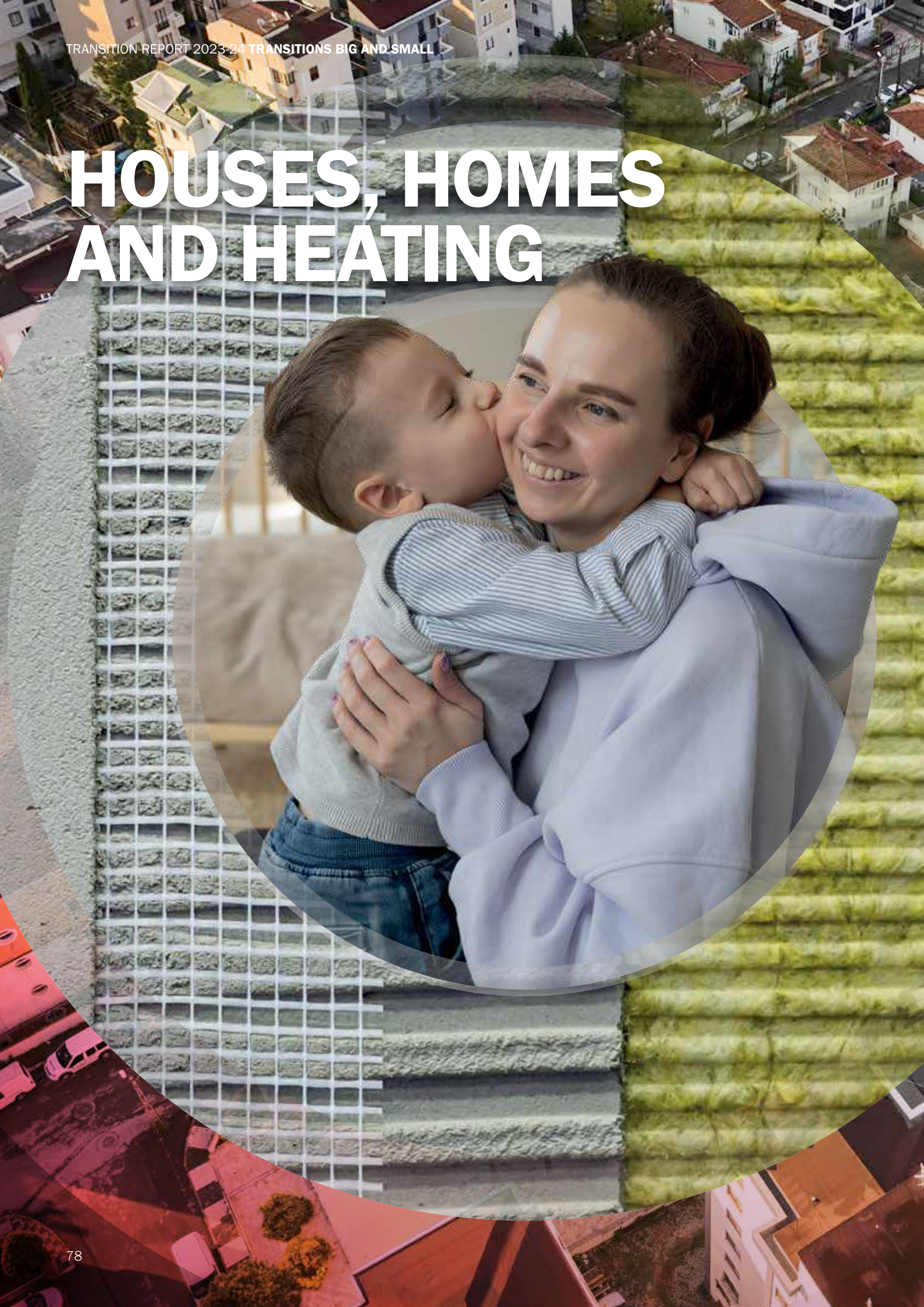
HOUSES, HOMES AND HEATING



Housing policies have lasting effects. For instance, post-war housing blocks continue to shape cityscapes across much of the EBRD regions. Levels of home ownership remain high across all income groups, but there is limited new construction and little social housing. Meanwhile, inequality in the condition of housing is pronounced, as is spatial segregation (the existence of low-income neighbourhoods separate from higher-income areas). Housing also has a substantial environmental footprint: residential emissions per unit of energy used are higher in the EBRD regions than in advanced European comparators, partly reflecting continued reliance on coal. However, there is scope for significant emission reductions through improvements in insulation and metering, even taking the building stock as given.

Introduction

This chapter provides an overview of housing in the EBRD regions. It starts with a discussion of why housing matters for economic outcomes and access to economic opportunities. The contours of cities are highly persistent: housing policies from decades ago – sometimes even centuries ago – affect outcomes to this day. Likewise, today's policy choices will continue to shape urban landscapes long into the future.

The second section paints a portrait of housing and home ownership in the EBRD regions, focusing on the specific legacies that differentiate economies in the EBRD regions from advanced economies and other emerging markets. That section also examines the link between home ownership and wealth and looks at the ways in which housing is related to socio-economic divides.

While housing and the associated heating, water and sewerage infrastructure matter greatly for well-being, housing also accounts ›

for a significant share of total energy use in the economy. Consequently, this chapter also considers the environmental footprint of housing, looking at the energy efficiency of the housing stock and heating systems in the EBRD regions. The chapter then concludes with a series of policy recommendations.

The analysis in this chapter draws on a range of different data sources, including the fourth round of the Life in Transition Survey (LiTS IV), which includes a special module on housing. That survey round, which was launched in 2022 and will conclude later in 2023, is being conducted in 37 economies, asking respondents in 1,000 randomly selected households per economy about a range of socio-economic outcomes (such as their employment and income), as well as their beliefs and attitudes (their views about the environment, for instance). For the first time, the survey also includes detailed questions on housing, with some of those questions being answered by the interviewer before the start of the interview (reporting on the condition of the building, for instance) and some being answered by respondents (providing information on the age of the building or the use of smart meters, for example).

Findings from the LiTS IV reveal that the quality of housing is closely linked to socio-economic outcomes. For instance, people living in higher-quality buildings tend to be healthier and less likely to experience mental distress than those living in buildings of inferior quality. Meanwhile, people who own their home are less likely to want to move. These associations hold even when taking into account people's education, income and other characteristics.

The housing stock in the EBRD regions reflects the legacies of past policies. More than half of all people in those economies live in buildings constructed between the 1950s and 1980s – that is to say, before the transition from centrally planned to market economies. Large multi-apartment buildings are more common than in advanced economies. Indeed, in some EBRD economies, up to 40 per cent of all households live in prefabricated housing blocks. As a result of widespread mass privatisation in the early 1990s (whereby social housing tenants were able to buy their home from the state for a nominal fee), home ownership rates in most economies in the EBRD regions are much higher than elsewhere. Moreover, ownership rates in EBRD economies are not related to household income, with lower-income households just as likely to be homeowners as high-income households. (Elsewhere, those on lower incomes are more likely to rent.) On the other hand, there is now very little social housing in the EBRD regions, reflecting the state's withdrawal from housing markets after the privatisation of the 1990s.

