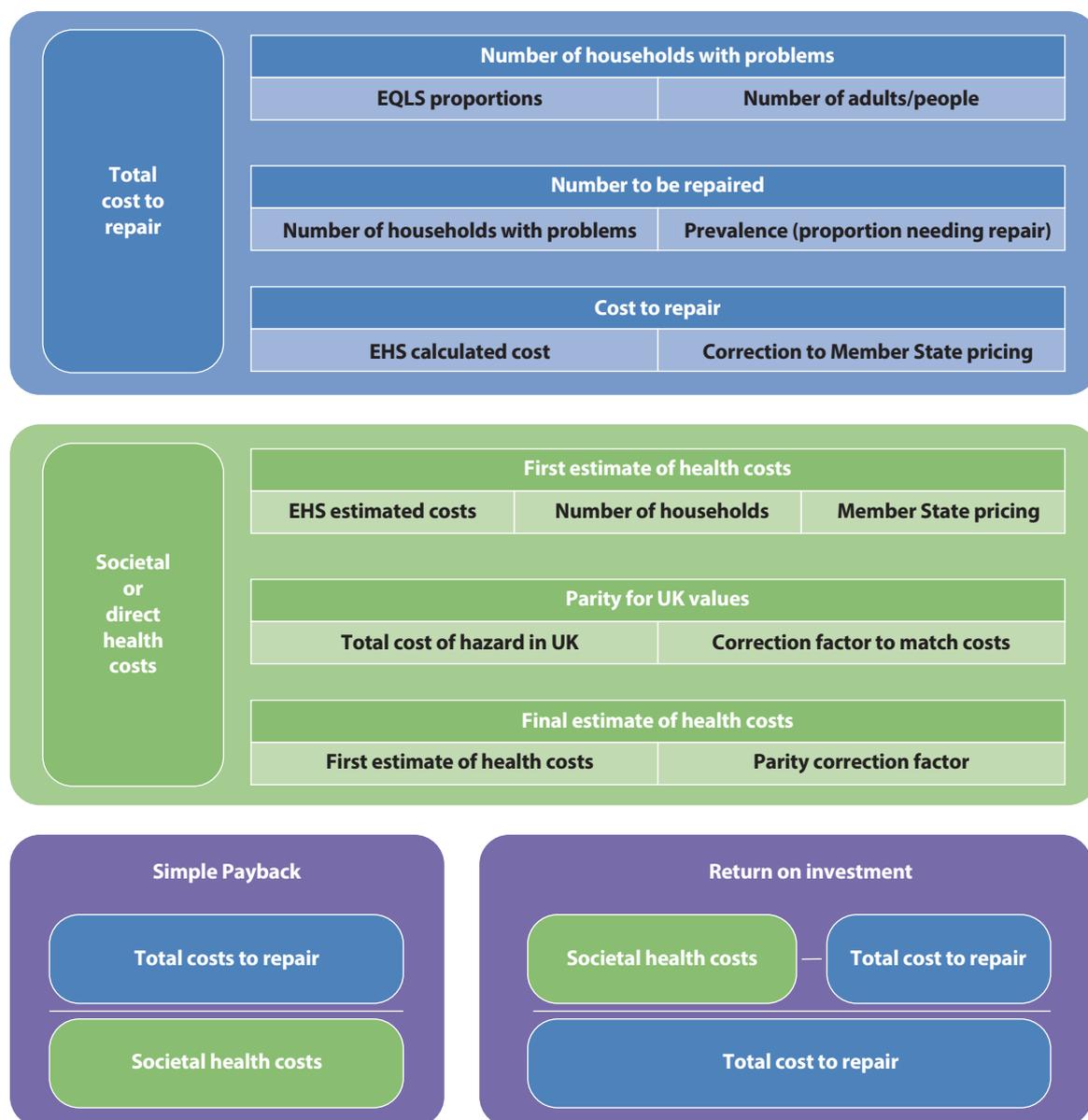
Calculating the cost of Europe’s inadequate housing using the model

The cost and benefit calculations suggested in the previous section can be applied quite successfully when adequate data are available, which has been the case in the UK. However, the same level of data, particularly hazard assessment using trained surveyors, is not available in other Member States. It is therefore necessary to try and model such differences across Europe using the best data available.

Prevalence information on housing problems is taken from the EQLS and cost data are taken from the EHS using the HHSRS tool; the inadequacies and hazards are linked. The following sections explain how the estimation is carried out; results are presented for the cost of inadequate housing (Nicol et al (forthcoming)). Figure 8 provides an overview of the model and the processes involved in generating estimates of national and EU-based repair costs and the benefits to society.

¹⁴ See Eurostat http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_for_investment, accessed 10 August 2015.

Figure 8: Model flow chart



Using EQLS data as a starting point

After reviewing a number of options (see previous sections and the technical annexes document, available separately), a model was developed which has, at its core, the EQLS dataset and a series of measurements of housing inadequacies. Some assumptions are made which do come with caveats, advantages and limitations.

The main advantages of the EQLS data are that they come from nationally representative samples and are based on the same definitions, being responses to exactly the same survey questions, survey time and data collection methods in all 28 EU Member States. In other words, they have a significant advantage in terms of comparability. However, they are based on simple yes/no answers about the existence of an inadequacy and give no indication about the extent (the scale and therefore a potential cost) of a problem. Like any other survey data, the data come from respondents who

are self-reporting and reported problems with housing are not checked by professional building surveyors. There may be differences in how respondents perceive the scale of a similar problem, for instance, and in whether they report only a housing deficiency, or both a housing deficiency and an economic difficulty in dealing with it.

In addition, a limited number of housing inadequacies featured in the survey questionnaire (nine are reviewed when building this model, six were applied in cost calculation¹⁵). The HHSRS identifies 29 hazards that can result in health costs. However, it should be pointed out that there is useful information in the EQLS which is not currently used to inform the assessment of inadequacies. For example, information about environmental noise is collected at Q50a, quality of drinking water is collected at Q50c, and crime, violence and vandalism is collected at Q50d. In principle, these could be added to the broader assessment of housing inadequacies, since they address different problems covered by the HHSRS and assessed for their impact on the health and safety of residents.

Number of households with problem

Since the EQLS data represent the adult population rather than the dwellings in Europe, the survey data were adjusted (a correction factor was applied to establish the rates of inadequacies as applied to households rather than individuals). Rates of different housing inadequacies per country are reported in Table 5.

The largest proportion of dwellings affected by problems with space is found in Poland (18.3%), France (17.4%) and the UK (17.3%). Damp and rot problems are reported most in Latvia (23.4% and 29.1% respectively), and Estonia (19.1% and 22.4% respectively). In Romania, one in five households lack an indoor toilet or bath (22.2% and 22.0% respectively). The affordability of rent appears to be a problem for more households in Poland (18.0%), whereas paying utility bills is an issue in Greece (23.8%), Italy (21.4%), Cyprus (21.2%), Hungary (21.2%) and Poland (18.0%). Heating problems are reported in more households in Poland (24.4%), Lithuania (24.1%), Estonia (23.0%) and Portugal (20.9%).

¹⁵ The model focuses on dwelling inadequacies; it was decided to exclude affordability problems since they are of a different type and may also require different policy solutions, as is pointed out in the Introduction.

Table 5: Proportion of households with each inadequacy

Country	Dwelling stock	Space problem	Rot problem	Damp problem	Toilet problem	Bath problem	Garden problem	Rent problem	Utility problem	Heating problem
AU	4,441,000	9.50%	2.00%	3.70%	1.10%	1.00%	16.80%	5.20%	6.40%	1.80%
BE	5,203,400	16.40%	7.70%	13.10%	1.60%	1.80%	16.10%	8.10%	13.50%	7.00%
BG	3,918,200	10.00%	11.00%	15.10%	11.80%	5.00%	3.00%	2.30%	15.40%	17.90%
CY	433,212	10.70%	4.50%	14.20%	0.00%	0.00%	2.30%	14.40%	21.20%	19.90%
CZ	4,101,635	14.90%	4.70%	12.00%	0.50%	1.40%	24.60%	8.90%	12.20%	5.40%
DE	40,545,300	12.10%	4.20%	6.20%	1.30%	1.50%	17.20%	9.70%	12.20%	6.40%
DK	2,762,444	13.00%	5.10%	9.30%	0.00%	0.00%	7.00%	1.80%	3.30%	2.60%
EE	649,700	11.50%	19.10%	22.40%	14.00%	15.90%	20.50%	5.00%	7.60%	23.00%
EL	6,384,000	11.70%	14.80%	11.90%	0.50%	1.20%	5.60%	9.70%	23.80%	17.70%
ES	25,208,000	5.90%	3.00%	6.80%	0.60%	0.90%	13.10%	7.00%	8.40%	11.20%
FI	2,906,000	12.50%	5.40%	8.10%	0.90%	1.60%	8.70%	5.90%	4.90%	2.30%
FR	28,077,000	17.40%	9.60%	14.70%	0.90%	1.30%	21.80%	7.90%	9.30%	9.10%
HR	1,923,522	11.10%	10.80%	13.60%	1.50%	2.00%	7.20%	6.30%	20.60%	7.20%
HU	4,400,000	9.80%	14.20%	12.30%	4.20%	4.70%	11.20%	10.70%	21.20%	14.40%
IE	2,019,000	9.90%	3.70%	7.50%	0.60%	0.90%	4.60%	8.10%	10.80%	7.70%
IT	28,863,000	10.10%	9.60%	8.50%	0.70%	0.80%	9.20%	14.80%	21.40%	7.60%
LI	1,389,000	13.50%	15.30%	10.20%	15.90%	14.20%	9.80%	3.70%	8.10%	24.10%
LU	208,000	11.10%	5.10%	7.70%	2.70%	2.50%	15.50%	2.90%	5.80%	3.30%
LV	1,018,000	19.40%	23.40%	29.10%	16.20%	18.40%	18.90%	12.70%	19.30%	17.90%
MT	223,900	5.20%	10.60%	10.60%	2.10%	1.70%	6.00%	2.50%	6.30%	17.00%
NL	7,200,000	12.80%	8.00%	12.70%	0.20%	0.00%	6.80%	11.40%	10.30%	3.10%
PL	13,853,000	18.30%	11.50%	13.60%	5.50%	6.70%	15.30%	18.00%	22.60%	24.40%
PT	5,878,700	10.10%	4.80%	12.80%	1.70%	1.60%	11.30%	6.30%	7.10%	20.90%
RO	8,329,000	10.10%	9.40%	11.90%	22.20%	22.00%	11.70%	5.90%	18.10%	16.60%
SE	4,633,678	16.20%	3.10%	4.70%	3.10%	3.50%	11.00%	3.70%	3.00%	1.20%
SK	1,994,900	7.70%	5.40%	6.50%	3.30%	2.40%	9.80%	9.00%	11.40%	9.70%
SL	857,000	8.10%	7.60%	10.40%	0.50%	0.50%	5.40%	3.40%	11.10%	3.10%
UK	27,767,000	17.30%	8.30%	14.00%	1.20%	1.90%	10.00%	8.80%	10.10%	12.10%
EU28	235,187,591	12.50%	7.70%	10.40%	2.80%	3.00%	13.10%	9.50%	13.50%	10.90%

Note: Within the EQLS database, the number of people in each sampled household is recorded, as is the age of each person in each household. It is therefore possible to determine the number of adults in each household. An estimate for the average number of adults in each household for each reported inadequacy for each Member State can therefore be calculated so that a rate of inadequacies as a proportion of households (= dwellings) could be reported in this table.

Source: EQLS 2011 and Housing Europe 2015.

Establishing cost of repair

The average repair costs for the HHSRS hazards relating to each of the inadequacies used in the model can be determined by using the UK values. For example, for toilet and bath inadequacies, the cost related to installing suitable amenities within the house is used, but this value assumes that space for these amenities in the house is available.

The number of households where this cost is applied can be corrected using a prevalence factor for each inadequacy. This correction is necessary since, in reality, for many who state they suffer from

a housing inadequacy, the nature of the problem is not really sufficient to warrant a costly repair. For example, it is assumed that only 33% of damp inadequacies actually need repairing, with the rest being a minor inadequacy that could be mitigated with a mould cleaner. In the case of rot, there is no alternative to replacing the affected structures; the same applies to inadequate toilet and bath installations. Corrections for space and heating are also applied.

The model allows for indexed corrections based on published relative construction values and relative values for residential buildings. This makes the cost to repair much cheaper in Romania, for example, and more expensive in Sweden.

Calculating savings

Even though repair work does not completely remove the hazard, it can reduce the risk to an acceptable level. The savings are considered as the difference between the costs associated with inadequate housing (before repairs) and the costs associated with average housing (after repairs) (Nicol et al (forthcoming)). The differences for the inadequacies discussed are shown in Table 6 (specific cost weightings are used for each Class of Harm in the HHSRS, as discussed previously). The total savings to society include both direct and indirect savings; the savings to healthcare provision represent the savings on direct costs; the savings on indirect costs refer to costs incurred due to lost lives and loss of earnings potential due to reasons of accidents or ill-health.

Table 6: Estimated savings by hazard (€)

Hazard	Estimated savings to health service (direct medical costs only)	Estimated total savings to society (direct and indirect medical costs)
Structural collapse	95	1,022
Damp	321	813
Personal hygiene	128	339
Excess cold	704	12,541
Overcrowding	106	1,694

Notes: Estimates were obtained by calculating the reduced costs associated with harm outcomes, based on the difference in probability of harm when a dwelling with a hazard is repaired. Lack of both an indoor toilet and of a bath contribute toward poor personal hygiene. GBP to euro currency conversion rate of July 2011 used.

Source: Estimations for cost by BRE using the EHS data.

Only costs associated with ill-health and accidents are included in the calculation of direct and indirect costs in the current model (broader indirect costs such as those listed in Table 4 and Figure 7 have not been assessed in the current calculation). With regard to direct costs, estimates associated with various classes of harm were calculated on the basis of NHS data; these costs could be avoided by the health service if the factors causing those harms were removed. With indirect costs, the model uses the valuation estimates originally developed to comprehensively assess costs associated with road accident injuries. These include the monetary value of loss of a life and avoidance of injury (see Roys et al (2016, pp. 22–23); for original studies see Department for Transport (2013) and Walter (2010). The cost of fatality in the home is assumed to be the same as it is on the road; the costs of illnesses and accidents caused by housing inadequacies grouped into fatal, serious, and slight. For each of those cost categories, the following cost components are calculated: loss of output (or earnings potential) and monetary value of avoidance of injury. The majority of the indirect cost is associated with the avoidance of injury; loss of output is also substantial (approximately 33% for fatal injuries and nearly 40% for slight injuries). Most of the harm in the model – developed in this

study to assess costs at European level – is associated with the hazard of exposure to excess cold. As excess cold is related to a relatively high fatality proportion, the overall indirect costs are much greater than the direct costs borne by the health service.

Cost-benefit for the EU28 countries

Since the total cost to society for each of the hazards in the UK is known, it can be used to compare the costs calculated using the EQLS estimates of households with each inadequacy. Using an iterative process, the proportion of the EQLS households that would provide the same overall cost to society for these hazards can be determined (Nicol et al (forthcoming)).

When extrapolating the results of the EHS results to other countries, the correction factors have to be applied. The costs for extreme (Category 1) hazards in England (adapted to the UK) are known from the cost of research into poor housing. First, the correction is made to bring the EQLS-based UK estimate in line with the EHS-based UK estimate. Correction factors can be applied to other nations, assuming that the degree of overestimation in the self-reporting of inadequacies likely to affect health and safety is the same in each Member State. These correction values can be applied to generate the final estimate of health costs. The resulting costs and benefits to society per annum are shown in Table 7.

The calculation includes adjustment to local or national costs for construction using PPPs for construction and currency conversions. Payback period, not adjusted for inflation, is also shown for each Member State. Payback periods for Sweden, Finland, Austria, Luxembourg and Denmark are quite high, highlighting the higher cost for repairs in these countries, resulting in very low returns on investment. However, the number of households requiring mitigation of hazards may be much lower in these nations.

In Europe, about 10% of the dwelling stock has three or more inadequacies out of six used in the model and such housing can be considered as severely inadequate for its dwellers. The highest rate of inadequate dwellings can be found in Latvia (30%), Estonia (21%) and Romania (19.8%), while the lowest share is found in Nordic countries, Austria, Slovenia, Luxembourg and the Netherlands. The average cost of repair is highest in Sweden and in continental European countries; it is lowest in eastern and southern Europe. If all severe inadequacies across Europe could be reduced to an acceptable level at once, the total investment would amount to almost €300 billion. The total cost of repair varies from €172 million in Malta to as much as €52 billion in Germany, due to the respective size of these countries.

To balance these huge investments, there are substantial savings to be obtained, mainly due to the absence of medical costs that only exist as a consequence of realised hazard risks caused by housing inadequacies. The annual total *societal* medical costs saved for the 28 EU Member States are just below €200 billion (€194 billion). This means that for €3 invested to reduce housing hazards, the return is €2 saved in medical costs within the year. If the fact that the home improvements last much longer is taken into account, the savings in medical costs are substantially higher. Indeed, on average, the investment has its breakeven point after 1.5 years. This is, however, very different across countries, with a payback period of over 23 years in Sweden to under a year in Cyprus, Portugal, Malta, Spain, Greece and Hungary.