Housing inequality has started to increase, and vulnerabilities are emerging. Poorer households are more likely to (i) live in older buildings, (ii) live in housing that is in a worse condition, (iii) have more limited access to public transport and (iv) have less access to green space. Meanwhile, the percentage of the population who own their home outright has started to fall, and reliance on mortgages has been growing. At the same time, rents have increased as a share of income (and relative to average mortgage payments).

As far as the environmental footprint of housing is concerned, the residential sector accounts, on average, for 26 per cent of total emissions and 29 per cent of total energy use in the EBRD regions, compared with 22 per cent of total emissions and 26 per cent of total energy use in advanced European comparators. In some EBRD economies, emissions from the residential sector are the single largest contributor to total emissions, exceeding emissions from industry, transport or other services. In some cases, residential emissions remain high even as industry is becoming greener.

While total residential emissions per capita are lower in the EBRD regions than in advanced economies, the EBRD regions emit more per unit of residential energy use. Differences in countries' fuel mix (particularly their reliance on coal) can explain around 40 per cent of all cross-country variation in residential emissions per capita. In particular, appliances (such as refrigerators and air conditioning units) are more emission-intensive in the EBRD regions than in advanced economies, reflecting differences in countries' fuel mix. Differences in emission-intensity are smaller for heating. In addition to altering countries' energy mix, findings from the latest round of the Life in Transition Survey suggest that there is also scope for significant emission reductions through improvements in insulation and metering of energy consumption (for instance, through energy-efficient upgrades to prefabricated housing blocks), even taking the building stock as given.

OVER
HALF
OF ALL HOUSEHOLDS IN THE EBRD REGIONS LIVE IN HOUSING CONSTRUCTED BETWEEN 1953 AND 1989

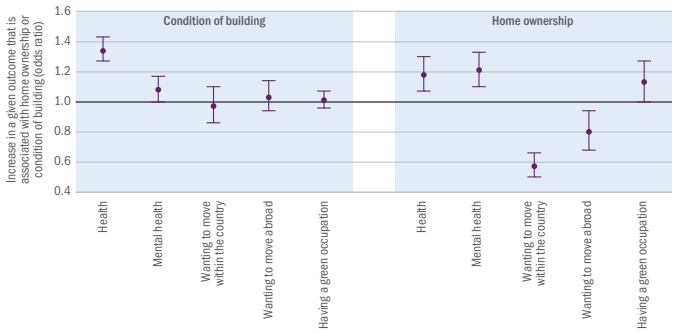
Housing matters

Housing is hard to measure. Dwellings differ in terms of their age, design and amenities; they are shaped by the characteristics of their neighbourhoods, such as access to infrastructure and utilities; and, in turn, they themselves shape neighbourhoods. Housing is not only a consumption good (providing accommodation), but also an investment, given its durability (typically being a household's main asset). And housing markets can be private, with varying degrees of regulation, or involve direct provision of housing by the state.

The link between (i) housing conditions and the characteristics of neighbourhoods, and (ii) economic outcomes and inequality has been well documented. Housing and the local environment affect access to healthcare, health (including mental health), educational attainment, employment and earnings in adulthood, as well as general well-being and intergenerational mobility.[1] In the United States of America, housing instability (being behind on rent, moving multiple times or having been homeless in the past) is associated with adverse health outcomes for adults and children alike.[2]

More generally, housing segregation (the emergence of low-income neighbourhoods separate from higher-income areas) leads to a host of poor socio-economic outcomes and lower levels of well-being.[3] Children growing up in poor-quality neighbourhoods perform less well in school and earn less as adults.[4] Studies based on panel data which have tracked individuals over time in the United States have found that children who live in a crowded household at any time before the age of 19 are less likely to complete their secondary education and more likely to have lower educational attainment at the age of 25.[5] Likewise, children living in poor-quality housing, in homes that have been in foreclosure, and in disadvantaged neighbourhoods tend to have lower nursery-readiness scores.[6] In contrast, children who live in – or move to – better neighbourhoods and are thus exposed to better environments tend to see higher levels of educational attainment and earn more in adulthood.[7]

CHART 4.1. Housing matters for well-being



Source: LiTS IV and authors' calculations.

Note: The condition of a building is measured on a four-point scale ("in urgent need of repair", "acceptable", "good" and "very good"); home ownership is a dummy variable, as are intentions to move and having a green occupation; all other variables are measured on a scale of 1 to 5. Physical and mental health are both self-assessed, with mental health being measured as described in Chapter 1. (Ordered) logit regressions control for the respondent's age, gender, marital status, level of education and employment status, as well as the logarithm of household income, the size of the household, the number of children in the household, whether the respondent lives in an urban or rural location, whether they moved there in the last five years and country fixed effects. The 95 per cent confidence intervals shown are based on standard errors clustered at the country level. An odds ratio greater than 1 indicates, for instance, that homeowners are more likely to report good health. The tests described in Oster (2016) suggest that the findings for health and mental health (particularly the correlation between mental health and home ownership) are more robust to potential bias caused by unobservable characteristics.

Chart 4.1 illustrates such correlations, drawing on the latest wave of the Life in Transition Survey. While it is possible that unobservable characteristics could be associated with both better outcomes and the quality of housing, people living in buildings that are in a better condition (that is to say, less in need of urgent repair) appear to be healthier, on average, than those living in buildings that are in a worse condition. They are also less likely to experience mental distress. Similar effects can be observed among people who own their homes. Furthermore, homeowners are also less likely to express a desire to move – whether within the country or abroad. These correlations are both economically and statistically significant, even when accounting for individual and household-level characteristics such as age, education, employment status and household income. For example, a person living in a better quality building is, on average, 30 per cent more likely to report being in good health. In contrast, if two people live in similar accommodation, but one earns twice as much as the other, that person is, on average, only around 3 per cent more likely to report being in good health.

[1] See Ziol-Guest and Kalil (2014) and Gaitán (2018).
[2] See Sandel et al. (2018).
[3] See Council of Europe Development Bank (2017).
[4] See Chetty and Hendren (2015).
[5] See Lopoo and London (2016).
[6] See Coulton et al. (2016).
[7] See Council of Europe Development Bank (2017).

Rome wasn't built in a day

Housing is highly path-dependent. Once established, cities are rarely abandoned; urban systems and city rankings are relatively stable over time; and local economic specialisations and regional political traditions often span centuries.[8] Housing is deeply embedded in infrastructure systems, from road networks to utilities. Large-scale infrastructure projects take years – decades, even – to complete; and once in place, that infrastructure depreciates slowly.[9] Historical buildings, bridges and sewer systems and the layout of road networks are often testimonials to the distant past.[10] When cities were first established, their locations were often dictated by natural advantages such as access to ports and rivers. However, those cities remain important today, despite their respective advantages no longer being as relevant as they once were.[11] Eastern parts of many former industrial cities (such as London and New York) are more deprived, as those with means escaped pollution from industrial chimneys. These spatial patterns of wealth and poverty persist, even though the pollution that helped to shape them has largely waned. While the spatial distribution of pollution is a result of interaction between industrial locations, wind patterns and city-specific topography, the correlation is robust to the addition of a large set of controls, such as access to public amenities and the distance to waterways.[12] Historical place-based R&D policies also have lasting effects: even in present day Russia, Science Cities (which were created in Soviet times) are more innovative and productive, and are home to more highly skilled and better-paid workers, than localities that were similar to them at the time of their establishment.[13] In addition to physical remnants, historical institutions (such as urbanisation regulations, zoning laws or policies affecting the provision of public goods) can also have long-lasting effects on cityscapes.[14] In many economies in the EBRD regions, secondary cities continue to play a more important role than in other economies, largely reflecting policy choices during central planning – building towns around large state-owned enterprises, in some cases specifically with a view to avoiding the front lines of the Second World War, without due regard for transport costs or environmental considerations.[15]

In conclusion, urban policies differ greatly and have very long-term effects on economic development. The following section provides a brief history of housing policies and looks at their legacy effect on housing and home ownership today.

A brief history of housing policies

In many advanced European economies, the private sector (typically employers) had primary responsibility for housing from the era of rapid industrialisation and urbanisation right up until the Second World War, leaving many households in low-quality dwellings and facing an expensive tenure system.[16] The rise of the modern welfare state after the Second World War brought significant changes to the housing market, with housing provision increasingly being seen as part of the state's responsibility for ensuring minimum standards of welfare.[17]

The 1970s and 1980s, in turn, saw a paradigm shift in many economies with the commodification of housing, whereby the provision and allocation of housing were left to market forces. The public provision of housing (that is to say, social housing), which was common in many welfare states at the time, went through a process of commercialisation whereby housing provision was privatised, or responsibility for allocating it was passed on to non-profit organisations and housing associations, while some countries launched "right-to-buy" schemes enabling households to buy social housing rented from the state at a relatively low cost.[18] As a result, the public sector retreated from the direct provision of housing in many countries (including in North America and the United Kingdom), focusing instead on indirect support for low-income households (through housing subsidies and allowances, for example). This policy shift resulted in a sharp rise in inequality, in terms of both the quality of housing and access to economic opportunities.[19] Spatial segregation based on ethnicity, race, migrant backgrounds and other socio-economic differences increased.

[8] See EBRD (2019, 2022).
[9] See Kalyukin and Kohl (2020).
[10] See Glaeser and Gyourko (2005a).
[11] See Bleakley and Lin (2012).
[12] See Heblich et al. (2021).
[13] See Schweiger et al. (2022).
[14] See Hanlon and Heblich (2020).
[15] See African Development Bank et al. (2019).
[16] See Dewilde and De Decker (2016).
[17] See van der Heijden (2013) and EBRD (2020).
[18] See Council of Europe Development Bank (2017).
[19] See Dewilde and De Decker (2016).

In contrast, under central planning in central, eastern and south-eastern Europe and Central Asia, housing was seen as a political priority. Nikita Khrushchev, the Soviet leader in the 1950s and the early 1960s, famously promised: "To every family its own apartment". The right to housing was often enshrined in constitutions,[20] and considerable resources were devoted to large-scale housing projects – addressing growing housing needs in rapidly industrialising and urbanising economies and, in some cases, in response to the destruction of housing stock during the Second World War.[21] In most economies, the state accounted for the bulk of the construction of housing and was the key provider of housing to the general population, typically in the form of multi-dwelling units.[22] The Soviet Union constructed about 2 million dwellings annually over almost three decades, while the construction of new housing in Yugoslavia increased more than five-fold between 1955 and 1965 and remained at or above that level until the late 1980s.[23]

A key characteristic of housing policies under central planning was the extraordinary occupancy rights enjoyed by tenants: once they had occupied their unit, it was almost certainly theirs for life, and it could be passed on to successive generations of occupants as long as the successors were registered as living there before the previous occupants died or moved away. Housing was also universally affordable: in 1970, rent in the Soviet Union absorbed about 5 per cent of household income on average, with utilities accounting for another 5 per cent; in Yugoslavia, average spending on accommodation fell from about 5.4 per cent of total expenditure in 1969 to 3.4 per cent in 1980 (with tobacco and alcohol accounting for about 4.5 per cent of spending during that period).[24]

When the transition process began, housing lost its privileged status, leading to the state's abrupt withdrawal from housing investment and the direct provision of housing services. Budget resources earmarked for housing were drastically reduced and construction was largely left to the private sector, with long-term effects on the supply of accommodation. Construction of new housing has fallen in all economies during the transition process, typically by half.[25]

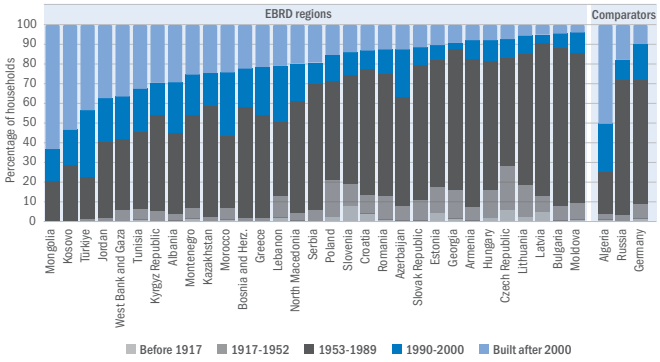
On the demand side, the privatisation of social housing through right-to-buy policies dramatically transformed housing markets. Under those schemes, sitting tenants had the right to purchase their units from the local government or state enterprises, typically at a price that was substantially lower than the market value – in some cases, for a nominal fee covering the cost of administering the sale.[26] Most of the housing involved was in multi-dwelling apartment buildings, with privatisation carried out on a unit-by-unit basis. The privatisation of housing proceeded rapidly. For instance, while 60 per cent of all units in Estonia were in state ownership before the transition process, by 1995 this share had fallen to just 10 per cent.[27] As a result, over half of all people in major post-socialist cities live in system-built, high-density housing estates where housing was transferred to tenants through privatisation programmes – perhaps the most enduring legacy of socialist housing policies and something that continues to define those cities today.[28]

In principle, the large amounts of home equity that have been created by those mass privatisation programmes have given new owners the opportunity to purchase larger or better units using that equity and mortgages with low loan-to-value ratios. However, right-to-buy schemes have also been associated with large increases in inequality and a decline in security of tenure for some households. Many private renters and homeowners with mortgages are now less secure than they would have been as renters of a state unit with the standard lifetime "social" rental contract.[29]

[20] See Smith (2010).
[21] See Andrusz et al. (1996).
[22] See Pichler-Milanović (1999).
[23] See Morton (1984) and Yugoslav Federal Statistics Institute (1991).
[24] See US Department of Commerce (1971).
[25] See Struyk (1996).
[26] See Tsenkova and Polanska (2014).
[27] See Struyk (2000).
[28] See Stanilov (2007).
[29] See Struyk (2000).