Table 7: Summary of costs and benefits to society of the six inadequacies

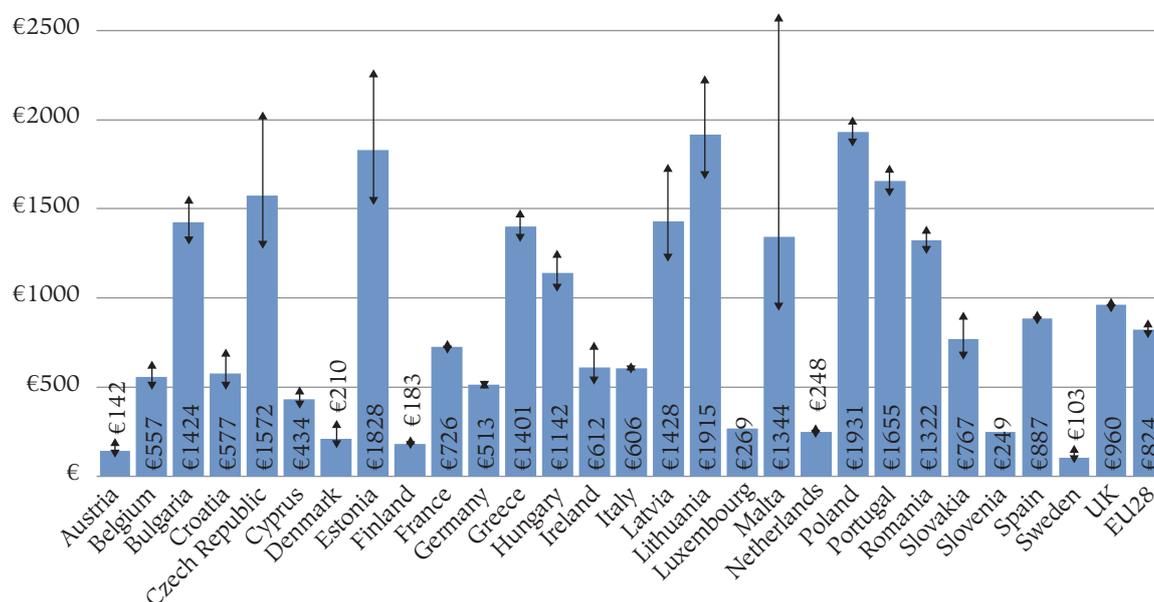
Country	Dwelling stock	Proportion of dwellings with three or more inadequacies out of six	Average unit cost of repair (€)	Total cost of repair (€ thousands)	Annual direct medical savings (in terms of healthcare provision) (€ thousands)	Annual indirect medical savings (€ thousands)	Annual total societal medical savings (€ thousands)	Payback (years)
SE	4,633,678	4.7%	16,759	11,400,835	24,070	453,533	477,603	23.87
FI	2,906,000	4.0%	8,180	3,290,242	25,204	505,377	530,581	6.20
AT	4,441,000	4.2%	9,926	3,460,576	29,484	603,007	632,491	5.47
LU	208,000	5.4%	8,815	301,650	2,627	53,275	55,902	5.40
DK	2,762,444	2.3%	7,123	2,297,609	27,062	551,947	579,009	3.97
LV	1,018,000	30.1%	5,439	4,421,745	68,099	1,385,795	1,453,894	3.04
NL	7,200,000	5.5%	4,450	5,180,915	84,262	1,703,448	1,787,710	2.90
DE	40,545,300	6.6%	9,066	52,652,715	943,858	19,849,699	20,793,557	2.53
BE	5,203,400	11.3%	5,832	6,590,226	133,221	2,762,613	2,895,834	2.28
FR	28,077,000	12.0%	6,586	44,583,984	930,427	19,444,533	20,374,960	2.19
EE	649,700	21.2%	5,370	2,437,639	54,621	1,133,034	1,187,655	2.05
RO	8,329,000	19.8%	3,928	22,093,431	514,865	10,497,212	11,012,077	2.01
LT	1,389,000	15.4%	5,175	4,530,039	121,346	2,538,965	2,660,311	1.70
SI	857,000	4.7%	2,755	353,949	10,001	203,628	213,629	1.66
CZ	4,101,635	8.9%	4,344	2,824,092	82,114	1,699,237	1,781,351	1.59
UK	27,767,000	11.0%	5,567	38,793,613	1,209,984	25,444,741	26,654,725	1.46
SK	1,994,900	7.2%	4,977	1,926,007	69,339	1,460,844	1,530,183	1.26
IT	28,863,000	11.2%	3,640	20,446,841	793,741	16,709,084	17,502,825	1.17
BG	3,918,200	13.4%	3,795	6,462,532	254,676	5,323,439	5,578,115	1.16
PL	13,853,000	19.1%	4,883	29,441,165	1,208,896	25,548,628	26,757,524	1.10
HR	1,923,522	10.9%	2,565	1,192,817	51,090	1,059,377	1,110,467	1.07
IE	2,019,000	6.5%	4,710	1,244,640	55,843	1,179,260	1,235,103	1.01
HU	4,400,000	14.3%	3,035	4,806,011	228,544	4,798,360	5,026,904	0.96
EL	6,384,000	15.7%	2,875	5,727,292	402,415	8,542,901	8,945,316	0.64
ES	25,208,000	6.3%	4,116	13,890,859	1,004,494	21,345,457	22,349,951	0.62
MT	223,900	7.9%	2,816	172,310	13,555	287,431	300,986	0.57
PT	5,878,700	9.9%	3,236	4,648,127	437,337	9,289,699	9,727,036	0.48
CY	433,212	15.0%	3,348	303,174	30,579	650,227	680,806	0.45
EU28	235,187,591	10.6%	5,127	295,475,035	8,811,754	185,024,751	193,836,505	1.52

Note: The table is ordered by first year return on investment.

Source: Derived from model

Figure 9 shows the relative cost to society per dwelling for each Member State (Annual total cost to society divided by the dwelling stock). The larger the cost bar the greater the potential benefit to society per household, if the repairs are made.

Figure 9: Relative cost to society for each Member State (€)



Note: Data are normalised by number of households.

A range of values is provided based on the 95% confidence intervals for the number of households (uncertainty caused due to the fact that number of households had to be established since the original EQLS data represent individual members of the population rather than households, or dwellings).

Relevance of the cost estimation model

Example of costing a home with a housing inadequacy

The methodology for costing housing inadequacies is best illustrated with an example, which in this case is a home with no inside toilet in Romania (the EQLS estimates that some 22% of homes in Romania have such an inadequacy).

Issue raised: A respondent records that the home has no access to an indoor flushing toilet. This is flagged as an inadequacy under the list of dwelling deficiencies monitored via the EQLS and considered a health risk.

Costings: A cost is generated to reduce the inadequacy to an 'acceptable level'. The EQLS does not provide any detail on the current housing design, the nature of the problem or the potential for improvement – only that there is no indoor toilet. However, there is detailed information on similar inadequacies collected in the 2011 EHS.

Health risks: There are health risks associated with the lack of an indoor toilet and associated hand washing facilities; the main risks being gastroenteritis, dysentery, anxiety and depression. There is also an increased risk of falls (particularly if an outdoor facility is used during the night) and of hypothermia if this is combined with cold outside temperatures. The EQLS does not collect information on health outcomes and costs, but linking to research undertaken by the BRE Trust provides information for the UK on the statistical likelihood of the lack of an indoor toilet leading to a health problem and the resulting first year costs to the health service which would result.

Longer term issues: If a person in the household was to become sick, suffer mental illness or have an accident due to the lack of an indoor toilet, there will be other implications as well as the

immediate medical treatment costs. There may be longer term care issues, loss of output in terms of educational achievement, employment opportunities, income, work days lost.

Economic implications: There will be other economic implications of the inadequacy, which have not been costed. These will include the lower sale/rental value of a home without an indoor toilet, compared with the same property if it was in an improved state.

For the individual example above, the costs would therefore be as follows:

Cost of repair = €11,440 x 41/97 (PPP construction)	= €4,835
Cost-benefit to society	= €339
Societal payback estimate	= 14.2 years
Return on investment	= -93%

These are not real costs but statistical averages and may not apply to any individual case in the EU. However, when they are aggregated at national and EU28 level they provide a reasonable indication of the comparative costs and impacts of a range of housing inadequacies across Europe.

Relevance at national level: three examples

As part of preparing this report, three national case studies were undertaken in France, Lithuania and the UK with the following objectives:

- to understand what data are available on housing inadequacies in a select number of EU Member States;
- to understand what are perceived locally as the main housing inadequacies;
- to see what policies are being implemented to deal with housing inadequacies;
- to apply the HHSRS method of estimating the cost-benefits of housing inadequacies;
- to provide alternative local costs, which can be used to refine the model;
- to receive feedback on the utility of the study in informing policies towards dealing with housing inadequacies.

With just three studies it is impossible to cover the complete range of situations in Europe, but the authors wished to include:

- a regional range, in terms of climate and topography;
- a range of historical housing development;
- a range of development, in terms of affluence/deprivation;
- a range of scores on the 'serious housing inadequacy' indicator;
- enthusiasm to be involved.

The case studies helped to appreciate the similarities and differences between the three EU Member States. The UK and France have many similarities; these are reflected in the range of inadequacies identified and the projected costs of dealing with them. While they have dealt with the basic issues of providing the great majority of their housing with basic amenities and services, there are still significant problems of overcrowding and the ability to keep homes warm. Lithuania has inherited

a housing stock that does not meet current aspirations and is difficult to keep warm and dry. In rural areas, there are still many homes that lack basic amenities and are heated through the collection and burning of wood. All of these Member States have effective strategies in place to deal with the most severe inadequacies, but the backlog of work is huge and the budgets for delivering them are small. Comparative housing stock statistics for the case studies are presented in Table 8.

Table 8: Comparative housing stock statistics for case studies

	UK (2008)	France (2009)	Lithuania (2009)
Population	62 million	64 million	3 million
Dwellings (occupied)	26 million	26 million	1.3 million
Persons per dwelling	2.3	2.3	2.5
Mean floor area per dwelling	85 m ²	85 m ²	66 m ²
Mean floor area per person	37 m ²	37 m ²	26 m ²
Dwelling age			
Pre-1940	37%	30%	14%
Post-1940	63%	70%	86%
Dwelling type			
House	81%	59%	36%
Flat	19%	41%	64%
Tenure			
Owned	68%	58%	89%
Rented	32%	42%	11%
Main fuel for heating			
Gas (piped)	82%	34%	9%
Oil (+ kerosene, bottled gas)	7%	24%	3%
Solid (coal, wood)	1%	4%	23%
Electricity	9%	28%	12%
District	1%	10%	53%

Source: Piddington et al (2013), Statistics Lithuania (2013).

When the results of the Eurofound study shown in Table 9 are compared with local data sources in the three case studies, commonalities can be found. In particular, the UK results can be validated against those from English and other UK national house condition survey estimates. The results for Lithuania are the first attempt at producing national costs, which look reasonable and match the priorities of local public health and energy policy. The results for France look practical when compared with the UK and have initiated a larger study in which the full model developed by the Buildings Research Establishment (BRE) is being adapted to work with French energy data.

Table 9: Summary of Eurofound model results

Inadequacies	UK	France	Lithuania
Seriously inadequate: three inadequacies out of nine (including affordability/garden space)	11%	12%	15%
Seriously inadequate: three inadequacies out of six (excluding affordability/garden space)	5%	4%	11%
Average cost of repair	€5,567	€6,586	€5,175
Total cost of repair	€38.8 billion	€44.6 billion	€4.5 billion
Annual direct medical savings	€1.2 billion	€930 million	€121 million
Total societal health savings	€26.7 billion	€20.3 billion	€2.7 billion
Basic payback (years)	1.46	2.19	1.7
Return on investment	-31%	-54%	-41%

Source: EQLS; derived from model.

The UK was selected because of the considerable information that exists on the relationship between housing inadequacies and health, informed by regular national housing surveys and good data from the NHS on the health impacts of inadequacies. Regionally, the UK represents maritime north and west Europe, with a history of housing inadequacies regarding cold and damp homes. It has the oldest housing stock in Europe. The case study was produced by BRE, which has access to all the relevant data.

France, in many ways, is a microcosm of Europe, with elements of western, southern, northern and central Europe and a variety of topographies. It has known problems of both cold homes and overheating and policies for dealing with them. France is very similar to the EU average. The case study has been undertaken in partnership with energy company EDF who have a particular interest in improving energy efficiency and reducing the impact of cold homes.

Lithuania shares a historical development in housing similar to the other former Soviet Union and Warsaw Pact EU Member States of eastern and central Europe. Vilnius was an active member of the WHO LARES city study and has housing policies in place to address recognised inadequacies. The case study has received significant input from the Centre for Health Education and Disease Prevention (based in Vilnius), which hosted a field visit in July 2015, and also from Vilnius Gediminas Technical University, which has experts in the field of domestic energy and provided additional material.

Conclusions

- There is a direct relationship between the housing that people live in and their health and socioeconomic opportunities. This is recognised by organisations such as the WHO, Eurofound and the Member States of the EU, their municipalities and housing providers.
- Attempts have been made to define, measure, and quantify the costs to society of leaving people living with housing inadequacies. These have been limited by the availability of good quality, comparable data at national and international level.
- The most useful information (in terms of the fact that the problems can be costed and rectified) is around the design and condition of existing housing. The lack of affordable housing is considered an inadequacy but not quantified in this study.

- The most comprehensive data on the effects and costs of housing inadequacies are to be found in the UK, in particular from the annual English (and other UK) housing surveys and the National Health Service.
- The EQLS is a useful source that provides data on housing inadequacies across the EU28 that are comparable, since the data have been collected on the basis of the same questions and same methods in all countries surveyed.
- It has been possible to develop a model which estimates the costs of housing inadequacies across all EU members on a comparable basis by applying detailed information from the EHS (and other data sources) to more generic data from the EQLS.
- The total cost of making existing housing reasonably healthy and safe (a cost of repair in relation to the six EQLS inadequacies covered) is estimated to be some €295 billion.
- If all the remedial work was undertaken now, the cost-benefit to EU society would be almost €200 (€194) billion a year.
- By far the greatest economic and social benefits from remedial action on Eurofound's six costed housing inadequacies will be from heating and insulation improvements. Such improvements are known to prevent long-term respiratory and circulatory illnesses and reduce winter deaths. By contrast, the provision of missing amenities, while welcome and necessary, does not have such an impact on actual long-term health problems and their consequences.
- The costs and impacts of undertaking remedial work are likely to be an underestimate because of the limited number of inadequacies that can be assessed through the model. Some of the 23 unmeasured home health and safety hazards (HHSRS), while uncommon overall, will be over-represented in some parts of Europe and these should not be overlooked.
- The proposed model will provide a useful tool for housing, public health and energy advisers to engage with politicians to identify where investment in the housing stock is required, how policies might be targeted, and the likely impact of their interventions.

This study demonstrates the cost burden to European society attributable to inadequate housing. It is also clear that if a wider definition of unsatisfactory housing was adopted, the total cost burden would be much higher. What this study also shows is that the cost burden is greater for the low and middle income Member States, but also that the cost burden for the higher income Member States is still very significant. The study also shows that action to ensure housing provides a safe, healthy, and hazard-free environment would deliver long-term social and economic benefits to households, local communities, and society generally.

Preventing inadequate housing: Eight case studies

This chapter describes and assesses specific initiatives that aimed to prevent, or intervene early in, inadequate housing. The aim is for policymakers and other actors with interests in addressing inadequate housing, such as non-governmental organisations (NGOs), to learn from these initiatives and from challenges that were encountered during implementation.

Following the conceptual discussion in the first part of this report, the focus here is on poor quality housing and prevention of inadequate housing.

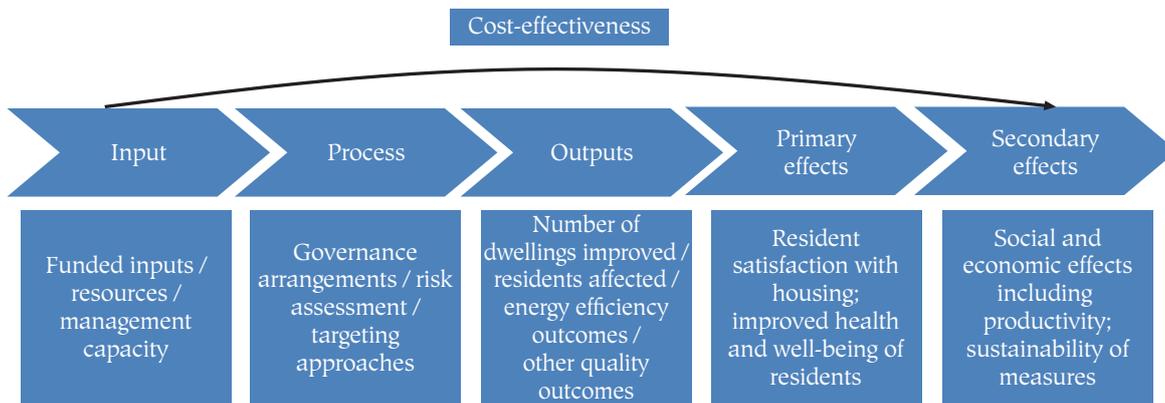
While some of these eight case studies will contain elements of enforcement of quality standards, this is not the focus of this chapter. Nor is it the broader aspects of the institutional framework of countries, such as the role of social housing and the regulation of vacant properties held for investment. Lastly, while building new housing stock may be touched upon in some case studies, major investment in building new housing stock is generally beyond the scope of this chapter.

Case study approach and selection of cases

Analytical framework

To inform the specific research questions for the study, an analytical framework was developed building from an evaluative or logic model approach which identifies the relationship between inputs, activities and outputs and the resulting primary and secondary effects associated with measures to address inadequate housing. This approach is illustrated in Figure 10.

Figure 10: Addressing inadequate housing: an analytical framework



Key activities and outputs relate to the resources and inputs involved in targeting particular housing quality issues and improving inadequate housing. Key outputs include the number of dwellings improved, types of improvements made and the number of residents affected.

The efficiency of the relationship between inputs (including funded inputs and staff resources) and outputs depends on a number of process factors which have been examined in detail in the case studies. These include governance arrangements, community and resident engagement and targeting approaches.

The first group of outcomes (primary effects) relate to the more direct impacts of housing quality improvements in terms of resident satisfaction and health and well-being. The exact nature of the primary and secondary effects outlined in the above framework depends on the type of intervention (in other words, the primary and secondary effects may interact, depending on the activity).

Potential secondary effects linked to housing improvements and health and well-being outcomes that the research has explored through reviews of secondary evidence and qualitative research include:

- improving educational attainment through effects on children's ability to study at home;
- encouraging residents to access employment and/or be more productive in the workplace;
- social outcomes changed by reducing risk of being affected by crime and anti-social behaviour.

Case study selection criteria

The selection of case studies was driven by the need to maximise the opportunity for learning lessons from the implementation of specific housing measures. However, this meant that similarity was sought on certain dimensions while variation was sought on others; the key criteria that informed the selection process are detailed below.

Similarity

All case studies had to be initiatives aimed at preventing – or intervening early in – inadequate housing. It was important that there was some indication that the case studies are particularly representative of a common type of initiative while providing some potential for learning. All case studies further focus on poor housing among groups in vulnerable situations. The case initiatives needed to be recent enough to be relevant, and have some evidence available about the effectiveness of the initiatives; however, they should not have been over-studied elsewhere already in relation to the questions asked here about the implications of inadequate housing in Europe.

Variation

Variety was sought, in that case studies should cover a wide spectrum of relevant issues in different contexts. This would make the lessons useful for a broader spectrum of situations. Diversity was sought on the following dimensions:

Aspects of poor quality (with associated risks) to be addressed by the measure

The quality of the dwelling interacts with the climate (damp and humidity, darkness, insufficient insulation against cold/heat), with household composition (lack of space) and characteristics of the neighbourhood (noise). However, case studies focused on measures aimed at improving dwellings rather than at improving neighbourhood conditions, climate or household composition. For example, they should address measures aimed at improving sound insulation and not at ways of diverting traffic away from the neighbourhood.

Low quality housing is related to cost; people may want to move to better quality housing or improve the quality of their dwelling, but find they cannot afford to do so. Also, bad insulation may be less of a problem if households can afford to keep their house at adequate temperature. However, the case studies focus on preventing (or intervening early in) poor quality housing, rather than on the household's financial situation alone. Hence, on the issue of affordability, cases are limited to those where low quality housing leads to high housing costs by raising utility and maintenance costs.

Type of delivery approach, with measures undertaken and financed by different actors

Measures could be undertaken by national, regional or local governments, but might also be initiatives taken by NGOs, social housing corporations, citizen initiatives or utility companies, or by partnerships between these or other actors. They may also be the funders of the initiatives, but funding could also come from other sources such as EU funds.

Variety of Member States

It is challenging to group countries; two countries may display many similarities in relation to one variable and very few in relation to another. In terms of housing, the two very different variables of welfare regime (housing benefits, role of social housing) and weather patterns may be significant. In selecting the case studies, however, it was considered important to include examples from various country contexts across Europe, and it was judged that a very general distinction between 'northern and western Europe' (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Sweden, UK), 'south and south-eastern Europe' (Croatia, Cyprus, Greece, Italy, Malta, Portugal, Slovenia, Spain) and 'central and eastern Europe' (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia) would satisfy this purpose.

Include a range of target groups, areas and tenure types

Earlier analysis by Eurofound showed that older people in south, south-eastern, central and eastern Europe are quite often vulnerable to housing quality issues (Eurofound, 2012a). Another Eurofound study highlighted poor housing quality among the Roma population (Eurofound, 2012b). The study seeks to cover these groups in one or more case studies. Similarly, the study aims to avoid a purely urban or rural focus, and to include examples of initiatives in both types of areas. It also seeks diversity in tenure, with initiatives dealing with private rented, social rented and owned housing, or combinations of tenure.