In the southern and eastern Mediterranean (SEMED), the public sector played an important role in the provision of housing in the 1970s and 1980s, usually keeping housing affordable through subsidies. This was particularly true in countries that had adopted elements of the Soviet Union's economic model, such as Egypt. Thousands of dwellings were built as part of major development plans. In the case of Egypt, the scarcity of agricultural land meant that new urban communities had to be built in the desert, resulting in the creation of 12 new towns. Mass housing policies resulted in large numbers of five-storey dwellings (typically without lifts). However, limited floor space often resulted in informal extensions being added to those buildings. The state's subsequent withdrawal from the housing market further exacerbated the situation. Across the SEMED region, rapid population growth and urbanisation, combined with limited urban planning (with cities being built back to front – buildings first and services afterwards), led to severe housing shortages, high levels of informality and insecurity of tenure.[30] In Egypt, the housing backlog is currently estimated at 3.5 million housing units, while Morocco is estimated to need an additional 600,000 units.[31] Nearly 70 per cent of Cairo's residents live in informal housing.[32] The next section describes the current housing stock in the EBRD regions, drawing on the latest round of the Life in Transition Survey.

CHART 4.2. Over half of all households in the EBRD regions live in dwellings constructed between 1953 and 1989



Source: LiTS IV and authors' calculations.

A portrait of housing stock

Over half of all households in the EBRD regions live in dwellings constructed between 1953 and 1989, reflecting high rates of construction under central planning (particularly between the 1960s and the 1980s). In some economies in the Caucasus and emerging Europe, more than two-thirds of the population live in dwellings constructed during that period (see Chart 4.2). Similar patterns can be observed in advanced European economies, reflecting reconstruction efforts after the Second World War and the expansion of the role of the state, but housing stocks in many other emerging markets are younger.

In many EBRD economies, construction rates have been low since the 1990s. Since 1995, the construction of dwellings has only accounted for 3 per cent of GDP in EBRD economies in the EU, 2 percentage points less than in advanced European economies, based on data from Eurostat. In both of those groups of economies, residential construction as a share of GDP increased temporarily in the boom years before the global financial crisis of 2008-09, fuelled by access to cheap credit, but is now back at levels comparable to those seen in the 1990s.[33]

This is despite demographic trends pointing to robust demand even in countries with shrinking populations (such as Bulgaria), as the number of individual households has continued to increase. Households have become smaller on average, as multi-generational households have fallen in relative terms, while single-person households have become more common. The increase in single-person households has actually been faster in emerging Europe than in advanced European economies, though that increase started at a lower level.

Reflecting the legacies of post-war housing construction, large multi-apartment buildings (defined as those with 10 dwellings or more) are more common in the EBRD regions than in Germany, being most prevalent in the Baltic states (see Chart 4.3). In contrast, small multi-apartment buildings (defined as those with less than 10 dwellings) are more common in the SEMED region and Türkiye.

Prefabricated housing blocks (assembled on-site using standard factory-made components) are common in many economies in the EBRD regions (see Box 4.1). Estimates from the latest round of the LiTS suggest that in some economies (such as Estonia, Latvia and Georgia) up to 40 per cent of households live in prefabricated housing blocks.

Many residential buildings in EBRD economies are in need of repair, partly reflecting their age. In the latest round of the LiTS, interviewers have been asked to rate the condition of the building in which the respondent lives on a four-point scale, with answers ranging from "very good" to "in urgent need of repair". Interviewers' responses suggest that in many economies in the Caucasus and the SEMED region, many dwellings are in need

[30] See Bah et al. (2018) and UN-Habitat (2011).
[31] See Centre for Affordable Housing Finance in Africa (2019).
[32] See Abadeer (2017).
[33] See Council of Europe Development Bank (2017).

of repair (see Chart 4.4). This is especially true of small multi-apartment buildings. In general, older buildings are regarded as being in a worse condition than newer buildings (with the age of the building being estimated by the respondent as part of the interview).

Almost a third of all households living in multi-apartment buildings in the EBRD regions have no formal building management, with that percentage rising to more than 70 per cent in Albania and some economies in the SEMED region. In general, buildings with no central management or only informal management tend to be in a worse condition than buildings run by management companies or homeowner associations. For instance, at the level of the EBRD regions as a whole, 4.5 per cent of all multi-apartment buildings without formal management are regarded as being in urgent need of repair, compared with just 2.1 per cent of multi-apartment buildings with homeowner associations. Similarly, around half of all buildings with no formal management have seen no major refurbishments in the last decade, compared with around 32 per cent of buildings with homeowner associations (see Chart 4.5).

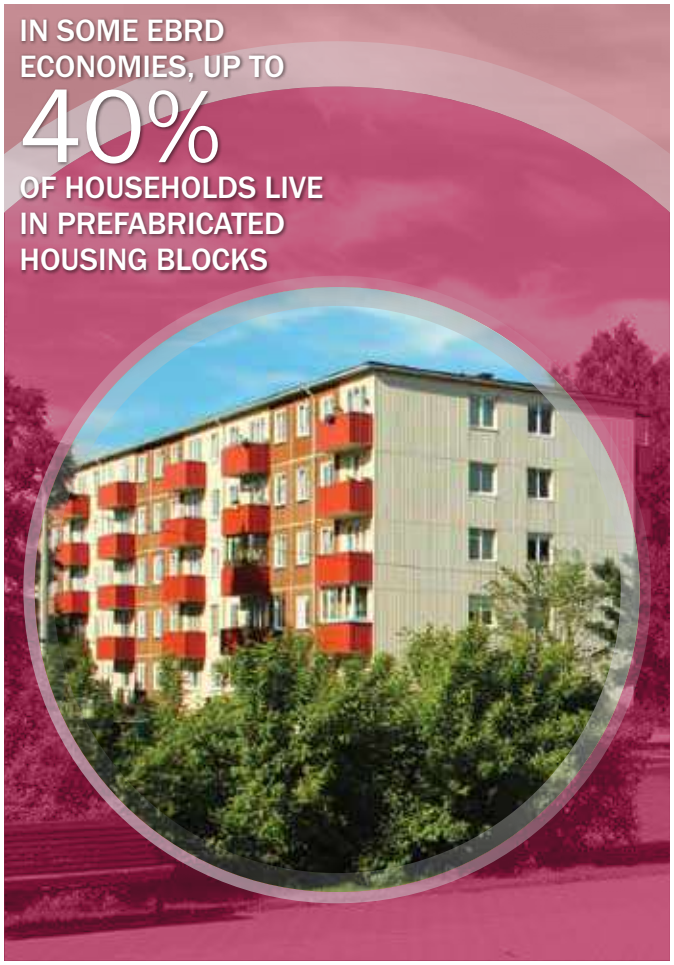
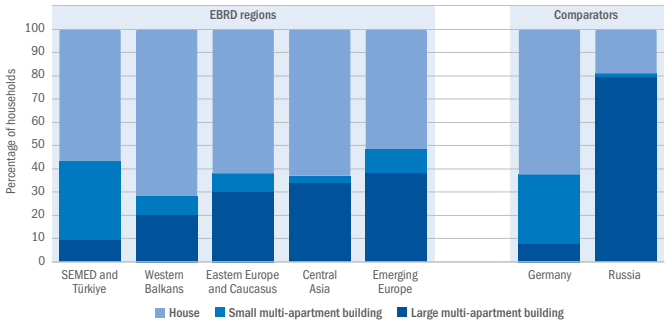
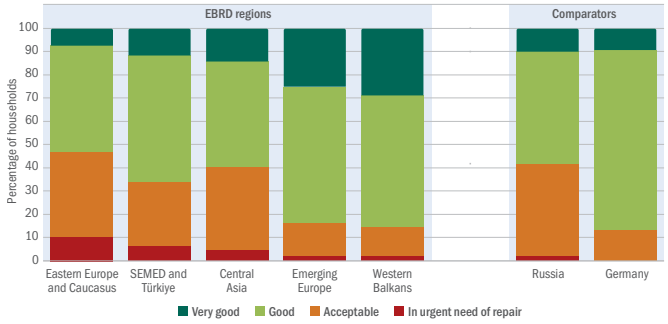


CHART 4.3. Large multi-apartment buildings are more common in the EBRD regions than in Germany



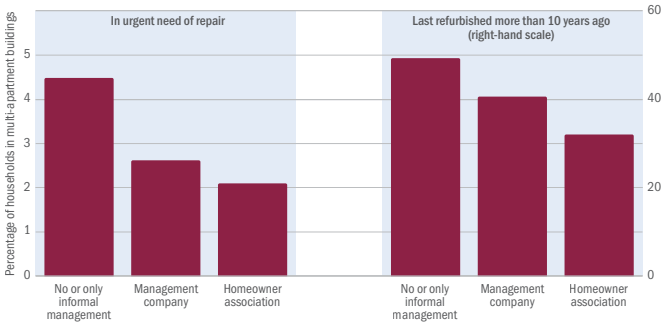
Source: LiTS IV and authors' calculations.
Note: In this chart, data for eastern Europe and the Caucasus cover only Armenia, Azerbaijan, Georgia and Moldova.

CHART 4.4. Many buildings in the Caucasus and the SEMED region are in need of repair



Source: LiTS IV and authors' calculations.
Note: In this chart, data for eastern Europe and the Caucasus cover only Armenia, Azerbaijan, Georgia and Moldova.

CHART 4.5. Multi-apartment buildings with no formal management tend to be in a worse condition than those with management companies or homeowner associations



Source: LiTS IV and authors' calculations.
Note: The figures in this chart (and those cited in the text) are based on household-level survey data and show, for each building management category, the percentage of households in multi-apartment buildings in that category whose building (i) is in urgent need of repair and (ii) was last refurbished more than 10 years ago.

A portrait of home ownership

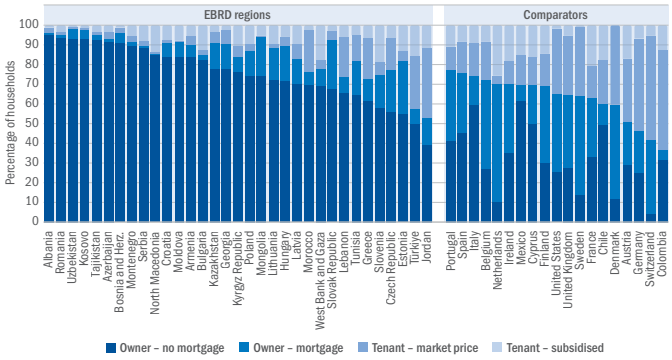
The composition of housing tenure (that is, ownership versus renting) varies greatly across economies, as do the relative shares of outright owners and owners with outstanding mortgages. These differences reflect current and past policies affecting housing supply and demand, such as privatisation, the regulation of mortgage and rental markets, the provision of social housing, taxation and land use policies.[34]

Today, advanced economies broadly follow one of two distinct approaches when it comes to the provision of housing: the unitary rental system (which is widespread in Germanic and Nordic countries) or the dualist rental system (which is common in Anglo Saxon countries).[35] The unitary rental market model is characterised by higher numbers of renters and a larger non-profit (or otherwise heavily regulated) housing association sector, which complements the private housing market to ensure more equitable access to housing.[36] Home ownership rates in Austria, Germany and Switzerland are around 40-50 per cent, and up to 20 per cent of households in these economies live in social housing (see Chart 4.6).

In contrast, the dualist rental system is characterised by a stronger role for free rental markets. It prioritises home ownership as a means of growing one's assets and wealth. For instance, the home ownership rate in the United Kingdom is around 65 per cent. The private rental market is profit-making and typically lightly regulated, providing only limited security for tenants. It is based on the notion that competition among landlords can increase the overall quality of housing. Social housing providers are less common, do not form part of the competitive market and act primarily as a safety net for the poor.[37]

Home ownership rates in former centrally planned economies remain high by international standards as a result of mass privatisation, with over 90 per cent of households owning their homes in some economies in the Western Balkans (compared with just over half in Türkiye and some economies in the SEMED region; see Chart 4.6). These economies have some characteristics of the dualist housing system, with high home ownership rates, but limited social housing. (Even in Poland and Slovenia, where social housing is most common, it accounts for less than 10 per cent of total dwellings.) In these economies, housing security is mainly available through ownership. Rental markets do, however, play a role in facilitating residential mobility. Such mobility is especially important in the context of significant technological shifts, where jobs disappear in some regions (such as those dependent on coal) but are created in others (see Chapter 3 and Box 4.2).

CHART 4.6. Levels of outright home ownership in the EBRD regions are much higher than in advanced economies



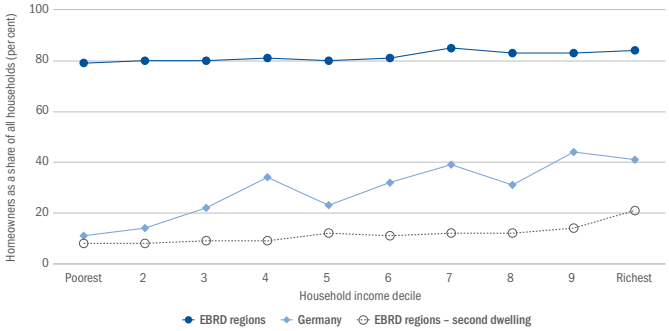
Source: Eurostat, LiTS IV, OECD and authors' calculations.
Note: OECD data are used for Chile, Colombia, Mexico and the United States. All of those economies' data relate to 2020, with the exception of Chile (2017). OECD data are based on occupied dwellings; where data on subsidised tenants are not available, the category "other and unknown" is regarded as comprising subsidised tenants. Data for all other advanced economies, plus Greece, Türkiye, central Europe and the Baltic states, and south-eastern Europe (with the exception of Bosnia and Herzegovina), are taken from Eurostat. All Eurostat data relate to 2022, with the exception of Montenegro (2021), Serbia (2021), Türkiye (2021), Albania (2020), North Macedonia (2020), Kosovo (2018) and the United Kingdom (2018). LiTS IV data are used for all other EBRD economies (for which Eurostat and OECD data are unavailable), adjusted for the average difference observed between LiTS and Eurostat data in the group of economies where both LiTS and Eurostat data for 2022 are available. On average, LiTS data have more outright owners and private renters than Eurostat data, but fewer owners with mortgages and fewer subsidised renters.