Summary of case studies

The selected case study initiatives broadly satisfy the previously outlined selection criteria. As can be seen in Table 10, the case studies cover the various parts of Europe and focus on different tenure types. All initiatives are from within the past decade, with some still ongoing and others finalised projects. There is also diversity in the main funding entity. They cover a range of target groups, but focus on households in vulnerable situations.

The eight case studies cover a range of aspects of housing quality. These include:

- overcrowding (London);
- energy inefficiency (Ireland, Turin);
- general upgrading (Amsterdam);
- inadequate housing situations (Liverpool);
- ageing housing falling into general disrepair (Latvia);
- lack of basic facilities (Roma families in Slovakia);
- lack of facilities for older people (Zaragoza).

Table 10: Case study summary descriptions

Name, location and date	Description of measure	Thematic focus – type of housing quality risk or condition	Target group(s)	Tenure focus	Main funder
Northern and western Europe					
1. London (UK): Tackling overcrowding Since 2009	Improved use of space/furniture, facilitating under-crowded households to move into smaller but higher quality dwellings and overcrowded households into larger dwellings	Overcrowding	Households in overcrowded dwellings	Social housing	Local government
2. Liverpool (UK): Healthy Homes Programme Since 2008	Service providers going from door-to-door to assess how housing quality can be improved and offer proactive support, including referral to a range of other social services	Health and risk of accidents	Households living in areas with low quality housing	Private rental	Local government
3. Ireland: Warmer Homes Scheme Since 2012	Funding energy efficient upgrades and retrofit works. A mechanism introduced by a community-based organisation to meet the costs of a project funded by this scheme made residents contribute on the basis of the projected utility bill savings.	Energy efficiency	Energy poor homes, mainly households in vulnerable situations	All	National government agency
4. Amsterdam (Netherlands): Renovation of social housing building ‘Bosleeuw’ October 2013 to June 2014	Renovation of social housing apartment block	General quality, energy efficiency	Specific apartment block in disadvantaged area	Social housing	Social housing association and occupants
South and south-eastern Europe					
5. Turin (Italy): Refurbishment of social housing in Corso Taranto March 2013 to December 2014	Refurbishment of a social housing neighbourhood	Energy efficiency, energy consumption, accessibility, comfort	Specific apartment blocks in low-income areas	Social housing	EU
6. Zaragoza (Spain): Vivienda Housing Programme for older people 2002–2008	Development of adapted departments and provision of community services	Housing falling into general disrepair	Older people	Social housing	Local government and NGOs
Central and eastern Europe					
7. Riga (Latvia): Tackling ageing housing in Riga Since 2010	Refurbishment of deteriorated high-rise building	Housing falling into general disrepair (and damp and mould)	Specific apartment block	Mainly owned	Private sector and occupants
8. Slovakia: Building Hope Project 2012–2014	Self-help construction of houses financed through micro-loans	Lack of basic facilities	Roma	Owned	NGOs and occupants

The case studies also showcased different types of delivery approaches at a variety of spatial scales. These include national programmes (Ireland), regional level strategic initiatives and local delivery (London), local initiatives financed by the health budget and delivered by the City Council (Liverpool), EU-funded local projects (Turin), cross-national initiatives (Riga), initiatives led by non-profit organisations (Slovakia) and social housing corporations (Amsterdam). However, the

case studies have demonstrated the important interplay between national legislation/regulations, European or national funding programmes and local governance mechanisms, and, therefore, the difficulty of categorising measures according to standard delivery models or spatial scales.

Two of the case studies focus on measures designed to address the housing quality needs of particular groups. One dealt with a specific target group (Roma) which is recognised as having the most severe problems of inadequate housing in Europe while another measure dealt with housing improvements specifically for older people (Zaragoza). However, other measures focused on particular groups more indirectly; in London, for example, ethnic minority groups have benefited disproportionately from policies tackling overcrowding.

In terms of good practice criteria, many of the case study measures, such as in Ireland, Liverpool and Slovakia, are already recognised as successful initiatives and have been showcased on European platforms or at the national level to share best practice. Others were included because they are widely regarded as offering innovative solutions to tackling emerging challenges in the provision of adequate housing, for example, London and Zaragoza, and offered the potential to identify specific lessons and good practice principles.

The case studies outline a range of key types of measures and highlight findings in relation to a number of core research questions. The case studies cannot be said to form a representative sample of interventions across Europe, but the evidence collected from them provides a basis for the consideration and further exploration of particular research themes.

A detailed description (of the delivery model, context and implementation) of diverse initiatives from across the EU that aim to reduce inadequate housing will give a flavour of the diversity of possible approaches. It aims to inspire policymakers and other stakeholders to think of the many options available. The research focuses on the effectiveness of the initiatives and on key success factors in the various contexts. It also aims to draw lessons on what works and what does not work in the specific contexts, and how measures have been or could be improved.

The case study research has drawn on multiple sources (depending on availability) including project reports, project websites, research documents linked to the intervention, administrative data, survey data, presentations and any other written material associated with the initiatives. For each case study, between 3 and 12 stakeholders were interviewed. The type of stakeholder consulted depended on the nature of the project (for example its theme, delivery body, beneficiary type, geographical focus). However, consultation included at least one beneficiary of the measure (or organisation representing a group of beneficiaries) and one representative of the organisation that implemented/administers/manages the measure. Fieldwork took place in the first half of 2015.

Case 1: London: Tackling overcrowding in social housing

Key points

In a climate of reduced public sector funding, policy approaches in London have highlighted the importance of developing creative and tailored solutions to address the problem of overcrowding.

Local authorities in London have demonstrated the importance of targeting households that are not technically overcrowded at the present time, but where there is a risk that homes could become overcrowded without intervention.

Employing staff to carry out a range of tasks related to overcrowding and under-occupation, such as visiting families, providing advice and helping to identify housing options and space-saving solutions, has been effective in allowing households to make more informed choices about their housing aspirations and to mitigate the worst effects of overcrowding.

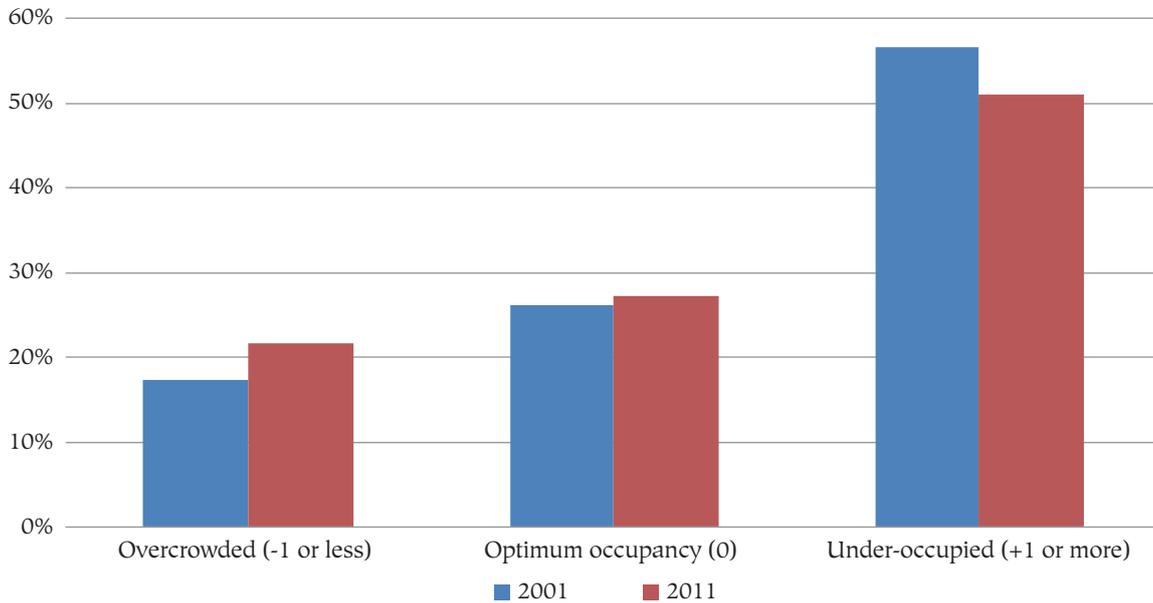
There is now a common understanding in London that targeting under-occupied dwellings has a key role to play in addressing overcrowding. However, it is recognised that this policy needs to be handled sensitively by providing attractive opportunities for families with a genuine desire to downsize their property. The provision of attractive, newly built, smaller homes can be an important means of addressing overcrowding, as it can provide an extra incentive for people with larger homes to downsize, freeing up homes for households that are overcrowded.

The research has demonstrated that there are many ways of mitigating the negative impact on health and well-being that may result from living in overcrowded conditions. The use of space-saving schemes is generally considered to be a cost-effective approach and there is qualitative evidence that it can make an important contribution to improve health and well-being.

The research has also demonstrated the challenges of implementing a larger scale programme of physical adaptations to address overcrowding and the high unit costs associated with this approach.

Background

Figure 11 shows that based on the 2001 Census definition of overcrowding which uses the room standard, there was a significant increase in the proportion of overcrowded households in London between 2001 and 2011 from 17.3% to 21.7%. This compares with an EU28 average of 17.3%, based on the EU-SILC which uses a slightly different definition of overcrowding.

Figure 11: Trends in overcrowding and undercrowding in London

Note: Based on the UK Census 2001 definition of overcrowding which uses the room standard approach; '-1 or less' refers to there being one room less than the 'room standard' would prescribe and '+1 or more' refers to at least one room more than the standard.

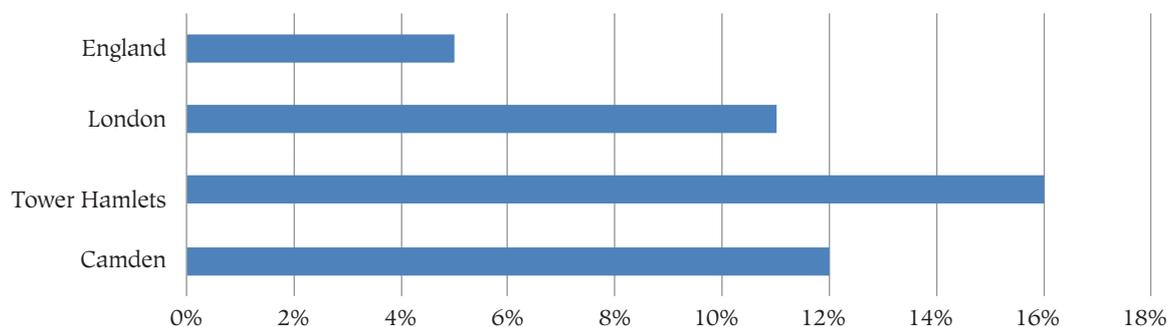
Source: London Datastore; UK Census 2001, 2011.

Based on the bedroom standard,¹⁶ UK Census data indicate that in 2011 the total number of overcrowded households across all tenures in London was 301,000 (9% of all households compared with 4% in England). Of these, 69,200 households were regarded as being seriously overcrowded because they had two bedrooms less than were needed, according to the bedroom standard. The rates of overcrowding in the social rented sector were significantly higher in London (17%) than the rates across all housing tenures.

The two London boroughs which are the main implementation focus of this case study – Camden and Tower Hamlets – had rates of overcrowding above the London average. Tower Hamlets had the third highest rate of overcrowding in England and Wales (ONS, 2014), with over 16,000 households (16%) having too few bedrooms to adequately accommodate all members, as shown in Figure 12.

¹⁶ The UK measures overcrowding somewhat differently, using a 'bedroom standard' that allocates one bedroom to each couple or lone parent, one to each pair of children under 10 years old, one to each pair of children of the same sex over 10 years old, with additional bedrooms for individual children over 10 of different sex and for additional adult household members. For EU-SILC, the indicator is defined as the percentage of the population living in an overcrowded household. A person is considered as living in an overcrowded household if the household does not have at its disposal a minimum of rooms equal to: one room for the household; one room for the couple in the household; one room for each single person aged 18 or older; one room for each pair of single people of the same sex between 12 and 17 years of age; one room for each single person between 12 and 17 years of age and not included in the previous category; and one room for each pair of children under 12 years of age.

Figure 12: Rates of overcrowding



Source: UK Census 2011.

Reflecting a strategic aspiration of the London Housing Strategy, the Greater London Authority's Overcrowding Action Plan published in 2010 stated that tackling overcrowding should be a key priority in all local housing strategies. The Action Plan highlighted a number of key actions that could be applied at the local level in tackling overcrowding or types of activities.

The case study research in the London Borough of Tower Hamlets focused on the implementation of the local council's strategy to tackle overcrowding from 2009 onwards.¹⁷ In Camden, the research focused on the implementation of the council's strategy to tackle overcrowding between 2008 and 2012.

Implementation

Lettings policies

An important component of the approaches of both Camden and Tower Hamlets to preventing overcrowding has been increasing the priority for overcrowded households in the council's housing allocation policies. Camden adopted a new allocations scheme in 2007 which gave additional preference to overcrowded and severely overcrowded households.

Tower Hamlets approach was based on a consensus that overcrowding had become a primary cause of homelessness through an increasing prevalence of married children staying at home and starting their own families, and then being evicted from their homes as a result of increasing family tensions. In practice, changing the allocations criteria meant that overcrowded households that had been waiting for a number of years for a suitable property in 2010 were given the same priority status as homeless households. The implementation of the revised policy saw lettings to overcrowded households increase substantially from 33% in 2007–2008 to 61% in 2011–2012 when 1,642 overcrowded households were provided with suitable accommodation, as shown in Table 11. Giving overcrowded households the same priority as homeless households was accepted in Tower Hamlets because overcrowding had become such an acute problem in the borough. However it may be more difficult to reach a consensus in other boroughs, and it is unclear whether homeless people were consulted.

¹⁷ The strategy reflects initiatives and actions set out in the Council's Overcrowding and Under-Occupation Statement 2009–2012 and the refreshed Overcrowding and Under-Occupation Statement 2013–2015.

Table 11: Trends in overcrowding social housing lets – Tower Hamlets

Year	Total number of lets	Number of overcrowded let	% overcrowded
2007–2008	1,627	541	33%
2008–2009	2,142	771	36%
2009–2010	2,608	1,054	40%
2010–2011	2,194	979	45%
2011–2012	2,703	1,642	61%
2012–2013	2,435	1,435	59%
2013–2014	1,907	889	47%
2014–2015	1,595	772	48%

Source: Data provided by London Borough of Tower Hamlets.

Both Camden and Tower Hamlets councils have demonstrated the importance of targeting households that are not technically overcrowded, but where there is a strong risk that they will become overcrowded without intervention. Tower Hamlets Council prioritises families where there are children below the age of ten of different genders, as overcrowding problems will emerge as the children get older and need separate bedrooms. In Camden there has been a particular focus on households living in studios and one bedroom flats as it was considered that these were most at risk of facing severe overcrowding problems in the longer term.

Case work

In both boroughs, the revised allocations policies were supported by programmes of visits to overcrowded households. In Tower Hamlets, 800 overcrowded council tenants received home visits between 2011 and 2012. Visits were undertaken to all of the severely overcrowded households (those requiring two additional bedrooms). The purpose of the visits was to go through all of the housing options available to the families including the changes to the allocations policy (as previously outlined) and to work with the families to identify solutions to mitigate overcrowding problems.

In Camden, the original overcrowding team – a manager and four advisers – was set up in 2007 with the UK government ‘Pathfinder’ funding. This work and the team was absorbed into a holistic service for council tenants the following year, which aimed to offer proactive casework and support to tenants around four main areas: housing need, health and well-being, financial inclusion and employability. The service proactively contacted all newly overcrowded families and aimed to offer a home visit and follow-up case work over a period of three months. By the time the service was discontinued at the end of 2011, the Council’s housing team had worked with over 800 overcrowded households.

Officers in both councils believed that the face-to-face visits were an effective means of allowing families to make informed choices in the application process for larger accommodation and to build up more trust and understanding of the lettings process. For example, the visits allowed the officers to explain to tenants why it might be difficult to get their ideal choice of home, as other households on the register (such as those with medical needs) could have a higher priority.

Camden Council documented the views of one family who were rehoused through the changes to the allocation policy, and as a result of the advice were provided with a home visit which speeded up their housing solution:

... waiting (for the right property) takes over your life and causes stress for the whole family ... moving has completely changed my life – I should have done it years ago ... my personal health has improved, the kids are more active.

Physical adaptations

The knocking through of rooms and building of extensions was generally regarded as a less effective remedy for overcrowding. A key issue was the limited scope for physical adaptation of property because of the high concentration of flats in both Camden and Tower Hamlets. In Tower Hamlets only three units were expected to be completed between 2013 and 2014.¹⁸ Major adaptations were considered by interviewees to be a costly method of tackling overcrowding, and it was hard to find properties suitable for adaptation and to balance this against the prioritisation of households affected by overcrowding.

Space-saving

Camden Council has focused on space-saving measures as a way of mitigating the negative health and well-being effects of overcrowding. Housing options advisers at Camden Council received specialist training in assessing homes for the best use of the available space, regularly offering advice to tenants. The council also offered households space-saving furniture (such as bunk beds, folding tables, desks and chairs and storage items), which many families could not afford to buy themselves. Officers indicated that these space-saving measures provided better value for money than larger-scale adaptations such as 'knock-throughs' and extensions. The average cost per intervention was only £250 (plus staff time), and officers generally felt that while the changes were small they had been effective in 'setting families on a different trajectory', especially when combined with other support functions such as health, employment and training advice.

Targeting under-occupied homes

Targeting households that are under-occupied has become an important component of housing need approaches in both Camden and Tower Hamlets. Both councils have continued an under-occupation service for the past seven years; its primary purpose is to support overcrowding strategies, where under-occupied homes are freed up by the service and released to overcrowded households.

Both councils have increased the priority for under-occupiers within the lettings allocations system. In Camden, for example, the council reserved a pool of one bedroom properties in attractive locations that only under-occupiers could apply for. Increased priority has also been given to households with larger homes – the greater the number of bedrooms tenants give up, the higher the priority their move is given.

Both councils have used incentive schemes for people living in under-occupied accommodations to encourage them to move to smaller properties. Downsizing payments given to under-occupiers has helped with practical assistance with the move. However, some doubt has been cast on whether the use of downsize payments has any significant impact on the decision to move, although there was

¹⁸ Overcrowding Action Plan Monitoring Report to Council committee

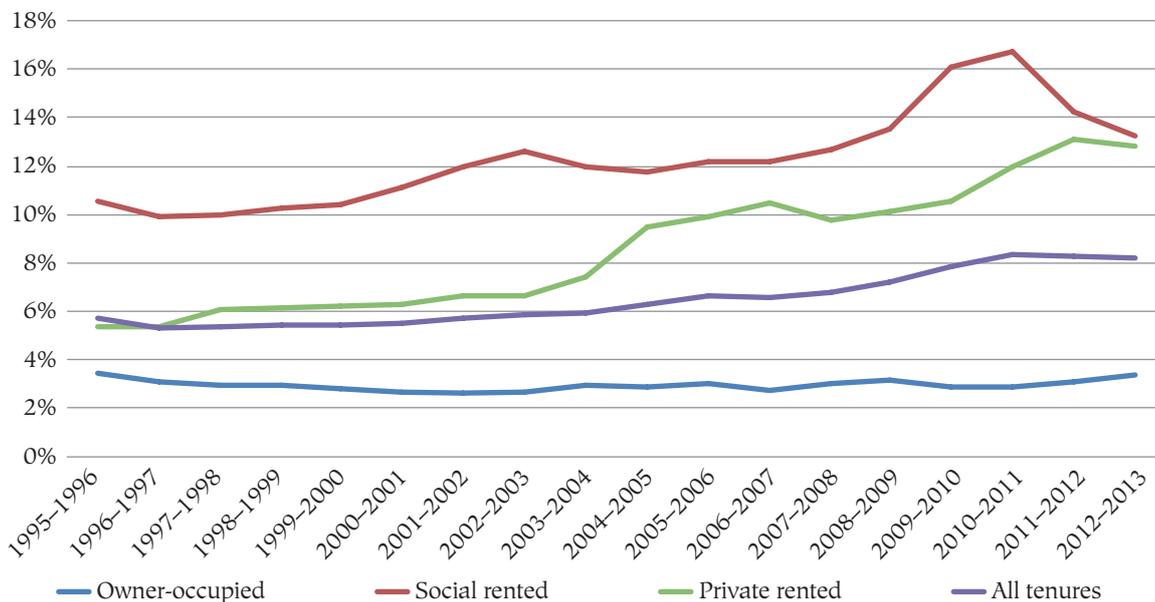
some suggestion that the payment does help to speed up the decision. Nevertheless, the general consensus is that information and advice given through face-to-face contact is a more cost-effective approach.