Many economies in the EBRD regions combine high levels of home ownership with low take-up of mortgages, again reflecting widespread privatisation. Other economies, such as Greece (as well as Chile, Colombia, Italy and Mexico), owe that combination of high ownership and low mortgage debt to a long history of inheritance being used as an alternative way of building savings and gaining access to home ownership. In contrast, in countries such as Denmark, Germany, Sweden and Switzerland, most households owning a home have outstanding mortgage debt, while home ownership rates are relatively low.[38]

Outright home ownership has been falling in the EBRD regions, albeit from a high level, while use of mortgages is on the rise. The percentage of households owning their home outright declined by about 5.7 percentage points between 2010 and 2022, falling to 77.8 per cent, while the percentage of households with mortgages increased by about 4.2 percentage points, rising to 8.6 per cent[39] (with a sharper increase in mortgage uptake being observed among richer households). In advanced European economies, home ownership and mortgage use are both in decline according to OECD data. The next section looks at how housing is related to socio-economic divides and access to economic opportunities.

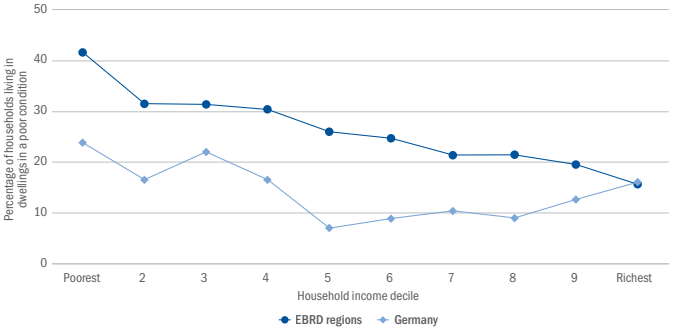
[34] See Causa et al. (2019).
[35] See Council of Europe Development Bank (2017).
[36] See Norris and Winston (2011).
[37] See Borg (2015).
[38] See OECD (2021).
[39] These are unweighted averages for 27 economies based on LiTS data. OECD data, where available, reveal similar patterns.

CHART 4.7. Home ownership is unrelated to income in the EBRD regions – unlike in Germany



Source: LiTS IV and authors' calculations.

CHART 4.8. Poor households are more likely to live in dwellings that are in a poor condition



Source: LiTS IV and authors' calculations.
Note: A building is considered to be in a "poor condition" if the interviewer assessed it as being "in urgent need of repair" or "acceptable".

IN SOME ECONOMIES IN THE WESTERN BALKANS, MORE THAN

90%

OF HOUSEHOLDS OWN THEIR HOME

Housing and inequality

Housing inequality reflects income inequality, but it can also contribute to it. In many advanced and emerging market economies, increases in income inequality in recent decades have been associated with rising concerns about the affordability of housing, widening disparities between renters and homeowners, and growing spatial segregation.[40]

In the EBRD regions, however, home ownership is largely unrelated to income – in stark contrast to Germany, where people in the top income decile are about 3.5 times as likely to own their home as those in the bottom decile (see Chart 4.7). (Similar patterns can be observed for other advanced economies, including those with higher home ownership rates (such as Italy), based on data obtained from earlier rounds of the LiTS and the OECD.) The lack of a relationship between home ownership and income levels in the EBRD regions reflects the high levels of home ownership in many economies on the back of right-to-buy schemes. Indeed, this pattern only holds for primary residences: ownership of other dwellings and land increases sharply with income. Take-up of mortgages also increases with household income (which is not surprising, as bank lending is conditional on households' ability to repay loans).

[40] See Council of Europe Development Bank (2017).

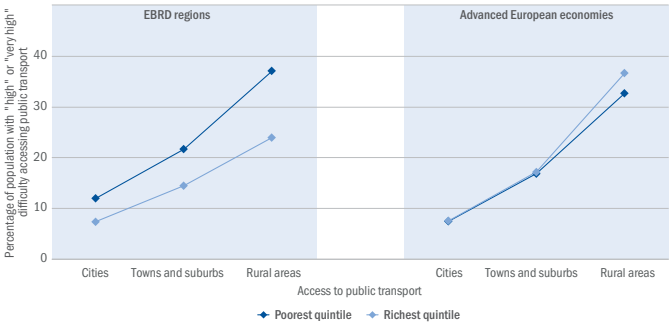
While home ownership is largely unrelated to income in the EBRD regions, the link between the condition of housing and income is stronger than in Germany (see Chart 4.8), with poorer households more likely to live in dwellings that are in a worse condition. In urban areas in the EBRD regions, those in the top quintile of the income distribution are somewhat more likely to live in large multi-apartment buildings (and less likely to live in houses) than those in the bottom quintile of the income distribution. In Germany, by contrast, the urban poor are most likely to live in small multi-apartment buildings, while richer households are more likely to live in houses. While most rural households in the EBRD regions live in houses, regardless of their income, small multi-apartment buildings are more common in rural Germany, especially for poorer households.

Housing also affects access to economic opportunities. In general, access to public transport is more difficult in rural areas. However, while access to public transport in advanced European economies is largely unrelated to income, in most of the EBRD regions poorer households are also less likely to have access to public transport than richer households – something that holds in cities, towns, suburbs and rural areas alike (see Chart 4.9, which draws on Eurostat data for a subset of economies). This pattern is also reflected in households' self-reported satisfaction with commuting time. Satisfaction with commuting time is significantly lower for the poorest 20 per cent in the EBRD regions – and this, again, holds across towns, suburbs and rural areas alike. In advanced Europe, meanwhile, differences between the poorest and richest quintiles are far smaller and, on average, only visible in rural areas – where the richest actually have more difficulty accessing public transport than the poorest.

It is also noticeable that urban areas in the EBRD regions (particularly in Central Asia and the SEMED region) lack access to green spaces relative to Germany. That lack of access to green spaces is more pronounced for lower-income households living in urban areas, who are more likely to live more than 30 minutes away from a public green space (see Chart 4.10). Eurostat data for a subset of economies in the EBRD regions point to similar patterns. Where the former centrally planned economies inherited generous public spaces in urban areas, those green spaces were often "lost in transition", being used for new housing developments. Meanwhile, the large-scale green development projects that have been implemented in recent years have typically been concentrated in the largest and wealthiest cities.[41]

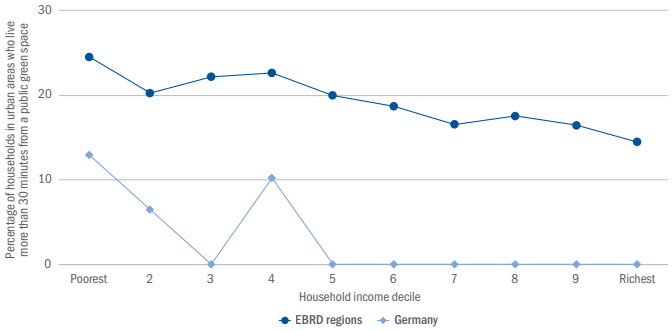
Monthly payments covering the cost of housing (mortgage or rent payments, plus the cost of utilities) account for a substantial share of household income, both in the EBRD regions and in advanced European economies (see Chart 4.11). In most EBRD economies, rent payments tend to be higher than mortgage payments as a share of income. In theory, renting and owning should be substitutes, but this is often not the case in practice – partly reflecting the segmentation of housing into renter-

CHART 4.9. In the EBRD regions, poorer households are less likely to have access to public transport



Source: Eurostat and authors' calculations.
Note: This chart is based on a question where respondents report on the difficulty they face in accessing public transport, replying "very low", "low", "high" or "very high". Data are for 2013.

CHART 4.10. Poorer households in urban areas also tend to have less access to public green spaces in the EBRD regions

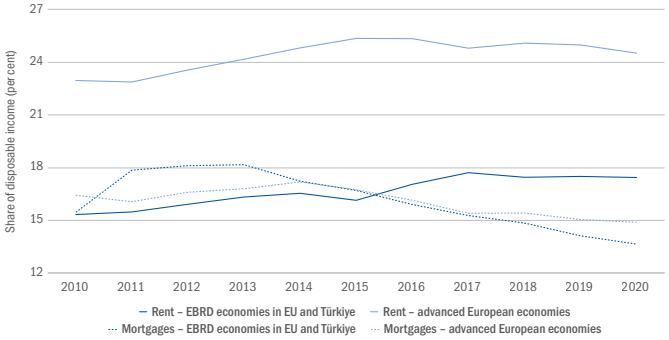


Source: LiTS IV and authors' calculations.

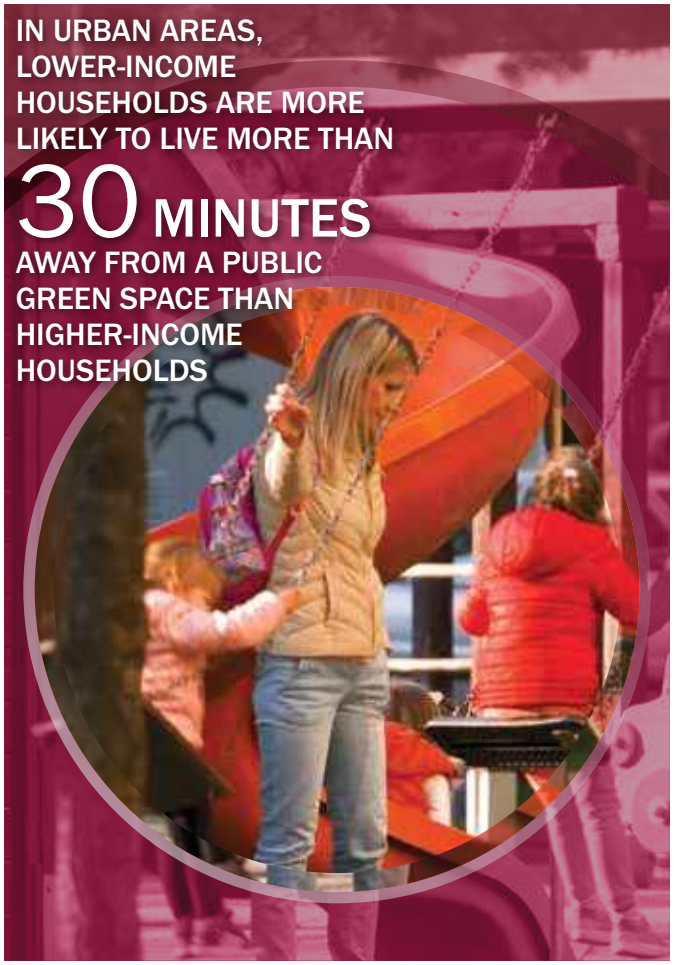
[41] See African Development Bank et al. (2019).

focused markets (typically consisting of smaller units closer to urban centres) and owner-focused markets (consisting of larger detached dwellings, often with higher maintenance costs).[42] Furthermore, the gap between rent and mortgage payments has widened of late (see Chart 4.11), reaching a record high (though the time series is relatively short).[43] Mortgage payments have fallen, both in the EBRD regions and in advanced European economies, reflecting the long-term decline in interest rates, while house prices have increased as mortgages have become more affordable. As house prices have risen, so has rent as a share of income, disadvantaging credit-constrained households, which are potentially unable to buy.

CHART 4.11. The gap between rent and mortgage payments has widened in the EBRD regions



Source: OECD and authors' calculations.
Note: Data for EBRD economies in the EU relate to Estonia, Greece, Hungary, Latvia, Poland, the Slovak Republic and Slovenia; figures for advanced European economies relate to Austria, Finland, the Netherlands, Norway, Portugal, Spain and the United Kingdom. Mortgage payments include both interest and repayments of principal.



Housing as an asset

In addition to being a place to live, housing is also an important asset, typically accounting for the bulk of households' wealth.[44] It is a fundamental driver of the accumulation of wealth, including across generations. For lower-income households, housing often represents the sum total of their inheritance.[45] The period since the Second World War has seen unprecedented accumulation of wealth in the form of residential property, supported by broad-based increases in house prices as mortgage products have become widely available.[46] As a result, residential property has become the largest capital asset in the investable economy, exceeding the total combined value of equities, commercial property, agricultural land, forestry and all the gold ever mined. Recent work in this area highlights the fact that housing accounts for (i) the majority of the increase seen in total private wealth in the 21st century, (ii) the bulk of the total return on aggregate wealth and (iii) the majority of the growth in wealth-to-income ratios.[47]

While the distributional implications of housing as an asset have received less attention, wealth inequality tends, in general, to be greater than income inequality, partly owing to the inherited nature of some wealth.[48] On average, the bottom 40 per cent of households in OECD countries receive around 20 per cent of total disposable income, but account for only 3 per cent of net wealth. Wealth also tends to be much more concentrated at the top than income.[49]

[42] See Glaeser and Gyourko (2005b) and Halket et al. (2020).
[43] See Gete and Reher (2018).
[44] See Causa et al. (2019).
[45] See Council of Europe Development Bank (2017).
[46] See Renaud and Kim (2007).
[47] See Piketty and Zucman (2014).
[48] See van Hoenselaar et al. (2021) and Causa et al. (2019).
[49] See Causa et al. (2019).

However, greater home ownership is actually associated with lower wealth inequality, as housing, as an asset class, is more important to middle-class households than to people at the top of the income distribution. Consequently, inequality in net non-housing wealth (including business and financial wealth) tends to be higher than inequality in net housing wealth. Consistent with the high levels of home ownership in the EBRD regions and its more equal distribution relative to other economies, wealth inequality tends to be lower in post-communist economies for which data are available than in other economies with similar income inequality. For instance, in Hungary, the Slovak Republic and Slovenia, the bottom 40 per cent account for around 5-10 per cent of net wealth; in Austria, Denmark, Germany and the Netherlands, which have similar levels of income inequality, the equivalent figure is around 1 per cent or less. In other words, many homeowners in post-communist economies may be relatively asset-rich, but income-poor.[50]

Just as housing tends to be households' largest asset, mortgages tend to be their largest liability. At the country level, mortgage debt makes up more than half of total household debt in almost all OECD countries. Among mortgage holders, mortgage debt represents more than 80 per cent of total debt. Young homeowners and homeowners at the bottom of the income distribution are the two groups where mortgages account for the largest share of household debt.[51] The increased use of mortgages in the EBRD regions over time has widened the range of options available to buyers. At the same time, however, increased choice comes with greater vulnerability relating to the potential loss of income or increases in interest rates. Variable-rate mortgages, which expose borrowers to greater interest rate risk, are more prevalent in EBRD economies in the EU than in advanced European economies (being particularly common in the Baltic states, Greece and Poland). Mortgages denominated in foreign currency, which expose borrowers to foreign-exchange risk, are less common than they were a decade or two ago, as the associated risks have been laid bare by large currency movements (such as the appreciation of the Swiss franc – once a popular currency for loans owing to its low interest rates). Nonetheless, in some countries (Poland and Romania, for instance) foreign currency-denominated mortgages have continued to account for more than 10 per cent of total mortgages in 2023.[52]

Housing and energy

Housing as a source of demand for energy

In addition to being an important consumption good and a major asset class, housing is also a major component of energy consumption. LiTS IV respondents in the EBRD regions report spending an average of 22 per cent of their household income on utilities (electricity, heating, water and sewerage, rubbish collection and so on), up from 17 per cent in 2016. This is significantly more than in Germany, and the figures for poorer households are higher still.