Assessment

The general consensus from the interviews is that the increased policy focus on overcrowding since 2008 and, in particular, the changes to allocation policies, has helped to reduce the rate of overcrowding in London’s social housing sector. This has countered the trend of rising overcrowding rates for other tenures and has contributed to the stabilising of the overall rate for all tenures. This evidence is supported by the data presented in Figure 13 which show that the rate of overcrowding in the social housing sector in London reached a peak of 16.7% in 2010–2011 before dropping to 13.2% in 2012–2013.

Nevertheless, Figure 13 also shows a steep increase in overcrowding in private rentals. This observation, combined with the fact that there has been a decrease in social renting (and owner-occupied housing) and an increase in private renting, suggests that the decrease of overcrowding in social housing is partly because it has moved to the private rental sector. While the data indicate that overcrowding started to decline in the private rented sector in 2011, further research would be required to show if there has been any displacement effect of overcrowding households moving to the private sector from 2011 onwards.

Figure 13: Proportion of overcrowded households in London by tenure, 1995–1996 to 2012–2013



Notes: ‘Overcrowded’, according to ‘room standard’ measure. Rolling three-year averages used.

Source: English Housing and EHS.

Case 2: Liverpool: Healthy Homes Programme

Key points

Primary care providers in Liverpool noticed that the unhealthy conditions of several of their patients were caused or exacerbated by housing conditions (for instance, falls, winter deaths, asthma). This was among the triggers for Public Health to fund the Healthy Homes Programme run by Liverpool City Council. The Programme consists of ‘advocates’ going from door-to-door in specific neighbourhoods, assessing – with the help of a short questionnaire – how houses can be improved with particular focus on hazards, dampness and energy efficiency. Advocates also noted whether people were interested in referral to other services, including employment services, and whether, for example, help was needed with addictions. Neighbourhoods to canvas were identified by analysis of 14 variables, including the proportion of private rented accommodation property – these tend to be in the worst condition and can be improved by asking landlords to act.

From its establishment in 2009 until September 2014, 19,730 surveys were collected of which 18,950 included referrals, some of them to multiple organisations, giving an overall total of 26,820 referrals. Most referrals concerned housing conditions (5,080) and the fire service (3,420). Overall, excess cold was the most common problem. The Programme generated around GBP 5 million in investment from private landlords, usually without need for legal action and partly due to the weight of requests made by the council. To increase the number of home visits that resulted in the successful completion of a questionnaire, advocates wore an NHS badge alongside their council badge. The NHS tends to have a good reputation among the population; the council badge triggered worries from some interviewees that they were being ‘checked up on’.

The Programme has less to offer for owned housing, and the quality of social housing is left to the providers who are informed when problems are observed. The proactive nature of the Programme was considered important, with advocates contacting households and arranging referrals, and then following up after one month to check whether organisations and landlords had acted. In 2013, an assessment revealed that the Programme’s targeting of specific neighbourhoods may have missed pockets of inadequate housing in better neighbourhoods. A 2011 assessment estimated project costs to be lower than the savings made for healthcare services (mostly from relieving conditions of excess cold) and wider societal savings (again, mostly from relieving excess cold).

Background

According to census 2011, just under half (47%) of Liverpool dwellings are owner-occupied (with or without a mortgage), 28% are rented social housing and 23% private rented housing (2% live in shared ownership or rent free; Liverpool City Council, 2013). Private renting almost doubled between 2001 and 2011 (Grinnell, 2013; Price, 2013). In spite of improvements in housing conditions, many dwellings are still classified as ‘non-decent’, in particular in the private rental sector. ‘Non-decent’ means that they do not meet the statutory minimum standard for housing (for example, they are not free from hazards such as a high risk of serious health implications from exposure to cold), and are in a state of disrepair. Overall, 49,143 of private dwellings (33% of the total) fail the requirements of the UK’s ‘decent homes standard’ (Liverpool City Council, 2012).

In 2011, Liverpool had the highest overall rate of fuel poverty in the UK, with one in five households (19%) living in fuel poverty and about 7% of households lacking central heating (David Adamson & Partners, 2011; Grinnell, 2013). A total of 44,106 private sector households (28.2%) spend in excess of 10% of annual income on domestic fuel and are in fuel poverty. Fuel poverty is particularly prevalent

among private rented housing (35%, compared with 25% private owner-occupied) and among the young and old (David Adamson & Partners, 2012). Rates differ largely between neighbourhoods, ranging from none of the 3,024 households in Norris Green to 47% of the 3,044 households in Warbreck.

Inadequate housing also affects health. Every year in Liverpool¹⁹ about 500 deaths and 5,000 illnesses that require medical attention are related to housing inadequacy. It has been estimated that 77 deaths from accidents in Liverpool occur within the home each year, with approximately 4,000 hospital admissions. Half of the accidental deaths have happened through falls; 90% of them people over 65 years of age (Watson and Hatcher, 2013). Excess winter deaths are estimated at 276 each year, with 8 emergency hospital admissions matching every winter death.

There are several programmes in the city that seek to address inadequate housing and related issues in Liverpool. In Liverpool's 2013–2016 Housing Strategy, the Healthy Homes Programme is assigned an important role in improving housing conditions in the private sector, where people are particularly at risk of inadequate housing.

The Programme consists of 'advocates' going from door-to-door in disadvantaged neighbourhoods, engaging in conversation with the people who live in the dwellings and seeking ways of improving their living conditions through engagement into a wide range of health and well-being services.

The Programme is financed by Public Health (previously a separate entity, now part of the city council) and executed by Liverpool City Council. Inspiration for the programme arose when primary care providers noticed that poor housing contributed to the exacerbation of poor health associated with asthma. In 2008, a business case setting out the impact of poor housing on health inequalities secured investment for the programme. For example, the business case highlighted that the Programme could prevent tripping hazards, chronic pulmonary obstructive disease (COPD) and other serious health and well-being issues that might be mitigated by better housing. Liverpool's Joint Strategic Needs Assessments (JSNA) identified housing quality as a contributor to health inequality (Liverpool NHS Primary Care Trust and Liverpool City Council, 2008, 2011), with the 2011 JSNA stating that poor quality housing affects physical, social and emotional well-being and causes illness and death through excess cold, increased infection, asthma and other respiratory illnesses (Watson and Hatcher, 2013).

The Programme is a targeted approach in that it focuses on areas where many people (including vulnerable groups) live in private rented accommodation, because private tenants are most likely to suffer from inadequate housing. It focuses on the top 10 hazards of the 29 described in the Housing Health Safety Rating System: excess cold; falling on level surfaces; fire; falling between levels; damp and mould; electrical hazard; falling on stairs; food safety; personal hygiene, sanitation and drainage; and entry by intruders.

However, the Programme is universal in the sense that all dwellings in the identified areas are visited, and it is holistic in addressing issues related to health and beyond (Grinnell, 2013). It looks at the broader picture, referring people to local doctors (general practitioners or GPs) if they wish, giving them healthy lifestyle recommendations, helping them to pay their bills (by, for example, ensuring access to benefits they are entitled to) and addressing issues such as social exclusion (for example, radios were offered to help people feel less isolated).

¹⁹ Liverpool's population is about 470,000 according to the census of 2011

Implementation

In 2008, the Programme started with a pilot (one advocate) and in 2009 it was rolled out into a full start-up operation with over 20 advocates, and then scaled down to a stable number of 7 advocates. The Programme's budget was relatively high (initially) and then dropped to a maintenance level of around GBP 1.07 million per year, with GBP 0.3 million inspection costs. Energy efficiency trainees were hired on a six-month contract.

The Programme has five main steps:

1. **Focus is given to geographical 'priority areas':** These are areas which are expected to benefit most from the programme; where the proportion of private rental properties is highest (the programme assumes 'social housing registered providers' take relatively good care of housing conditions); where most people in vulnerable situations live; and where housing conditions are considered to be worst. Overall 14 variables are used to select neighbourhoods, including figures on hospital admissions for falls and recorded burglary rates. Visits have focused on the 291 highest priority areas identified in 2009. Interviewees explained that areas visited in the early years have recently been re-visited including those where contact had already been established, but in particular those where there were lower levels of response on the initial visits.
2. **Contact is made with a number of organisations and groups in the area:** This is to 'warm the neighbourhood up', as the interviewees expressed it. This builds up a picture about specifics of the neighbourhood, such as public health and cultural issues. It includes councillors, the city council neighbourhood management team, community groups, local radio, resident groups, local activity groups, GP surgeries and dentists, children's Sure Start centres, libraries, schools, police and social landlords (Watson and Hatcher, 2013).
3. **All dwellings in the area are sent a letter:** This is to let their occupants know that an advocate will visit their homes. The letter offers residents the option of contacting the Healthy Homes team by calling a free telephone number to set up an appointment. Healthy Homes advocates visit each property in the area, offering every occupant the opportunity to go through a four-page questionnaire about housing conditions, lifestyle and health issues. Advocates are trained to have a conversation with the occupants rather than to 'conduct a survey'. It includes questions about fall hazards (such as loose handrails/banisters, lighting), heating conditions, causes of dampness, poor insulation, hygiene and health issues (in particular asthma).
4. **The team inputs the data collected into the referral system:** Action is then taken by the Healthy Homes team.
5. **A call-back is made:** This is done 28 days after households were visited by advocates to check whether a follow-up visit took place.

While the focus is on geographical areas with high proportions of private renting, visits are also made to social housing and owner-occupied housing in the identified area. Social housing corporations are contacted with suggestions for action they can take, and owner-occupiers are also advised about how they could improve their housing conditions.

The Programme has the most to offer for private tenants, with a large part of the follow-up actions taken concerning the enforcement of tenants' rights. When landlords are asked to make the home improvements deemed necessary after the advocates' assessment, most landlords do this without any

problem. Sometimes, however, a landlord is unable to pay for improvements. In this case, Liverpool City Council offers to fund the renovation but requires repayment as soon as the property is sold.

Interviewees estimated that about one in twenty landlords who are asked to make improvements refuse and the council embarks on legal action. On one occasion this had a nationwide impact. Liverpool City Council took action against a landlord who had installed a heating system which was expensive to operate. The council's case was that it was unaffordable to run and therefore unacceptable on grounds of health and safety. After a judgement by the higher court, this became national case law. The judgement agreed with the council that heating costs were a material consideration in the assessment of excess cold, thus ensuring that assessments made nationwide must now consider the operating costs in safeguarding the health of occupants. The team offers a service to help landlords to access properties to carry out gas safety checks, while environmental health officers can take advantage of their powers of entry by using court warrants when necessary.

When asked about what groups were found to be particularly hard to reach and in vulnerable situations, interviewees mentioned neighbourhoods where many Roma and Czech people live. The local Neighbourhood Management Team advised the Programme of ethnic minority groups considered socially isolated who had language issues and poor diets. In response, the Programme recruited a council employee who spoke Czech and an interpreter for the Roma residents. It also offered food vouchers (to all residents) for local grocery stores to encourage participation and to help improve diets.

Another group in a particularly vulnerable situation are people at risk of winter deaths, or winter-related hospital admissions, particularly the frail and elderly. The Programme includes a 'Winter Survival' action project that targets groups at risk with tailor-made measures (Watson, 2013). Information is an important element of this, including a two-week radio campaign and events for the elderly and adults in vulnerable situations. There are a number of practical measures targeted at these groups, including:

- the distribution of chair-based exercise DVDs, blankets and jackets;
- the distribution of 'Winter Warmth' leaflets;
- the provision of bags of rock salt/grit to make outdoor walkways safe in cold weather.
- a prize draw (with three prizes of GBP 100) during the winter months, with questions related to raising awareness and preventing winter deaths.

The Programme also includes its winter campaign material (Winter Survival) in the letters that GPs send out to patients asking them to attend surgeries to be given vaccinations against influenza.

The Programme worked with the charity Dying to Keep Warm, to provide those in heating crisis with temporary heaters, carbon monoxide detectors and gas isolation valves for people in vulnerable situations (particularly those with dementia). The Programme also had an emergency accommodation pilot scheme that used sheltered accommodation for step-up and step-down periods for those leaving hospital or in danger of admission to reduce risk of harm, save money, reduce 'bed blocking' and resolve the housing issue, even if temporarily.

Assessment

From the Programme's establishment in 2009 to September 2014, 48,800 addresses were visited. Communication initially took place at a rate of about one in every three addresses visited. Over time, measures were developed to increase successful contact. The first two steps of the process (described in the Implementation section of this case; contacting community organisations/groups and sending out letters) were built into the programme from an early stage.

Recruitment, training and the experience of advocates were key elements for its success, with other aspects added later; for example, advocates initially wore only badges with the Liverpool City Council logo, but they now also wear NHS badges. The reason for this is that the first badge is often associated with the ability to enforce and may also raise fears of being 'checked up on' among community members, whereas the NHS is one of the most trusted brands in the UK and people generally contact them when they need help.

Advocates also began to give every household visited an energy-saving light-bulb, facilitating contact. A monthly prize draw of GBP 50 towards households' energy bill (paid directly to providers) was offered for those who participated in the survey. While these measures have not been evaluated systematically, advocates' experience suggests that contacts increased.

Overall, 38,300 interventions were made; 19,730 surveys were collected of which 18,950 included referrals, some of them to multiple organisations, with an overall total of 26,820 referrals. Most referrals concerned housing conditions (5,080) and the fire service (3,420). Overall, excess cold was the most common problem.

The Programme benefits from regular assessment, with feedback sought in many ways. By default, advocates ask occupants to participate in a 'customer focus group', contributing to continuous feedback and improvement of the programme, with the 28-day follow-up check crucial in monitoring impact. An attempt is made to contact all residents by phone. If contact is not made, a letter is sent asking the resident to call the programme if they have not received the services.

The city used estimations and evidence when establishing and monitoring the Programme. For example, cost calculations carried out by the Building Research Establishment (BRE) have indicated that work carried out during the first year of the programme was estimated to save the NHS in the region of £439,405 per year, from this point onwards. Over a 10-year period this could be extrapolated to an approximate saving of £4.4m (NICE, 2016). A comprehensive Health Impact Assessment study (Grinnell, 2013) was commissioned by the Programme after its fourth year of operation. It was further claimed that the project contributed to reducing excess winter deaths by 57% between 2009 and 2012 (Price, 2013).

Because the Programme is run from the city council, this is likely to explain its effectiveness in persuading landlords to make needed improvements. Overall, from April 2009 to September 2014, the Programme generated GBP 5.1 million of investment from private landlords. Furthermore, interviewees stated that many jobs were created as a result of this investment.

Another success factor was seen to be the proactive nature of the Programme. For example, households do not need to initiate referrals themselves because the Healthy Housing team takes care of that for them.

The Health Impact Assessment study argued that the scheme may benefit from broadening its target to smaller pockets of homes in neighbourhoods which were not initially identified as target areas. The assessment also argued that longer-term follow-ups could be better developed beyond the 28-day call-back.

The forms that advocates fill out when they visit people at their homes have developed over time. Experience has shown that it is better to keep them short to allow advocates to have a real conversation with the people they visit, rather than having advocates look at the form and simply survey the occupants. It is a challenge, but regarded as important, not to take on too many suggestions from various interest groups or government departments for more questions to be included.

The referral process has also improved over time, with training by partner organisations playing a key role. For example, referrals by the Healthy Homes team to the Benefit Maximisation Service were not always of the type that could help to maximise their benefits. To increase the effectiveness of referrals, the Benefit Maximisation Service provided training to the Healthy Homes programme; referrals are now considered to be of better quality.

The Programme, however, does have gaps. By design, it does not focus on owner-occupiers and social housing. Nevertheless, it does visit such dwellings if they are in areas identified by the criteria and if they support occupants with referrals. However this may not be enough to effectively prevent poor quality housing, in particular among owner-occupiers, with areas that have large proportions of owner-occupiers likely to be missed by the Programme.

There seems to be an unmet demand among owner-occupiers for further support. Liverpool's housing survey revealed that many owner-occupiers are interested in maintenance booklets (9.8%), energy efficiency advice (11.4%) and a small grant/handyman service (21.8%). It should be mentioned that there are other programmes that specifically target homeowners. In the Liverpool area, for example, the charity Energy Projects Plus has a helpline and runs campaigns encouraging people to insulate their homes.

An interviewee referred to the national 'Energy Companies Obligation' scheme, which provides loans to people for home renovations. Loans are financed through contributions from energy companies and are repaid by a regular and affordable amount added to utility bills until the debt is repaid. Nevertheless, according to the interviewee, this scheme is hardly used (around 1,000 households in the UK), possibly because of the terms and size of the loans, and potentially because of lack of short-term pay offs.

Case 3: Ireland: Warmer Homes Scheme

Key points

The case study presents the Better Energy Warmer Homes scheme, an area-based energy improvement programme that operates across Ireland. The programme funds energy efficiency upgrades and retrofitting projects to improve energy conservation and living conditions for householders, while reducing fuel poverty and the negative health impacts associated with poorly insulated housing. While the scheme operates across the whole of Ireland, the scheme's uptake has mainly been in urban rather than rural areas due to the location and concentration of housing stock belonging to the local organisations, which are the delivery agents for the scheme. To address this issue, the lead authority delivers an alternative scheme aimed at individuals.

The programme offers a good example of a national level energy efficiency programme that addresses inadequacies in the housing stock, particularly insufficient insulation and the associated symptoms (fuel poverty, discomfort and ill-health). To date, the programme has improved the energy efficiency of 8,014 households through the funding of 106 individual projects, and has also generated an energy saving of an estimated 56 gigawatt hours (GWh) across a three-year period.

A key feature of the programme is that it operates in a particular neighbourhood or area. Central to the successful implementation of the programme is that delivery organisations have an established presence in local communities and have built a sense of trust with residents.

The emphasis on resident engagement has been a feature of delivery in a number of projects funded through the programme. Community-based organisations prioritise ongoing resident support and monitoring of impacts, and some with a cooperative structure (where residents are essentially joint owners of the housing stock) emphasise the role of residents as 'members' and stakeholders, rather than 'tenants'. This relationship has meant that residents more readily understand the aims of the intervention and opt to participate as a result of ongoing contact with the community-based organisation.

These organisations are required to meet the costs for around 30% of the project (the remaining 70% is government funded). A mechanism introduced by a community-based organisation to meet project costs and to enhance the sustainability of the project is the pay-as-you-save approach where residents make a contribution to the work on the basis of their projected utility bill savings. In general, residents are content to contribute a small weekly instalment since they are paying less on their fuel bills as a result of the scheme. There is potential to roll out this payment mechanism more widely, across both other Irish schemes and European interventions to improve homes and energy efficiency as a means of enhancing financial sustainability.

An attempt has been made to keep the measures and the approach (including eligibility criteria) relatively simple. This has helped to engage partners and residents and ensured that the delivery of the programme is relatively straightforward. The measures implemented are therefore 'tried and tested' rather than technologically innovative, as part of a deliberate attempt to generate the maximum gain from a finite investment, to support a critical mass of households, and to offer value for money.

Background

The main rationale for the introduction of the programme was the existence of poor quality, and in particular, energy inefficient housing in Ireland. The worst conditions exist within the portion of the

housing stock that was built before 1998, prior to the introduction of national building regulations that introduced a set of more rigorous requirements for newly constructed housing (specifically regarding insulation and energy conservation). Before this, a high proportion of housing in Ireland was energy inefficient; an issue exacerbated by the exposed climate and dispersed low density housing stock. According to the 2012 national census, one-third of Ireland's housing was constructed before 1970, which gives some idea of how much housing might be energy inefficient and of poor overall construction quality. As a result, Ireland came to be among the European countries with the highest rates of fuel poverty and excess winter deaths. While there are several definitions of 'fuel poverty' (especially relating to assessment of eligibility under the scheme), stakeholders within the sector generally recognise that fuel poverty exists when a household has to pay over 10% of their income on energy bills. The proportion of households in Ireland experiencing fuel poverty has been estimated at 13.5%, which, while lower than for the UK, stands higher than many other European Member States (Energy Bill Revolution, 2013).

Research undertaken in Ireland across the 1990s revealed that people in vulnerable situations (such as poor people and many elderly) are more likely to live in sub-standard housing, especially in terms of energy efficiency, and also that it is often these people that use more traditional fuels (for example, peat and coal) which are less efficient and also have a disproportionately high impact on the environment (Brophy et al, 1999). Research identified that a 10-year investment plan to bring household energy conservation standards up to 1997 standards would actually save lives among the lowest socioeconomic groups, particularly among those over the age of 65. For example, it was found that this intervention would avoid almost 3,000 cases of cardiovascular and respiratory disease (about half the excess winter hospitalisation cases in Ireland) and would prevent 650 premature deaths, representing 44% of excess winter deaths in Ireland (Brophy et al, 1999).

Overall governance for the programme is funded by an Irish government agency, the Sustainable Energy Authority of Ireland (SEAI), while the delivery of projects is through locally based, not-for-profit organisations (community-based organisations). The locally based organisations are selected through a competitive process which requires them to submit a proposal for grant support to the SEAI. These organisations typically own and manage housing stock for residents on low incomes or with specific needs (for example housing associations). Over 100 individual projects in different residential areas have been funded through the programme to date.

The measure is targeted at houses within particular areas managed by housing associations and cooperatives. Dwellings were selected for the intervention by the local delivery organisations on the basis of level of need, including both the poor condition of the dwelling and the degree to which fuel poverty is an issue for the residents in the particular neighbourhood. The local delivery organisations hold detailed information on their housing stock and their tenants' circumstances, so the organisations are able to make an informed judgement regarding the areas of their housing stock that would most benefit from the intervention.

Implementation

A key element of the delivery model is that the programme has funded locally based, not-for-profit organisations (community-based organisations (CBOs)) to deliver approved projects through the programme. These organisations have an established presence and track record of working in the intervention neighbourhoods. Placing these CBOs at the heart of the delivery model has been critical to the smooth running of the intervention and has helped to build on the relationship already existing

with residents to foster their involvement and buy-in. There are a number of other mechanisms and approaches employed by the programme that have contributed to its success.

The programme also has a high level of political support (reflecting cross-departmental working in government) which has helped to ensure that partners and stakeholders across a range of policy areas are engaged and informed about the intervention. The programme's sustainability has been supported by financial contributions from residents through the pay-as-you-save mechanism and from energy suppliers through Ireland's Energy Credit scheme. The pay-as-you-save mechanism is a funding model in which residents are asked to pay half the value of their energy savings over five years to support future energy upgrade projects. The amount paid by residents is between €5 and €8 per week, which is added on to the cost of the rent paid to the landlord organisation. A relatively unique feature in the ongoing delivery of the scheme is the way in which local delivery organisations are working to quantify and calibrate the impact of the scheme. To integrate evaluation into the scheme delivery, one such organisation has employed a researcher to capture the impact of the scheme by undertaking research with residents.

These elements of the programme combined form the 'blueprint' which could be used if a similar programme was to be delivered elsewhere. However, it would have to be considered whether the involvement of local delivery organisations allows for the delivery of the programme across urban as well as more rural and isolated areas. Interviewees argued that there would also be benefits in allocating or assuring funding for several years into the future so that strategic planning and cost savings can be generated through the delivery of the programme over the medium rather than short term.

Assessment

Over 8,014 dwellings have been covered by the scheme to date across a three-year programme that has generated estimated energy savings of 56 GWh. This is calculated through a schedule approved by SEAI, which sets out the energy savings generated for dwellings of a particular type and size depending on the nature of the works. This schedule has broad public and stakeholder support and is used as a basis for the Energy Credit scheme that operates across Ireland to level private utility company contributions to energy efficiency works. Ongoing evaluation has shown that residents are more comfortable and warmer in their homes, and in many cases are spending around a third less on their heating bills. As a part of ongoing research, residents have completed surveys prior to and after the delivery of the upgrades. Against a range of domains, including their quality of life, comfort and warmth in their homes, their health and the costs of their energy bills, they allocate scores to before the improvements and after. The results of these surveys indicate that while energy bills have reduced or stayed similar for residents, many are finding that they are much warmer and more comfortable in their homes.

There is also some anecdotal evidence that some residents have improved health, for example, reduced symptoms of respiratory conditions. Evidence of health-related impacts is limited as the programme has only been running for three years. It is expected that forthcoming analysis will quantify some of the associated health gains.

Those parties interviewed for the case study were of the opinion that a similar programme could be implemented in a different European context, subject to a number of provisions and approaches. For instance, to make it possible to ask residents to contribute towards the cost of the works by paying a portion of the estimated future savings, it is essential for delivery organisations to have a positive,

ongoing relationship with residents, and that residents themselves are regarded as stakeholders in the programme. This trust and respect helps to foster resident buy-in. The case study also showed that a pilot scheme run prior to the formal roll-out of the programme helped to ensure continuous improvement.

The majority of projects have delivered the support agreed at the project application stage. Over 8,000 dwellings were improved under the scheme between 2012 and 2014. The measures implemented are relatively straightforward and simple upgrades achieve a good level of energy efficiency for a medium level of investment. The scheme has promoted this approach rather than supporting the implementation of 'deep' retrofitting interventions, employing innovative and cutting-edge energy efficient technologies.

Case 4: Amsterdam: Renovation of social housing complex 'Bosleeuw'

Key points

'Bosleeuw' is a complex of four four-storey apartment blocks and a few separate houses in Amsterdam West. It is owned by social housing corporation Stadgenoot, which initially planned to demolish and rebuild the apartment buildings. During the global financial crisis, budget constraints led Stadgenoot to change its plans, opting instead for a renovation of the apartment blocks, while occupied, starting with one block with 179 apartments of 50–60 m², rented at €300–400 per month.

The renovation took place between October 2013 and June 2014, addressing a number of aspects of housing quality including fire safety, security in common areas, security against break-ins, reduction of health risks, energy cost, reduction of draughts, noise insulation, reduction of plumbing repairs, redistribution of space, and less tangible aspects of housing satisfaction such as aesthetics. Stadgenoot ensured a 10% return on investment by increasing rent for occupants, partly mandatory (€40 per month for central heating and insulation of outside walls and floors), partly optional (€10 each for solar panel and extension of bathroom).

Consensus-building with inhabitants was essential, partly because there is a legal requirement for about 80% of tenants to agree if renovations bring about a rent increase. Several factors proved important to the inhabitants, including a strict limitation on the number of days that renovations of each apartment were allowed to last, a requirement to leave the apartment clean every evening, a survey to monitor renovations, and an area where people could spend the day while works were taking place.

It emerged that the type of renovations that seem to make sense from a broader perspective may not seem so attractive to the beneficiaries. Structural improvements such as ventilation systems and drainage renewal may prevent problems in the future and make sense from a health and safety perspective, and renovation of the external parts of a building may also seem appealing to the broader neighbourhood. However, inhabitants may not always appreciate such renovations as much as those that take place inside the dwelling.

It also emerged that improved energy ratings might not lead to reduced consumption of energy. Some people felt there was no option available to use the new central heating to heat just the room they were using, as they had previously done. Stadgenoot realised that to change existing habits, residents needed information about how to convert the improved ratings into real energy savings. Similarly counter-intuitive was the fact that only 30% of inhabitants opted for solar power, even though it brought a direct return of €23 per month to offset the €10 rent increase for its installation. Reportedly,

some people, migrants in particular, found the deal ‘too good to be true’. Additional measures, such as local champions, might have increased take-up.

The step-wise approach of the renovations described in this case may have been caused by financial constraints, but experience from the renovation of the first block of apartments could be applied to renovation of further blocks. It is interesting to note that a change in the accounting rules, with reduced impact of value-increases of apartments, has real impact on renovation plans: the focus will be more on maintenance and less on value-increasing measures such as the exterior.

Background

Amsterdam West is the most densely populated borough of Amsterdam, with about 140,000 inhabitants. This case study concerns a building in one of its neighbourhoods and some of its social problems, which the municipality tries to address. The population consists of a largely homogenous group of migrants, mainly from Morocco but some also from Turkey. Dwellings in the area, as in many other parts of Amsterdam, are predominantly social housing. This case study deals with one complex, consisting of a group of four four-storey buildings and some small neighbouring houses, referred to as *De Bosleeuw* (‘the forest lion’). These buildings are owned by social housing corporation *Stadgenoot* (‘fellow townsman’), which owns about 32,000 rented accommodations around Amsterdam. Social housing (monthly rent below about €700) is accessible to households with an annual income up to €34,678.

All dwellings in the renovated apartment block discussed in this case study fall in the category of ‘cheap’ (below €600, the threshold for the housing subsidy), and all are social rental apartments with between one and three bedrooms, 50–60 m², at a rent of €300–400 per month. Some 20–25 apartments in one of the buildings (next to the one that is subject of this case study) have been sold since 2006. This building was not earmarked for demolition and organising renovation of such partly owner-occupied blocks is generally more challenging for the social housing corporations.

Originally, the plan was to demolish three of the four apartment blocks and replace them with newly built blocks as part of a broader urban redevelopment plan. There would be more diversity in the size of apartments, particularly larger, new apartments. Occupants (social tenants) would be compensated, as legally required, with a one-off payment of €6,000 per dwelling, and relocated among *Stadgenoot*’s housing stock across Amsterdam. The chances were that many of them would not return to the area afterwards. This was part of the municipality’s strategy to increase diversity among occupants. It would also address the issue of too little variation in the available size of dwellings and consequent problems of overcrowding.

With the onset of the global financial crisis, however, *Stadgenoot*’s budget for the scheme was cut and it was decided that the buildings would be renovated. This would be done in phases, starting with one of the blocks consisting of 179 units.

Implementation

This first phase took place from October 2013 to June 2014, at a cost of about €60,000 (including value added tax) per dwelling. While the cost of rebuilding per unit would have been similar, the compensation for inhabitants was lower (€1,500 instead of €6,000) and renovation avoided other additional legal costs such as connection to utilities. But, renovation would actually be more costly as regulation would require the apartments to be larger, which would imply higher value but also a penalty for the retraction of social apartments.

Renovation would be financed with an increase in rent, calculated to bring a 10% return on investment over 25 years: €1,000,000 additional income from rent against an investment of €10,000,000. Rent was increased by €40 per month to compensate for central heating and insulation of outside walls and floors. Two other interventions were optional. The first was an extension of the bathroom by removing a wardrobe in the bedroom, against an additional €10 monthly rent increase. Second, occupants had the option of having solar panels installed on the roof of the apartment block, against a further €10 rent increase.

A dialogue was opened with occupants to reach an agreement on the renovation plan. This dialogue came about, in part, due to a legal requirement for about 80% of occupants to be in agreement with a renovation plan if the consequence was to be a rent increase, and a requirement to involve the tenant committee if more than 20 dwellings were affected.

An important condition agreed upon with the occupants was that the work in each apartment should take no more than 15 days and that builders would clean apartments at the end of each working day. Also a space was made available where people could stay between 07:00 and 16:00 on working days.

The renovations

The insulation of the external walls was the main contributor to an apartment's energy efficiency, along with other measures. Local gas heating was replaced by a modern central gas heating system in all dwellings, which resulted in an energy efficiency rate increase from F to A, with the exception of top floor dwellings where the improvement went from G to B.

The drainage system was renewed in the entire building as the old system was subject to frequent clogging, leakage and bad smells. Attempts to unclog it over the years had damaged the drainage pipes, making them weaker and thus resulting in increasingly frequent leakages and smell nuisance for inhabitants.

Water pipes were also renewed to alleviate condensation problems, and to make the apartments easier to insulate and cheaper to maintain. Furthermore, the new pipework system allows water to be turned off centrally in case of leakage or flooding. Water meters were installed, making cost dependent on usage rather than on the size of the dwelling as was previously the case.

Doors to the apartments were replaced to make them fire-resistant and to prevent fires from spreading from the stairways into the dwellings, or from dwellings into the stairways. The new doors also had various safety features such as burglar-proof strips.

Noise from neighbours is a common problem for inhabitants. An interviewed inhabitant reported that noise was one reason why their family had moved to a top-level apartment with no neighbours above. The renovation was not able to fully address noise issues, as this would require ceilings to be replaced and better insulated. The additional cost and major disruption this would cause inhabitants made this improvement unfeasible. However, stairway ceilings were sound-insulated, reducing the noise that enters the apartments from the stairways. Another renovation which helped somewhat to reduce noise was the insulation of drainage.

Droogloop ('dry walk') is the local term for the area inside the building on the ground floor. There are no dwellings on the ground floor, only storage space and a covered area that leads to a central patio. This area was particularly problematic as young people tended to meet there; some started fires there and stolen items were often dumped, creating feelings of insecurity for residents. As part of the

renovation, cameras were installed every few metres in this area and lights were installed which turn on automatically when it gets darker, making the area feel safer at night, not only due to increased visibility but also by making sure the cameras keep capturing what is going on.

The municipality insisted on replacing multiple individual satellite dishes on balconies with a central system on the roof of the building.

The municipality complemented the renovation with a multidimensional approach for the neighbourhood and it had planned to renovate the direct neighbourhood, but only after the renovation of the dwellings was completed to avoid neighbourhood renovations being damaged by the ongoing building works. When the apartment block rebuilding project was cancelled, it was decided that more emphasis should be placed on social aspects of the area renovations, since it would now be impossible to improve diversity in the area by dispersing the current residents throughout the city. The municipality adjusted its plans accordingly.

A social programme was started by the municipality in 2010–2011 and will run until 2019–2020, focusing on:

- a safe and clean neighbourhood;
- training and information, particularly about the prevalent issue of bullying;
- encouraging residents to work together and incentivising them to take action themselves.

The process of achieving such involvement is long and complex. One specific example includes sporting activities. It is important that such activities do not lead, for example, to parents leaving their child behind to be entertained, but instead engage parents as volunteers and eventually persuade them to organise activities themselves. This reflects the shift in thinking during the crisis, in particular around 2010, which stressed the importance of individual responsibility and placed less focus on society's responsibility.

An important aspect in achieving social engagements in signalling issues includes the *huismeesters* ('house managers') appointed by Stadgenoot in particularly problematic areas. They function as antennae to signal social and physical problems in and around the dwellings and to help solve them. With reduced resources during the crisis, Stadgenoot has confined *huismeester* appointments to the most problematic buildings. Bosleeuw is among these priority areas, but as the situation is judged to be improving, the working hours of the *huismeester* will soon be reduced.

The method by which Stadgenoot calculates its return on investment has changed, where the emphasis would be more on issues such as improving the internal drainage, rather than increasing the value of the dwelling by (for example) an external make-over. The focus will first be on technical maintenance of the other three housing blocks, specifically on the block which is in the worst condition.

Assessment

The renovation contract included an incentive for the builder specifying that if there was a budget surplus, this would be divided among the contractors that had taken the risk of guaranteeing to keep within budget. Eventually costs were €40,000–€50,000 below budget and this surplus was indeed given to the lead contractor. To keep contractors motivated during the process, a survey was held among inhabitants during the renovation works.

Improved energy efficiency did not lead to energy savings for many people. Many people were accustomed to only heating one part of their home, while central heating generally heats larger parts of the house at a higher temperature (‘even when switched-off’ one inhabitant noted). Changed habits were likely to bring energy savings and Stadgenoot, for example, distributed fliers which explain how decreasing the overall heating by just 1°C would still retain their comfort, but at lower cost.

Occupants were also offered solar power installations on the roof of the apartment block connected to their dwelling’s electricity system in return for a monthly €10 rent increase, although the installation of the panel also brought a guaranteed estimated monthly discount of €23 on their electricity bill. In the Netherlands, any solar-generated electricity not used by the household is transferred into the electricity system and the electricity company pays the household for it.

Somewhat surprisingly, only 30% opted to have solar panels. The most common reason for declining the solar energy system was disbelief that the deal would actually earn them money. Migrants particularly found it ‘too good to be true’. One interviewee did choose to have solar panels and was satisfied with it, and when she moved to a different apartment that had no solar panels in the same building, she was disappointed she could not take the installation with her. In 2015 the regulatory authority ACM urged utility providers to give clearer and more complete information to consumers about the financial consequences of installing solar panels, and to issue more transparent energy bills (ACM, 2015).

Case 5: Turin: Refurbishment of a social housing neighbourhood

Key points

The focus of this case study is the refurbishment of a social housing neighbourhood in the Corso Taranto neighbourhood of Turin, Italy. Comprising of 16 buildings with 652 flats, the intension of the programme was to improve security, environmental quality, energy efficiency and accessibility/comfort of the buildings. This was part of a wider programme for renovation of public housing owned by Agenzia Territoriale per la Casa (ATC), supported by the European Regional Development Fund (ERDF) Regional Operational Programme of the Piedmont Region. Altogether it allowed for the renovation of around 2,000 apartments owned by ATC in eight different social housing estates between March 2013 and December 2014. As of today, it has been the biggest energy refurbishment programme carried out by a single owner/manager of residential buildings in Italy.

The programme represents an exceptional case in the Italian context of the use of Structural Funds for large scale refurbishment of the housing stock. The research highlighted the key role of end-users’ involvement: feedback from tenants can result in the carrying out of works more efficiently; training of and information from tenants, leading to real cooperation, is essential to achieve more efficient energy consumption patterns. The potential of achieving energy savings through behaviour change, even in a context with vulnerable end-users, should be adequately taken into consideration and specific supporting measures should be implemented.

Background

This case study concerns the renovation of 16 buildings in an area known as Corso Taranto, in the Regio Parco-Barca quarter in Turin. The buildings were constructed in 1969 with 652 rented social housing flats. They have similar characteristics and include two types of buildings: ten-storey buildings with two staircases, and seven-storey buildings with three staircases, with the average size of the dwellings being 81 m² and an average household size of 2.5 persons. The project impacted

a total of 1,586 residents; 52% of the residents are elderly (over 70 years old) and elderly people living alone represent 52% of all households. Out of the total number of households, 37% have an annual income of between €10,000 and €20,000 per year, while 13% have an annual income below €10,000 and 6% have no income and rely entirely on social security.

There were a number of problems with the buildings. First of all, their poor energy efficiency was contributing to increasing energy costs for the residents. Average rents amounted to about €90 per month and tenants were paying two to three times as much for utilities. Secondly, heating and hot water were provided through individual boilers installed by ATC in the 1980s, managed by the tenants in each flat after the central heating system previously in use was removed. This had proven to be unsafe, with a number of cases where the lack of maintenance and malfunctioning of the boilers had posed serious threats to the safety of the tenants, and more generally of the entire building. Furthermore, some households, particularly those in difficult financial situations, tended to turn off the heating as they could not afford to pay their energy bills, hoping instead that the heating from neighbours would be sufficient. As a result the homes were not kept adequately warm. Finally, lifts in the buildings were old and often malfunctioning, leading to considerable inconvenience for the tenants and high expenditure on frequent repairs.

Project objectives were:

- enhancing energy performance and thermal comfort in the buildings, lowering carbon dioxide emissions by replacing individual boilers with a connection to a new district heating system, installing new windows and window-frames to enhance thermal and acoustic insulation, applying a thermal coat to the façade, insulating the roof and removing thermal bridges;
- enhancing social conditions through the aesthetic improvement of the buildings and an increased sense of identity and ownership of the neighbourhood through a participatory process;
- enhancing economic conditions of the resident population by lowering energy bills;
- enhancing security, installing a new heating system and new lifts.

The project was supported by the Piedmont Region ERDF Operational Programme 2007–2013, under its priority focusing on sustainability and energy efficiency. Among other measures, the programme made funding available (up to 70% of eligible costs) to increase energy efficiency in the existing publicly owned buildings managed by public housing agencies, to lower energy consumption and increase the use of renewable energy sources while, at the same time, enhancing the living conditions of residents.

Implementation

The first phase of the project focused on the accessibility of the common parts of the buildings and more specifically the lifts which were old and needed frequent repairs. A total of 16 lifts were replaced with new and more functional ones, with the lift shafts enlarged to allow for a larger lift to give greater access for wheelchair users.

The second phase focused on increasing thermal comfort and energy performance (insulation of the walls and roofs, external thermal coating, new windows and double glazing), substituting existing boilers with new high performance ones and to connect all homes to district heating.

In parallel to this, the existing thermal plant in the neighbourhood was upgraded and a new central combined heat and power hub was created. In addition, a new district heating network was built,

serving not only the 16 buildings but the entire neighbourhood (including 11 other buildings belonging to ATC and others in private property).

Assessment

According to the follow-up carried out by the social department of the social housing association, which undertook the initiative, the majority of tenants were highly satisfied with the improvements to their homes. Residents were particularly satisfied with the aesthetics, new windows and insulation, and many said they could now keep the heating level to a minimum.

In terms of financial sustainability, it is important to mention that costs were not directly reflected in the amount paid by the tenants, as rents were not increased accordingly. Social housing rents in Italy are determined on the basis of the household's income and not the value/quality of the dwelling, and regional laws regulating the sector forbid the increase of rents to repay investment in the refurbishment of public housing. This makes it difficult for social housing companies to get a balance between the need to update the existing housing stock and financial viability without specific public support. The role of structural funds was therefore key: overall, the project received €6,325,800 of co-funding from the Regional Operational Programme.

Interestingly, the works related to the heating system were financed through so-called 'project financing' which implies that the majority of the costs are financed by a company (selected through public tendering) which subsequently becomes the energy managing company for a period of 24 years, and its investment is repaid through the cash flows generated by the payment of the energy bills over this period. It is therefore very important for the overall financial stability of the project that if residents do fall into arrears with their utility payments, it is tackled promptly and reduced as much as possible. The public tender to select the company to provide and manage the energy distribution included a clause concerning energy prices. The selected company must apply the same tariffs as those applied by the municipal company IREN, the public utility company which is the major provider of district heating in the city of Turin.

Evaluation of energy savings and reduction of carbon dioxide emissions continues. The expected reduction in energy consumption at the start of the project – considering all the different measures taken – was estimated at 25%–35% and carbon dioxide emissions were expected to be reduced by 470 tonnes per year. A full evaluation report is soon to be delivered to the Regional Authority in charge of the ERDF, but no data are yet available. The measures implemented are not necessarily state-of-the-art in terms of achieving the maximum level of energy efficiency and environmental sustainability. Nevertheless, it remains an outstanding example in the Italian context, especially considering the scale of the project.

Experts from ATC have explained how the situation has been more complex than foreseen, and a number of factors complicate the evaluation. Firstly, data on energy consumption in the single housing units were not fully known prior to the project because each household had an individual heating contract with an energy provider. This makes it difficult to have a significant comparison of consumption before and after the project. Secondly, with the previous system tenants could decide to completely turn off the heating to avoid paying for energy consumption. This meant that some dwellings were not adequately heated, with potential negative consequences on health. Some residents would rely on their neighbours' heating to keep their homes warm, creating a 'free rider' problem. With the new centralised system, all households pay a fixed minimum price for heating, plus an amount that varies according to their actual consumption. This should result in most people

keeping their heating turned on at all times. This has not been fully understood and/or accepted yet, and it is proving difficult in the case of particularly vulnerable tenants (elderly people, those with mental illness, households with multiple social problems) to reassure them that a basic minimum of heating is paid for under the new scheme and that it will not cost them any more. Generally, however, those who used to adequately warm their homes before the works were carried out now have lower bills. Of course, some households are actually paying more because they can no longer ‘free ride’ and must pay a fixed contribution whether they switch their heating on or not. Gains for all residents should be considered in terms of better comfort and increased safety.

Likewise, the evaluation of energy consumption since the installation of the new heating system is ongoing. Depending on the results, ATC will consider changing some aspects of the billing system to make sure the tenants have to pay an amount which reflects consumption in an equitable way, also taking into account the structural differences between housing units.

ATC is trying to encourage tenants to make proper use of the heating system by:

- providing further training and explanatory sessions;
- putting in place a ‘warning’ system whereby tenants are told if their energy use increases over a certain amount, to avoid the problem of arrears on payments;
- encouraging households with very low incomes (below €6,000 per year) to use available support in the form of allowances from the regional Solidarity Fund, which can be used to pay utility bills after a small down-payment.

ATC is also considering how to adapt the fixed payment for utilities to make the system more efficient and more reasonable.

The main internal driver of success was the high level of coordination between the technical and social expertise within ATC, as well as the decision to invest in the creation of a social department within ATC to deal with the residents. This was possible thanks to ATC’s experience of other urban regeneration projects.

Among the external drivers of success, one should first of all mention the existence of a well-established and particularly active tenants’ committee. Without the presence of mobilised residents who were able to engage with the public company, the implementation of the project may have proved more difficult and may not have achieved the same shared results. Secondly, as previously mentioned, the contribution of local associations and other partners was key in providing a range of services to residents when their mobility was reduced due to the ongoing works. Thirdly, the project was made possible by the availability of funding from the Piedmont Region through ERDF funding.

Although the project had to respect the initial schedule for the delivery of the targets, the detailed schedule of the works was discussed and agreed weekly with the residents to make sure the works were planned at a suitable time and to avoid delays. Thanks to their knowledge of the buildings, the residents also gave valuable information about practical aspects of the work, which was taken into consideration whenever possible.

Besides the more tangible results, it is also argued that the project has increased the ‘sense of belonging’ of residents to the neighbourhood, and increased trust in the public housing company.

Case 6: Zaragoza: Vivienda Housing Programme for older people

Key points

This programme consists of three housing developments and related community facilities projects in Zaragoza, Spain. The projects address the housing requirements of a section of the older population who are at risk of poverty and socially isolated, developed from a community-led initiative based on inputs from a network of neighbourhood associations and a range of stakeholders who have supported the design, planning and implementation phases. All stakeholders agreed that the project's delivery approach produced synergies between public and private organisations, making good use of resources and ensuring value for money.

The programme ensures housing provision that reflects the profile of residents, including house-sharing with community spaces for individually adapted apartments, taking into account different degrees of vulnerability and specific needs. Having a mixed profile of beneficiaries, including older people, has fostered social inclusion of this segment of the population. Quality of life has improved for residents and seems to have produced savings in terms of less intense use of health and social services.

Background

The Spanish city of Zaragoza is part of the WHO Global Network of Age-friendly Cities and Communities, which was established in March 2011 to encourage the exchange of experience and mutual learning between cities and communities worldwide. Upon entering the network, the council (*Ayuntamiento*) carried out a study of the current conditions and needs of older people. The results showed that 19% of the population in Zaragoza were aged over 65, 36% of whom were living alone. The study also showed that 4% declared no income at all, 16% less than €700 a month and 38% between €700 and €1,000 per month.

The older population is over-represented in the area of Casco Histórico (the oldest area of the city) where one-third of the population is over 65 years old. Most of the buildings in this area were old and in need of repair and adaptation in order to provide a safe living environment for occupants. Many dwellings required lifts and the replacement of baths with showers, among other adaptations.

Zaragoza Vivienda has implemented three initiatives focused on the elderly population:

- Centro Comunitario Oliver is a set of 38 apartments and a community centre. This is a project for senior citizens, aimed at people who are still highly self-sufficient, living in adapted apartments, benefiting from services provided by the council as described below and sharing events and cultural/recreational activities with neighbours;
- Apartamentos Tutelados is a mixed-use building with 14 small adapted apartments and a community centre providing a range of services;
- Comparte Vida is a building with three apartments (three beneficiaries per dwelling) next to a council care home.

All initiatives aim to improve the quality of living conditions of the elderly population by providing comprehensive and tailored assistance. That is, not only providing affordable accommodation, but also by facilitating access to other social support services including:

- social workers who provide assistance with administrative practices and monitor the need for personal assistance at home;
- personal assistants who are available for less autonomous people;
- trainers who are focused on adult education and learning activities at recreational spaces;
- mediators who deal with issues of cohabitation (mostly for Comparte Vida).

A key feature of these measures is their tailored service provision to meet the specific needs and profiles of beneficiaries. The target population was approached through the partner NGOs, including Caritas Zaragoza, Ozanam Foundation, Adunare Foundation, La Piedad, La Once and the community association (*asociación de vecinos*) at Barrio Oliver, which has a detailed understanding of the needs of the local population. Caritas Zaragoza is an NGO closely associated with the Catholic Church with a broad network of offices across the territory and has been involved in Zaragoza for several decades. Ozanam, La Piedad and La Once are all NGOs involved in the initiatives by contributing resources and input, and developing activities with the neighbours' association of Zaragoza.

Zaragoza Vivienda and the partner organisations agreed on potential candidates for the schemes; the eligibility criteria dependent on recipients' socioeconomic profile. Candidates were defined as elderly, with constrained economic resources and unable to afford to buy a home on the open market. They must also be physically independent and able to live in their own apartments.

A common feature of all of the projects has been the prevention of the premature placement of older people in residential care homes²⁰ when they are still fairly autonomous and independent or need only light support with certain activities such as shopping, cooking or other housework, which is offered by the Council of Zaragoza.

Implementation

Comparte Vida has three apartments in which eleven people have benefited from the project since it started in 2008, as shown in Table 12. Zaragoza Vivienda is planning to add one more apartment to support three additional beneficiaries. Centro Comunitario Oliver has 38 apartments; from 2008 until the publication of this report, 58 people have benefited. At the community centre, the Adunare Foundation provides meals at a low price and arranges gatherings with neighbours from the Oliver neighbourhood with around half of the 38 inhabitants receiving meals at the centre. The activities attract people of different age ranges and there have been some 500 different people actively involved since it started. Indeed, there is a waiting list for neighbours wishing to participate in activities at the centre. According to Zaragoza Vivienda (2015), most of the people having meals at the centre are aged between 61 and 80 (35%), followed by older than 80 (27%) and between 51 and 60 years old (21%). Only one person aged between 19 and 30 attended the community centre for a meal. In addition, there are a number of people older than 52 who have lost their jobs and are having meals at the centre. In relation to country of origin, 92% are Spanish. Only 15% of the people attending meals are residents of the building.

²⁰ 'Residential care houses' are residential houses for elderly people who need permanent personal assistance by nurses to support complex health needs; they may be publicly funded or private.

Apartamentos Tutelados has provided accommodation to 28 elderly people in 14 apartments since 2001. Like the other two projects, they enjoy access to community social services, particularly those specifically targeting the elderly population such as help with administrative matters and remote and personal assistance with housework.

Table 12: Impact of the Vivienda Housing programme, 2008–2015

Start year of project	Number of beneficiaries	Apartments	Services / activities
Comparte Vida (2008)	11	3 (one more being added)	Access to community and specific social services (home care, administrative tasks)*
Centro Comunitario Oliver (2008)	58	38	10,800 meals annually; 697 gatherings and integration into community activities
Apartamentos Tutelados (2001)	28	14	Access to community and specific social services

Note: * Community social services are all those provided to the community as a whole; specific services are targeted at certain populations. For instance, the elderly have a different set of social services to immigrants, young people, children, women and large families.

Source: Ayuntamiento de Zaragoza (2015).

Assessment

In quantitative terms, the targets were limited by capacity and have been achieved; in qualitative terms Zaragoza Vivienda has succeeded in working with a mixed profile of beneficiaries, encouraging community integration and reducing the isolation of older people. The municipal social services established a profile of vulnerability in relation to physical and mental health and assessed beneficiaries' needs. Elderly candidates presented different needs, ranging from those aged 65 with minimum support needs, to those aged 80 with mobility issues and in need of permanent assistance with domestic work. It is thought that mixing different types of beneficiaries was helpful in reducing the social isolation of groups that had not been used to interacting with people of different ages.

Since the beginning of their implementation, the initiatives have assisted 97 people, with an overall cost of €5,749,179 for initial investment in physical space, construction and furniture. This includes the community centre valued at €1,612,975, which is used by the whole neighbourhood. The annual management cost for the initiatives as a whole amounts to €185,813. Therefore, the total net value of the three projects is €2,995,562 in terms of physical investment. Averaged out across the number of beneficiaries per project at the time of writing, Comparte Vida shows a cost per beneficiary of €22,143, Tutelados €32,039 and Centro Comunitario Oliver €51,648. The total number of beneficiaries is expected to grow during the lifespan of the projects, which would bring down the cost per beneficiary.

Overall, beneficiaries indicated that they most appreciated the physical adaptations (new bathrooms and adapted spaces for mobility such as wider doors and user-friendly lifts) and the geographical location (proximity to other public facilities). All stakeholders agreed that the main internal driver of success was at the community level with the partnership agreement between public, third sector and community organisations. This delivery structure provided a clear mapping of needs. A second internal driver is its tailored service provision which delivers effective targeting. Finally, the provision of a comprehensive strategy facilitates complementarities between public services (housing, health and elderly population well-being), thus fostering public effectiveness and efficiency.

The main external driver is a public administration committed to social inclusion and keen on meeting community demand by partnering with them and delivering a response. As stated by Zaragoza Vivienda's manager, this public response of Zaragoza is rare in a Spanish national context, where the emphasis is on property ownership through mortgages rather than social housing.

When planning the Centro Comunitario Oliver, the centre was first conceived as a day care centre for the elderly, but it was then realised that a community centre would be a better option to engage the whole community together alongside the elderly, creating a public space to bring together neighbours and the elderly population for joint activities.

One of the oldest members of the neighbours' association (*asociación de vecinos*) and other stakeholders in permanent contact with the community said that beneficiaries of the programme show a higher life expectancy and better quality of living compared with similar communities in Zaragoza and across Spain. Their health conditions are permanently monitored and it has been shown that living in suitable housing arrangements diminishes the occurrence of domestic accidents (which are high among the elderly), while diminishing the risk of depression.

You could see a clear progress and improvement on them when they come to live with other people and start getting involved in activities with other people from the community. They become more interactive and talkative. It is true that women tend to be more engaged than men, but that is changing.

(Representative from Adunare Foundation)

Moreover, it was felt that engagement in cultural activities with people from different generations has helped improve levels of self-esteem; a member of the neighbour association said: 'When I turned 90 years old, the neighbourhood organised a big party and it was full of young people. I felt very happy and appreciated.'

There are different features that our beneficiaries appreciate, like being monitored on weekly basis by our staff and easy access to our services such as domestic assistance with housework, assistance by phone; but the thing most of them appreciate most is being next to Residencia Amparo [the care home] where they can meet other people and feel part of a community while still living an independent life.

(Social worker at Casa Amparo)

As explained by the social worker at the care home, the main physical adaptations – for instance, showers and lifts – aim to eliminate any sort of barrier to residents' mobility and comfort. Residents also receive assistance from a specialised team to move and adapt furniture in their homes to make mobility easier and safer whenever they wish. The social services delivered are partially funded by central government and the autonomous community, the beneficiary's financial contribution determined by their financial profile. If their income is low enough, services would be provided for free.

Case 7: Riga: Tackling ageing housing blocks

Key points

Like many other Member States across eastern Europe, Latvia has an ageing housing stock which is characterised by poor energy efficiency and poor living conditions for local residents; 70% of apartment blocks in the country are over 50 years old. Flat owners often spend half of their monthly wage on heating bills.

The project is focused on 'deep renovation' which helps to generate a step change in the housing it improves and the people who live there. Instead of improving one or two aspects of the building, the project helps to improve it in a holistic way including doors, windows, roofs, basements as well as more 'aesthetic' (but high impact) improvement including decoration, lighting and building safety issues that often make a big difference to the everyday lives of residents and which are more immediate and obvious impacts of the project.

The project aims to tackle the ageing housing stock in Latvia through the use of private sector funding. The project does this by using the savings in energy bills from improvements in the homes to pay off the loans that are taken to fund the improvements in the first place. The model starts by performing an analysis of the amount of energy typically used by the building and the cost that residents usually pay for their energy bills. The savings in energy costs after the improvements take place are then used to pay back the loan over a period of time, or are reinvested into the building to allow for capital upgrades that may otherwise be unfeasible. Thus residents maintain the same monthly payment after improvement, but part of the monthly payment is used to pay off the loan.

Background

Latvian housing stock was generally built between 1950 and 1990, with around 70% of all housing in this Member State being over 50 years old. Much of the housing originates from the communist era where thousands of apartment blocks were built over a relatively short time period and broadly to the same standard. This means that large parts of Latvia's housing stock are ageing at a similar rate and causing significant issues over similar timeframes for both residents and city authorities.

Around 85% of all homes in the country are owner-occupied. This means that any repairs and improvements needed to address the problem of inadequate and ageing housing generally concern the individual residents rather than the city council or other housing-related organisations. This therefore puts the onus on the individual rather than the state to finance and implement actions to tackle inadequate housing in the country.

The above issue of owner-occupation creates another problem when attempting to effectively address inadequate housing in the country. Each apartment block often consists of between 30 and 70 individual flats, all of which have independent owners who are in different financial situations and have different personal circumstances. This means that any improvements to issues such as roof insulation, heating systems and wall insulation generally would need the agreement of each individual flat owner before work can commence. The collective agreement needed to improve an apartment block can often be a key challenge to tackling inadequate housing, mainly because some flat owners do not support improvement plans as they cannot afford them, or because their personal circumstances make them unwilling to take on large scale investments. They may, for example, not expect to live long enough to see the benefit of the improvements, or may be planning to sell their homes shortly.

A fundamental issue associated with inadequate housing in Latvia is the poor energy efficiency levels of the apartment blocks and the individual flats contained within them. Poor insulation is at the heart of the issue and ageing windows, roofs, doors and walls all contribute to high energy consumption. The average amount of energy consumed in an older apartment block in Riga is 400 kWh/m² compared with just 50 kWh/m² for a newly renovated building. The very high consumption is due to a combination of the poor levels of insulation and the generally cold winters experienced in Latvia, particularly in recent years (often averaging -8 to -10°C in 2011 and 2012 respectively).

A direct consequence is that a large proportion of household income is spent on heating costs. The average heating bill for an apartment block in Riga is around €170 per month, which is often three times that of a monthly heating bill for a new apartment block. Considering that the average monthly wage is €600, the proportion of residents' wages going towards heating bills is significant and acts as a large driver of poverty among local residents.

Implementation

The energy service company (ESCO) Sun Energy programme is focused on a 'total renovation' of ageing apartment blocks in Latvia so that all aspects of an entire block are improved (including windows, basements, staircases, doors, cellars, hot water systems, heating, ventilation and roofs/loft space). Although the improvements themselves are relatively standard, the main elements of the project can be summarised as follows.

- **Improving homes in a holistic sense:** making sure that buildings are not improved in just one or two ways, but that a range of improvement methods take place. Known as 'deep renovation', rather than simply improving the windows or doors, it implements a holistic improvement plan that leads to a step change for the building and its residents. This in turn means that the impact of the improvements is much more apparent and that the effects on residents' quality of life are more obvious.
- **Treating each apartment block as different and unique:** although many of the former communist apartment blocks were generally built to a similar standard, the project made a point of dealing with each block individually and ensuring that improvements were tailored specifically to the needs of not only the apartments but also the individual residents. For example, an apartment block which contained mainly older residents saw improvements that were focused more on warmth and heating, while an apartment block which mainly contained owners on lower incomes had improvements which focused on reducing energy bills as much as possible.
- **Improving the aesthetics of the building as well as addressing its technical weaknesses:** another key aspect of the project was making improvements to apartments that were more peripheral in terms of energy efficiency, but important in relation to making large improvements in its general appearance. For example, instead of simply spending resources on cavity walling, loft insulation and new heating pipes, the project also ensured it improved staircases, decoration, lighting and other issues linked to the communal areas of the apartment blocks. Although these types of improvements were less important in terms of energy efficiency, they were considered useful to both encourage residents to take part in the improvements and also to relatively quickly increase the overall impact of the project in a cost-effective way (recognising that, for instance, replacing heating pipes would have a large impact on the energy efficiency and heating bills but would have less direct impact on the appearance of the apartment blocks themselves).

- **Promoting the quality of life benefits of the project rather than simply the environmental and energy benefits:** recognising that the project would need the buy-in of the majority of residents found in each apartment block, the project promoters focused as much on the quality of life benefits of the project (being more comfortable in the home, having new and smarter communal areas, higher house prices) as it did on the environmental and energy-saving aspects of the project. For example, the benefits were articulated in terms of euros saved on energy bills rather than in terms of kilowatts of power saved so that residents were able to understand the practical impact that improvements would have on their monthly expenditure.

Assessment

The project has been seen by many as directly benefiting the quality of life of residents, particularly in terms of improving the economic and personal circumstances of local homeowners. Homes were reported to be 30%–50% warmer as a result of the improvements, with an expected positive impact on health.

An unpublished study by Riga Technical University that focuses on one neighbourhood of Riga where nine apartment blocks have been improved, shows that local doctors have seen a 30% drop in patient visits related to respiratory issues often linked to mould in damp and cold houses. The research did not ascertain whether the drop was completely or partly attributable to the housing renovation work, but stakeholders believed there was a direct correlation. Although hard to measure, the project was also seen to benefit the general well-being of local residents, who were reported to be happier and more likely to remain in the neighbourhood after the improvements had taken place.

Energy bills have dropped from around €170 to €90 per month. However, the funding model works on the basis that the levels of monthly payments stay the same (to pay off the loan) meaning direct financial benefits to homeowners are less apparent. The actual level of energy used was reported to be around two-thirds lower after the improvements took place, which was seen as being particularly beneficial in environmental terms.

An interesting aspect of the project was its use of people living in already-improved apartment blocks to promote the benefits and positive impacts of the project. Although the project promoters used traditional marketing materials and a website to communicate the impacts of the project, they also asked residents who lived in improved apartment blocks to market the benefits. When an old apartment block was being encouraged to take part, residents were often taken to a newly improved apartment block to talk to other residents who were now enjoying the benefits of a newly improved home. They were also encouraged to visit and inspect the communal areas of a newly improved apartment block as well to see how individual flats had benefited from the project. One of the improved apartment blocks also had a ‘champion’ who raised the profile of the project and spread awareness about its benefits among other flat owners in other blocks in their neighbourhood. This ‘peer-to-peer’ marketing approach was seen as being much more effective than traditional forms of promotion including leaflets and other online methods.

Case 8: Slovakia: Building Hope project

Key points

The Building Hope project was implemented by ETP Slovakia, a not-for-profit organisation that supports disadvantaged and marginalised groups in Slovakia (predominantly Roma) to encourage integration by improving their social and economic situation. The project was implemented between 2012 and 2014 with a total budget of approximately €100,000 and was targeted at a small village in the Košice region of eastern Slovakia with a population of 753 citizens, 78% of whom are Roma.

The aims of the project were to provide better housing conditions for the Roma community in the selected village and to teach this community new working skills, working habits and financial responsibility. The housing conditions of the targeted community are inadequate for several reasons: they do not meet basic sanitation or hygiene standards; they do not have gas, water or electricity; and these households are often overcrowded and illegally built. Given the high level of inadequacy of current dwellings, the project focuses on construction of new dwellings by the beneficiaries themselves, partly as a response to the lack of social housing for the socially excluded and very low-income social groups. The homes designed for self-help construction can be adapted for both smaller and larger families by adding up to two more rooms to the basic floor area, depending on the financial situation of the participating family. The project is financed through micro-loans which are returned to the system through repayments.

An interesting aspect of this project is the active participation of the targeted population and the wider Roma community in its design, planning and implementation. Also key to the long-term success and sustainability of the project is its integrated approach, looking not only at the provision of housing, but also training beneficiaries in financial literacy and budget management, and providing new working skills. Because of financial limitations, just six dwellings were constructed within the remit of this project.

Background

The Building Hope project took place in a village called Rankovce in the Košice region of eastern Slovakia. The village has 753 people, 78% of whom are Roma. Košice has one of the highest unemployment rates in Slovakia and lags behind other regions in terms of its structural and economic development; nearly all of the Roma population in the village are out of work. The largest problem facing the village is a lack of decent and legal housing, and the Roma population often live in illegally built makeshift shacks with no running water or sanitation. Other issues linked to the Roma population include a high dependency on social benefits and lack of educational facilities and attainment. Close to three-quarters (70%) of homes in Rankovce use a public well, located half a mile from the village, to access water.

Since members of the Roma population are nearly all unemployed, they do not have sufficient financial resources to provide adequate housing for themselves. They are not eligible for a mortgage or loan from financial institutions, or for any kind of state subsidy for housing provision since residents of illegally built dwellings are not eligible for public sector state help.

The Building Hope project aims to provide the Roma community in the selected village with better housing conditions and to educate all age groups in new working skills, working habits, financial responsibility and healthcare. The project is a combination of social field work, offering training in

educational, vocational and financial literacy and construction skills, but also raising awareness of health issues.

Particular risks addressed by the measure were overcrowding, inadequate living conditions in provisional shacks, difficulties in accessing housing on the rental/homeownership market, bad hygiene and health conditions, social exclusion, non-working habits, financial illiteracy, illegal housing and lack of social housing.

Implementation

The project is based on ETP Slovakia's experience of long-term cooperation with the Roma community on several different projects (for example a savings programme with 926 families and a microcredit programme with 550 families). The self-help programme utilises an incremental housing construction scheme which starts with a basic house of 25 m² for the ground floor area and 50 m² for the upper floor area. This area can be further expanded up to 150 m².

Houses are built from recycled, environmentally friendly and energy efficient construction materials. Roma families built their houses by themselves or with the help of community and family members under the supervision of a skilled construction manager. The construction period lasted approximately 12 months and the loan repayment was set for a period of more than 10 years – repayment of the loans secures the programme's long-term sustainability, enabling other families to participate. Thus, Roma families are encouraged to help themselves, be self-motivated, gain meaningful working and life skills and make multiple steps towards integration.

The Building Hope project was planned to run from 2013 to 2014, but although the last houses were approved at the end of 2014, connections to electricity and water connections were finalised in early 2015. The last micro-loan is expected to be repaid by about 2023. Over a period of two years, six family houses for six Roma families were constructed with part of the Roma community of the village of Rankovce involved in the project implementation. The construction work to build the home was performed by family members in that community and (where needed) construction skills were provided. This further allowed the development of skills, thus increasing participants' employability. The project provided both informal and peer learning (learning skills from friends and family), as well as more formal education about proper construction practices. The houses themselves are built on land and sites that have been legally purchased and have legal construction permits. This means any issues with other local residents are reduced.

Financial sources were a combination of microloans provided by ETP Slovakia with support from other organisations and private savings from those families participating in the project. Self-help construction was carried out under the supervision of a professional building inspector with assistance in construction from the Roma community. The model was designed to be low-budget so that it could be sustainable and replicable in as many cases as possible, which included the use of volunteers (wherever possible) as well as the use of second-hand building materials which again kept overall costs to a minimum. ETP Slovakia carried out the main managing and administrative role and liaised with the local government of Rankovce, The Evangelical Church of the Augsburg Confession in Slovakia (ECAC), the organisation For a Better Life, the organisation Hope for Roma, a local vocational secondary school and local social workers.

Assessment

In Slovakia, the Roma issue poses a significant problem and the majority of citizens do not support new Roma settlements in their village or city. This could have also explained why the mayor – himself a Roma – might have changed their mind over cooperating with ETP Slovakia (in some cases). Even in cases where there is willingness to cooperate among the local authorities, the lack of suitable building plots in the territory of a given city or village poses a significant obstacle. Plots in rural areas in Slovakia are mostly owned by the Slovak Land Fund and municipalities do not have enough financial resources for their purchase.

While willingness of beneficiaries to participate can be a challenge, in this case it was not. Thanks to the project's organisational structure, Roma families were encouraged to help themselves and gain new valuable skills and experience. Their living standards have been substantially improved and they have begun to become integrated. The experience of one family brings hope to other families of the same community and of other marginalised Roma communities as well. The willingness of participants to contribute to the construction works, obey the rules and acquire working habits had a positive impact on the project.

This project is sustainable in that it reduces public expenditure by using private savings and micro-loans, makes use of recyclable materials, stimulates increased social contacts and improves the economic and social inclusion of Roma from marginalised Roma communities. Micro-loan repayments ensure financial sustainability and enable more families to participate in the programme. So far, there have not been any significant problems in repayment. The need for additional funding for further construction can be considered a limitation as the repayment is planned over at least 10 years; new financial partners will be needed to fund the construction of additional houses. During implementation of the project, there were some further common issues, mostly caused by natural phenomena such as flooding of a newly constructed water reservoir.

The success of this project is proven by the fact that there are other inspired Roma families from the community interested in the self-help building model. There is also evidence that some are purchasing building plots and starting to construct new homes. Moreover, the Ministry of Finance in Slovakia is currently developing a 'Slovak Investment Holding', a social housing programme based on ETP's Building Hope model of self-help construction, to provide microcredits for further social housing programmes.

The Building Hope project demonstrates good practice in an integrated approach, based on the cooperation of all relevant partners including local government, state institutions, donors, sponsors and non-profit organisations. It is an example of an investment model, as opposed to a benefits model, that supports families of the Roma minority. By employing the Roma, engaging them in the Building Hope Programme as part of the 'Activation Work Programme' – for instance, contractual-based municipal services, and/or in so-called 'voluntary services', the State-run active labour market programme, helps increase social capital of the Roma and their day-to-day contacts with the non-Roma.

Building upon and learning from ETP Slovakia's extensive experience in this type of project, the Slovak Ministry of Labour, Social Affairs and Family is currently implementing two national projects: Social Field Work, and Community Centres. The Ministry of Finance is also currently developing a social housing programme based on ETP's Building Hope model of self-help construction.

Considering the issue of the overall integration of Roma, it isn't clear that this type of project offers a comprehensive solution. Although the project participants gained basic working skills and working

habits as they built their new homes, their chances of finding formal employment might be still modest given widespread discrimination against Roma people, and given that the Roma minority is concentrated in regions with high unemployment. This pilot project cannot be considered a long-term solution to the widespread segregation of the Roma minority beyond the village of Rankovce. It does solve the problem of inadequate housing but does not offer additional social services and care to segregated families.

Lessons from the case studies

Resident engagement

Accept, cooperate and maintain

The case studies have shown that engagement of residents and buy-in from resident groups is crucial to the effective improvement of housing. In certain cases, residents had to legally opt-in and vote on whether they wanted to be involved in the project (Amsterdam and Riga). Engagement can also enhance residents' appreciation of the outcome of a measure, which is important for overall levels of housing satisfaction. Engagement can also improve the efficiency of the works if it motivates residents to prepare their apartments for the workers, saving them time. In the case of Slovakia, it was also argued that a feeling of 'ownership' (and actual ownership) further helped in motivating residents to maintain the quality of the dwelling after the project ended.

Engaging residents is important not only at the start of the project, but also during its implementation. One example is the survey of residents conducted during the works in the Amsterdam case study. In Turin, the detailed schedule of the works to improve energy efficiency and accessibility/comfort was discussed and agreed weekly with the residents to make sure the works were planned at a suitable time and to avoid delays. This helped to improve the cost-effectiveness of the measure.

Understanding needs and preferences

Engagement is also key in understanding the needs and preferences of residents, allowing improvements to be tailored not only to the specific dwellings, but also to the needs and preferences of residents. While expert knowledge may be lacking, residents are likely to know their dwellings particularly well and be able to point out where they can be improved.

Tailoring improvements not only helps win the acceptance of the majority of inhabitants of a building; it also recognises how different types of measures might vary in importance for different groups of people. These considerations are particularly important when the policy objective is to increase quality of life. In Latvia, for example, an apartment block which contained mainly older residents saw improvements that were focused more on warmth and heating, while an apartment block which mainly contained owners on lower incomes had improvements which focused on reducing energy bills. In the case of Amsterdam, inhabitants of the renovated apartment block could choose if they wanted to have their bathrooms extended (at the cost of space in their bedrooms). The case also shows that understanding the preferences of residents in the process of renovations (rather than the content) can be key in acceptance.

Understanding the preferences and needs of residents can further improve efficiency of measures to address inadequate housing. Residents are likely to know their buildings from daily experience very well and are thus able to provide valuable information for works (Turin). Another example where an understanding of residents' preferences helped to ensure efficiency comes from the London study. In addressing overcrowding, it may be easily assumed that not all households in under-crowded apartments would necessarily choose to leave their dwellings for the benefit of those in overcrowded

dwellings. However, where households have a genuine desire to downsize their property, the targeting of under-occupied dwellings for mutual exchanges with overcrowded households can be considered a more cost-effective solution to the problem of overcrowding than building larger dwellings.

Over the course of a dwelling's lifetime, residents will usually come and go. So, particularly if the policy objective is prevention rather than cure, it may make sense to invest in all housing stock to improve quality in ways that are not of immediate importance to current occupants. However, this may only be feasible if funding comes from public or third-party sources, and if it is possible to take a long-term view, since positive outcomes are less immediately apparent.

Trust as a facilitator and outcome

Trust can be an important facilitator for the success of housing measures, where citizen engagement can help to enhance trust in the initiative. In Amsterdam, optional solar panels were offered to residents. Yet even with a guaranteed and immediate financial benefit, many residents (particularly migrants) found the offer 'too good to be true'. In evaluation, it was felt that the take-up rate may have been higher if, for instance, a co-resident could have 'championed' the measure (as was done in the Riga case).

Initiatives, if well-managed, can contribute to enhanced trust in those who managed or financed the initiative, including social housing providers and governments. They can further nourish (or even create) a sense of belonging in the neighbourhood, with people collaborating to create better living environments (Turin).

Facilitating engagement: NGOs and existing resident organisations

The case studies have shown that an important factor in addressing poor housing conditions is the involvement of local organisations or other NGOs that have an established presence in local communities. The evidence suggests that community-based organisations are not only well placed to understand what types of improvements will meet the needs of local residents, but also to gain the trust of residents and persuade them that the measure will improve their quality of life. In Zaragoza, the measure to address the housing needs of a group of older residents was a community-led initiative based on input from a network of neighbourhood associations. Central to the successful delivery of Ireland's Better Energy Warmer Homes area-based scheme has been the transfer of responsibility for delivery to local organisations with good community connections. Resident engagement can be facilitated by local community organisations, but also by pre-existing resident organisations (Turin). Where there is no such association, greater effort may be required to reach out to residents in order to encourage their participation.

Targeting groups, dwellings and neighbourhoods

Several of the initiatives discussed in this research have applied targeted approaches. This includes the consideration of risk factors and the need for early intervention. In London, for example, local authorities have demonstrated the importance of targeting households where there is a risk that the home will become overcrowded without intervention, as well as targeting those that are already overcrowded in terms of the standard definitions. In Zaragoza, careful consideration has been given to the social profiling of older residents to assess their suitability for adapted and shared accommodation. In Liverpool, a quantitative analysis of 14 variables identified neighbourhoods that were most likely to benefit from the measure.

The studies have also shown that targeting a specific geographical area identified by an average level of housing issues or deprivation can have limitations. While such an approach make sense in

the context of limited resources to fund interventions, it risks missing smaller pockets of poor quality housing in areas that appear on average to be better off. Measures aimed at certain types of tenure or specific population groups may similarly fail to address housing issues in other types of tenure or population groups.

While not having a strong effect in terms of prevention, intervention may also be targeted at specific households where poor quality housing has had a clear impact. Such measures may be cost-effective, as they target dwellings definitely in need of improvement (often with direct benefit for the occupants). An example includes 'environmental home inspection' services provided for patients at the request of attending physicians to improve patient management (WHO Europe, 2008; Charpin et al, 2011), including the Green Ambulance in Brussels, SAMI Liege and CMEI Marseille. Such requests are usually motivated by respiratory problems or by general symptoms which reoccur or worsen at home. The visit includes a standardised questionnaire as well as environmental sampling such as mite allergen measurement, mould identification and VOC monitoring. Some non-respiratory indoor risks are also taken into account. Following the visit, a report is sent to the family and the attending physician.

Complex environments

Overall, the case studies demonstrate that the need to address poor quality housing should not be considered in isolation from other social issues. People who are living in poor quality housing often need support in other areas – such as health and employability – to help them move towards positive development paths. Some initiatives clearly recognise these complexities and seek to provide holistic support. Liverpool's Healthy Homes Programme is a clear example, where the main objective was to improve housing quality, but it also aimed to provide support in finding employment and with a broad range of other social issues. The Slovak case is another clear example where the initiative went beyond narrow housing issues, seeking to address the issue of unemployment. In Amsterdam, the local government complemented the renovations with a broader social integration strategy.

This does not mean that initiatives aimed at addressing inadequate housing should necessarily address the broader range of issues. However, these issues should be recognised and assessments should consider where these issues interact so that the positive impacts of housing improvement measures are sustainable. Even when measures focus solely on the improvement of dwellings, they can have a broader impact. For example, the analytical framework presented earlier suggested that impact of overcrowding arguably can extend to affect children's school performance (Goux and Maurin, 2003).

As discussed earlier in this report, housing improvement measures that have a positive impact may be due to residents being effectively engaged in the process. It is interesting to refer here to a case study conducted elsewhere (Eurocities, 2015) on an 'energy efficiency through participation' project in a deprived neighbourhood in Malaga (Spain). It notes that because this was 'an area that is known for high unemployment, crime, drugs, poverty and illegal activity, energy efficiency was not a top priority for residents'. By recognising these issues and actively seeking to engage residents, the impact of that project seems to have had positive outcomes not only on energy efficiency, but also by improving the atmosphere in the neighbourhood.

Addressing inadequate housing with limited budgets

Resident or owner-based funding mechanisms

Mechanisms that facilitate funding by residents may be needed when public or charity funds are limited in addressing inadequate housing. Such funding may also improve engagement of residents

and facilitate a long-term positive impact. A key challenge is that ‘poor quality housing’ and ‘having problems making ends meet’ (let alone having the resources to fund major reforms) are strongly associated.

The Slovak case illustrated that resident contributions can be made through micro-loans, but also through input of labour resources. The Amsterdam, Ireland and Riga case studies showed how monthly payments by residents, based on expected savings in energy bills created by home improvements, can be used to fund renovations. However, if such resident contributions are based on expected rather than actual savings, it can be a challenge to persuade residents that these savings will actually be made. In practice, these savings may indeed not be made (see ‘Translating energy efficiency into benefits for residents’).

Resources can also come from landlords using enforcement mechanisms to insist on home improvement requirements. Examples include the regional Flemish government’s initiative to address damp and mould (WHO Europe, 2008), and Liverpool City Council’s Healthy Homes Programme that covered a broad range of housing issues. The challenges are that residents may face rent increases, depending on local regulations, and that owners may not always be able to afford improvements. In the Healthy Homes case study, when landlords were unable to fund improvements, they were given loans that they could pay off when the dwelling was sold at an enhanced price generated by the renovations.

Minor measures with reasonable impact

Some of the measures show that smaller, immediate and low-cost improvements to housing can have a reasonably large impact in the shorter term while waiting for longer-term solutions. The experience in London has shown that small-scale space-saving measures can make an important contribution to health and well-being gains. The ESCO project in Latvia takes the approach of improving ‘non-technical’ issues such as lighting and decoration, which, in the shorter term, were shown to have made a big difference in people’s lives.

Translating energy efficiency into benefits for residents

Improved energy efficiency does not necessarily lead to lower energy bills and higher housing satisfaction of residents, as was shown by the Amsterdam and Turin case studies. How can this be explained? For example, in the Amsterdam case, people were accustomed to heating only part of their dwellings. However, the new more efficient central heating system (contributing to the improved energy rating of many apartments from F to A) heated parts of their apartments that people were not using. Their dwellings may have been warmer, but this may not have always been appreciated. The social housing corporation in charge of the renovation project recognised this issue and distributed leaflets to explain how to use the central heating systems more effectively. In the Ireland case, there was an initiative to install thermometers to enhance awareness of the increased temperatures. In Turin, information and training for residents on how to use the new systems more effectively has proven to be an essential element in achieving the desired energy efficiency and environmental sustainability.

Regardless of such efforts, energy efficiency still did not always translate into lower energy bills and higher housing satisfaction for some residents. It is important to recognise this challenge and seek to mitigate it by focusing on the interventions most likely to deliver perceived benefits by combining reform with information, and making systems user-friendly.

It was found that transparency of information about energy bill savings matters to residents. If energy bills are clear, it is more likely they will more readily appreciate the benefits of reform (Amsterdam and Riga). While lower bills do not always indicate energy efficiency, it may indicate that households are failing to heat their homes adequately. It may even mean that households have started to use different types of fuel for heating, even though these have come to be seen as inadequate because of health and safety risks. This is demonstrated by the unintended impact of an increase in heating fuel tax in Greece, which has triggered a revival of old wood-burning stoves and fireplaces (Lekakis and Kousis, 2013).

Although there has been extensive research carried out (including at European level) on the potential energy savings to be obtained by refurbishment of the existing housing stock, overall there is still scope for better understanding of the role that end-users' behaviour can play in achieving efficiency goals, and of the best ways to mobilise residents. Changing the behaviours of energy consumers requires a real cultural change and in the context of particularly vulnerable end-users, it requires specific training and social support. The difficulties should not be underestimated.

Improvement through integral assessment

In several of the case studies, assessment was a part of the initiative which ultimately contributed to the improvement of the initiatives themselves. This may be particularly true for assessments that focus on identifying aspects of the programme that can be improved, building on the experiences of people involved in the delivery of the programmes. It may be less the case for assessments that are at the macro-level and which are linked to future approval of funding, sometimes of a more political nature. Furthermore, one should caution against costly assessments of smaller scale projects unless it is likely they will be applied on a larger scale.

Besides 'assessment studies', integrated quality control checks can also be important. One example of this is the survey of residents during the works in their apartments in the Amsterdam case study which partly monitored whether the contractor had kept their promises. Another example is the Liverpool case where a follow-up check was made a month after beneficiaries had been visited to see if interventions had indeed occurred.

Multidimensional impacts

It is a challenge to assess policy initiatives. One reason for this is the fact that outcomes (on which the initiatives are assessed) have multiple dimensions, and sometimes are only felt in the long run (see Analytical framework, Section 2). Sometimes housing adequacy is addressed narrowly; for example, a focus on the technicalities of insulation. If quality of life is seen as a broader policy objective, rather than taking a narrow view of environmental concerns and energy bills, a more holistic approach may make sense. In achieving higher 'housing satisfaction', residents may prefer more visible renovations inside the dwelling. Another challenge is the availability of data and the cost of collecting them.

While it has proven useful to include assessments in examining how services can be improved, it is more of a challenge to assess the overall impact of interventions and whether or not they 'pay off'. At the macro-level, data may suggest positive developments in terms of overcrowding (London) or winter deaths (Liverpool), but it is hard to distil the impact of initiatives on these outcomes in a complex environment. More local quantitative evidence combined with qualitative findings from interviews has shown more robust evidence of the impact of measures. For example, research in one neighbourhood of Riga where nine apartment blocks have been improved showed that local doctors

have seen a drop in patient visits caused by respiratory issues often linked to mould, damp and cold houses. Interviews confirmed that some of this decrease is likely to have resulted from the initiative.

Qualitative evidence generated from interviews with local stakeholders, community groups and residents provided insight into the relationship between housing improvements and health and well-being outcomes. For example, the London case study has reported qualitative evidence that shows how the mitigation of overcrowding can generate long-term health and well-being outcomes. There is also anecdotal evidence from community associations to suggest that the Zaragoza measure, which has linked physical interventions to the improvement of housing conditions for older people with a comprehensive programme of social support measures, has improved the life expectancy and quality of life of older residents. The research has generated some limited evidence on other potential economic benefits, such as the effects of mitigating overcrowding on employability and life chances (London).

The impact of energy efficiency measures on a household's energy bills is more straightforward to measure. For example, approximately 30% of residents benefiting from Ireland's Better Energy Warmer Homes area-based scheme said that they are already spending less on heating six months after the implementation of the scheme. Interviews for the case study found that in two households, expenditure on energy had reduced from €30 to €20 a week. Energy bills for beneficiaries of the ESCO project in Latvia dropped from around €170 per month to €90.

Albeit less informative, it is also relatively straightforward to assess projects on the number of interventions made rather than on the impacts of these interventions. Some interventions were limited to certain households (Slovak and Zaragoza) or a number of blocks (Amsterdam, Riga and Turin) while others concerned a larger number of interventions (Ireland and Liverpool).

There is limited quantitative evidence available on the overall cost-effectiveness of housing measures. However, in London the unit costs associated with a programme of physical adaptations (for example extensions) to address overcrowding suggested that this approach was less cost-effective than other mitigation approaches such as space-saving schemes. Over 8,014 dwellings have been covered by Ireland's Better Energy Warmer Homes area-based scheme to date, across a three-year programme which has generated a total energy saving of 56 GWh. The annual cost (GBP 1.07 million, plus GBP 300,000 inspection costs) of the Healthy Homes Programme in Liverpool has been estimated to be lower than the savings generated in healthcare services (GBP 440,000; GBP 341,000 from excess cold hazard) and wider societal savings (GBP 1.1 million; GBP 853,000 from excess cold hazard).

Initiatives to address inadequate housing are particularly likely to be effective if:

- context is taken into account;
- they engage residents;
- behaviour is taken into account, rather than over-reliance on rational design;
- initiatives contain elements of learning.

Future development and implementation of policies should take these as the pointers when designing and planning housing.

On average, the quality of housing in Europe has been gradually improving. It improved (to a certain extent) even during the years of recent global economic crisis, both in objective terms (dwellings per population, rooms per person) and subjective terms (satisfaction with accommodation rose from 7.6 to 7.7 in the EU between 2007 and 2011).

However, there are housing inadequacies that still affect a tangible proportion of population in most Member States, such as the inability to keep homes adequately warm. There are other inadequacies, such as lack of indoor toilet or bath/shower, which are concentrated in certain Member States; no indoor facilities is a problem that is nearly non-existent in the more affluent countries, yet affects up to a fifth of the population in some eastern Member States.

Acknowledging the negative effects of poor housing on the well-being and health of those who live in such conditions, this study has presented a model that can be used to estimate the cost incurred by Europe as a result of inadequate housing. The model assessed what it would cost to eliminate problems including a lack of basic facilities (such as lack of toilet, bath/shower), structural problems, and shortage of space. It suggested a way to link the available data about the prevalence of housing inadequacies in Europe with the main health costs of housing inadequacies. Once comprehensive information on these types of costs was identified in the UK, it was extrapolated to the rest of the EU on the basis of similar inadequacies reported in the 2011 EQLS.

The medical costs included in the model are part of a wider range of costs to society of the health implications of living in inadequate housing, including loss of future opportunities and earnings. It is estimated that the total cost of leaving people living in such 'unimproved' housing is at least €193 billion a year to the economies of the EU.

The model estimates that the costs of the work required to remove housing inadequacies across the EU, or at least improve them to an acceptable level, is some €295 billion at 2011 prices.

If all the work was undertaken now, it is estimated that there would be medical cost savings of €9 billion in the first year and benefits would continue to accrue into the future.

These figures come with wide error margins and are likely to be an underestimate for the following reasons:

- the EQLS does not measure all housing and health inadequacies in the home, notably those relating to household accidents, fire, air quality and security;
- the estimates do not include the societal and economic costs of inadequate housing which are not driven directly by health-related outcomes (such as market values, home insurance, enforcement action).

There are also cost benefits which are impossible to quantify in monetary terms such as 'well-being' and 'feeling of community'.

The study demonstrates that the improvement of inadequate housing will have multiple benefits, many of which have relatively short payback periods. If all necessary improvements were completed at once, the cost to EU economies and societies would be repaid within 18 months by projected

savings such as lower healthcare costs and better social outcomes. In other words, for every €3 invested, €2 would pay back in one year.

In policy terms, the focus on delivering warm, dry homes and removing households from fuel poverty will deliver the greatest health cost benefits. However, these results should be seen in the broader context of the major forthcoming European challenges that affect housing needs, such as increasing poverty and social exclusion, the demographic challenge of ageing, lifestyle and societal changes such as the trend towards smaller households, or the pressure on energy-efficient or even zero-energy housing. It is in this context that future housing renewal strategies need to be embedded and be informed by the huge cost that the society will continue to bear in many areas if housing inadequacies are not addressed. The future debate, and the application of the study's findings and its model cannot be limited to housing policies only – social, energy, demographic and other agendas must also be considered.²¹

Given the economic and social costs that society bears due to inadequate housing, it is important for European countries to reconsider what standards they apply to their housing stock, and how those standards are enforced. Eurofound's background review of the standards across the Member States revealed that countries have greatly differing regulations for dimensions of housing. Most countries regulate sanitary and certain safety measures; many have standards that cover the structural soundness of housing, though they are not necessarily broadly monitored or applied. Overcrowding, even though identified in the report as an inadequacy, is not universally addressed by regulated standards. Countries vary widely in their application of incentives and sanctions aimed at improving housing quality, and some have no such generic incentives or sanctions. Therefore, unsurprisingly, inadequate housing exists in the EU, and there is considerable room for policy development to address housing quality.

Addressing inadequate housing can facilitate public engagement and improve a neighbourhood's social climate. The case studies show that good housing has benefits beyond the health and well-being of the inhabitants of the dwelling. They also show that it may be relatively inefficient to improve dwellings if environmental or socioeconomic problems are left unaddressed. However, measures aimed at addressing inadequate housing can have a broader impact that positively affects an area by promoting trust in local government, encouraging citizen involvement, and providing a sense of belonging in the neighbourhood. To have this enhanced effect, housing policy measures should consider the needs of both present and future households by assessing the impact the housing is likely to have on the health and well-being of these households.

Addressing inadequate housing is not only a technical problem – it must involve residents and consider behaviours. Residents can play an important role in identifying needs for dwelling improvements. Moreover, the examples show that residents can also contribute to funding and facilitate implementation of measures, if they are effectively engaged. For example, rationally designed measures aimed at energy efficiency may be ineffective if they do not take into account behavioural and implementation issues.

Measures which are multi-faceted, having the broad goal of improving quality of life of residents, may be most likely to lead to positive outcomes. The broad approach refers to addressing issues in various ways simultaneously; in particular, by combining softer measures (such as keeping residents updated as works progress) and incorporating learning opportunities (for

²¹ Thanks to Matthias Braubach (WHO Europe) for raising this.

example, step-by-step approaches, or use of resident surveys to understand practical problems which may become apparent during the process) along with the measures being implemented.

Policy pointers

Improving data and indicators to assist cost analysis and use of evidence

It would be useful to have comparable information on health costs across all Member States. A 'value of life' indicator could be considered for calculation purposes.

- Member States can be encouraged to conduct or upgrade housing surveys, including use of trained inspectors/surveyors.
- Population surveys could be refined to include measures of severity of housing inadequacies and respondents briefed to ensure questions are answered consistently within and between Member States.
- Additional questions in European and perhaps national surveys would improve knowledge of comparative housing conditions between EU Member States; for example, questions about the installation of smoke alarms, single steps between levels, holes in flooring and graspable handrails on stairs.
- It would also be useful for population surveys to include some measure of severity of the inadequacy and perhaps a more detailed briefing of the respondents so researchers can be confident that the questions have been answered in a consistent way within and between Member States. For example, rather than asking whether a home suffers from damp, it could be asked whether dampness is:
 - structural dampness, penetrating through the roof or windows;
 - dampness in the walls, leading to mould growth;
 - condensation arising from use of the home.

Translating the data into a cost-benefit message for policies

The findings of this study make it possible to suggest:

- promoting the many benefits of investing in better housing;
- considering the use of housing health and safety ratings to inform the measurement of housing inadequacies in the EU;
- adapting Cost of Inadequate Housing model for processing country-specific data and analysing the costs of inadequate housing;
- encouraging models for social and economic costs of non-action to be applied in housing policy planning.

Should readers be interested in advancing the country-specific analysis of costs of inadequate housing, an adaptation of the Cost of Poor Housing Model should be considered. This would require national data on the prevalence of the housing-related hazards in the country of question and the relative costs of repairing/mitigating the risks alongside national healthcare costs. It is also possible that there are different housing risks not covered under HHSRS in some Member States; however, given the appropriate understanding of the hazards, the methodology could be applied.

Development of standards and metrics

Strategies and policies to tackle the problem of inadequate housing must be aware of the cost to health and well-being if no action is taken. This requires the development of standardised housing assessments to determine whether:

- dwellings provide a safe, healthy and hazard-free environment;
- regional factors such as historical construction practices, climate, the local environment, geology, cultural and economic circumstances affect how risks are being addressed;
- building codes should be enforced to ensure newly built dwellings are safe, healthy and hazard-free;
- both the standards and metrics directed at existing housing and the building codes for new housing should be informed by the extensive literature on the negative impact of unsatisfactory housing conditions, and the positive benefits of safe, healthy and hazard-free housing.

Practical policies to prevent inadequate housing

Initiatives to address inadequate housing are particularly likely to be effective if context is taken into account, if residents are engaged, if behaviour is taken into account rather than over-relying on rational design, and if initiatives contain elements of learning.

Context matters

- Initiatives aimed at addressing inadequate housing may need to consider the broader social situation of residents, if effective and long-lasting results are desired.
- Where resources allow, it is important to understand the specific needs of individual households and to develop tailored solutions accordingly.
- Different types of interventions can be of varying importance to individual households in the same building. It is vital to recognise this diversity when designing effective interventions, in particular if the policy objective is to improve quality of life.
- If well-managed and communicated, even initiatives to improve narrow aspects of housing adequacy can increase trust in the agency or organisation overseeing them, and can increase the sense of belonging in the neighbourhood, contributing to broader positive outcomes.

Residents matter

- Resident engagement can be an important factor in understanding needs and preferences, and in reaping positive outcomes from renovations. Involving community organisations and residents in information provision can facilitate engagement.
- Residents may be able to co-fund initiatives if they are spread out over longer periods of time, and if renovations lead to savings such as lower energy bills.
- Improving trust in an initiative among residents, for example by resident engagement and good information provision, can facilitate positive outcomes.
- If engaged, residents can increase efficiency of initiatives by cooperating (for example preparing the dwelling for renovations), by providing labour and by providing information about the buildings they live in.

- Improvements may narrowly focus on specific issues such as insulation but can also take more holistic approaches to improving 'housing satisfaction'; for example the process of reform and more visible effects of improvement inside the dwelling may matter more to residents than planners may expect.

Behaviour matters

- Some initiatives may make perfect sense from an abstract level, but when implemented in reality they fail. An example from a case study is the limited take-up of solar panels: despite the guaranteed benefits, scepticism among residents prevented its successful implementation. Measures should seek to address this.
- Increased energy efficiency does not always translate into lower energy bills and higher housing satisfaction of residents. It is important to recognise this challenge and seek to mitigate it by focusing on interventions most likely to pay off, make heating systems user-friendly and accompany reforms with information provision.

Integration matters

- Measures should recognise that the need to address poor quality housing should not be considered in isolation from other social and economic factors.
- There is evidence that housing measures can be more effective if combined with softer interventions, such as information provision and advice on energy saving (to support energy savings upgrades) or employment and training advice for families that may have been disadvantaged by their housing situation.

Learning matters

- In most case studies, unforeseen issues emerged during implementation. To apply the lessons learnt in the context of the specific project, a phased approach makes it possible to address issues first on a smaller scale and subsequently scale up.
- There is a need to ensure that assessment and evaluation is integrated into the delivery of measures to identify how they can be improved, building on experiences from stakeholders and also considering the cost of such assessments.

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This report aims to improve understanding of the true cost of inadequate housing to EU Member States and to suggest policy initiatives that might help address its social and financial consequences. The full impact of poor housing tends to be evident only in the longer term, and the savings to publicly funded services, the economy and society that investment in good quality accommodation can deliver are not always obvious. While housing policies are the prerogative of national governments, many Member States face similar challenges in this field. In some, projects to improve inadequate housing have already provided valuable practical experience that can usefully be shared, and this report presents eight such case studies. While improving poor living conditions would be costly, the report suggests the outlay could be recouped quite quickly from savings on healthcare and a range of publicly funded services – in the EU as a whole, for every €3 invested in improving housing conditions, €2 would come back in savings in one year.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social and work-related policies. Eurofound was established in 1975 by Council Regulation (EEC) No. 1365/75, to contribute to the planning and design of better living and working conditions in Europe.