Housing is also a source of pollution and greenhouse gas emissions. While energy use and the associated emissions in industry and transport tend to receive more attention, the environmental footprint of the residential sector is sometimes larger. This section puts emissions from housing into the broader context of overall emissions (including those produced by industry, transport and other services) and breaks residential emissions down into their various components. In particular, it distinguishes between (i) heating and hot water (including gas boilers) and (ii) domestic appliances (such as refrigerators or air conditioning units). While the former are often supplied through integrated systems that are part of the building stock (such as district heating), the latter are typically electrified individual units that are not built into housing structures and can be changed at the household level.

ON AVERAGE, HOUSEHOLDS IN THE EBRD REGIONS SPEND

22%

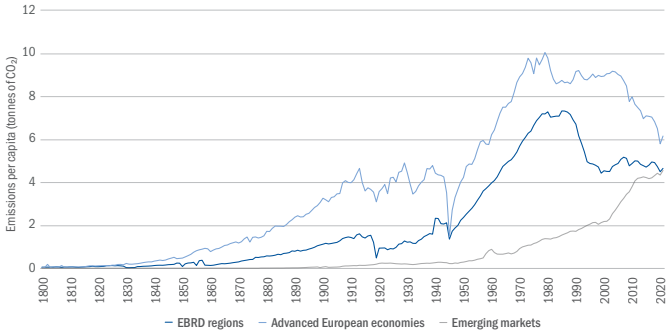
OF THEIR INCOME ON UTILITIES, UP FROM

17%

IN 2016

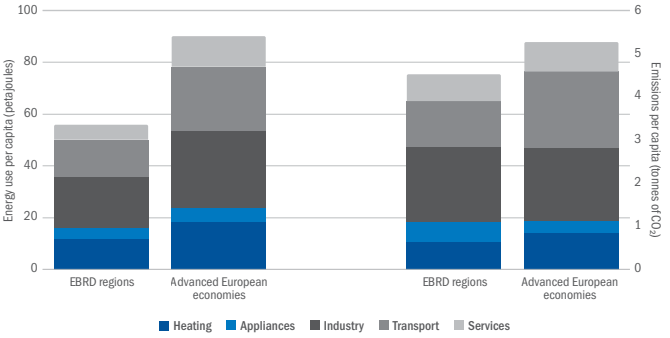
[50] See Causa et al. (2019) and OECD (2021).
[51] See Causa et al. (2019) and OECD (2021).
[52] See Causa et al. (2019).

CHART 4.12. Carbon emissions per capita in the EBRD regions have remained largely unchanged over the last two decades



Source: Our World in Data and authors' calculations.
Note: This chart shows population-weighted averages based on three unbalanced panels: up to 34 economies in the EBRD regions; 15 advanced European economies; and 15 emerging market economies.

CHART 4.13. The residential sector accounts for 29 per cent of total energy use in the EBRD regions and 26 per cent of total emissions



Source: IEA and authors' calculations.
Note: The data in this chart are estimates based on IEA surveys of statistical agencies and relate to 2021 or the latest available year. Residential energy use and emissions are broken down into "appliances" and "heating". "Appliances" includes cooking, cooling and lighting; "heating" refers to all heating, including hot water (such as gas boilers). Data represent population-weighted averages based on 27 economies in the EBRD regions and 15 advanced European economies.

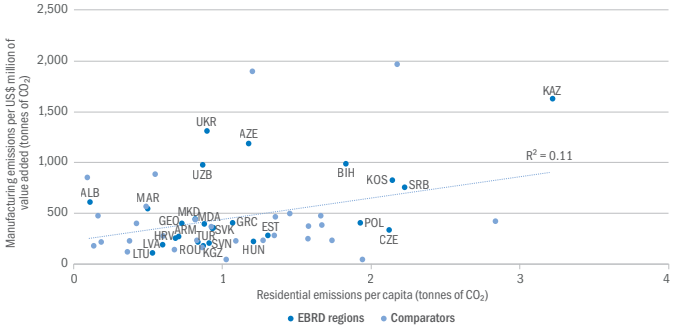
Environmental footprint of the EBRD regions over time

Until the late 1990s, the environmental footprint of economies in the EBRD regions closely tracked their development trajectory. Total emissions per capita in the EBRD regions increased sharply with industrialisation and urbanisation in the decades following the Second World War, peaking in 1985 (see Chart 4.12). Following the shift away from central planning (which largely disregarded the social cost of pollution) and the transition recession, emissions declined sharply, falling by almost 40 per cent.

Over the last two decades, carbon emissions per capita in the EBRD regions have remained largely unchanged, broadly in line with the levels observed in other emerging markets. Panel regressions suggest that emissions in the EBRD regions are now comparable to those observed in other economies with similar levels of development, urbanisation and industrialisation. Emissions per capita in advanced European economies are higher on average, but they have declined rapidly since the mid 2000s. At the same time, the average for the EBRD regions conceals significant variation across individual economies. Emissions per capita are highest in Central Asia (particularly in Kazakhstan, Mongolia and Turkmenistan) and central Europe (particularly in the Czech Republic and Poland), where levels exceed those seen in advanced European economies. Total emissions per capita are lowest in the SEMED region, followed by the Western Balkans, and eastern Europe and the Caucasus.

Across the EBRD regions as a whole, the residential sector accounts for 26 per cent of total emissions and 29 per cent of total energy use (see Chart 4.13). However, there are several economies where the residential sector is the single largest contributor to total emissions, surpassing industry, transport and other services. This is the case, for instance, in Azerbaijan, Kosovo, the Kyrgyz Republic, Moldova and Serbia.

CHART 4.14. Residential carbon emissions can remain relatively high even as industry becomes greener

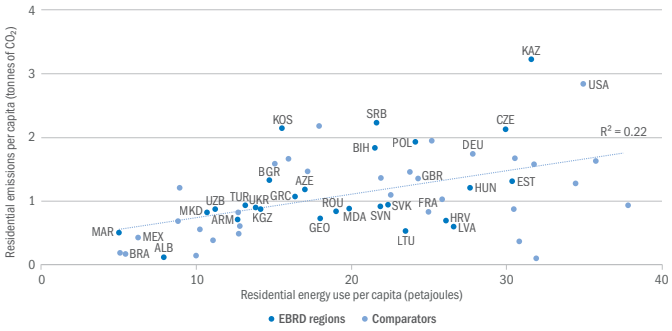


Source: IEA and authors' calculations.
Note: Data relate to 2021 or the latest available year.

Weak relationship between the residential sector and industry in terms of carbon efficiency

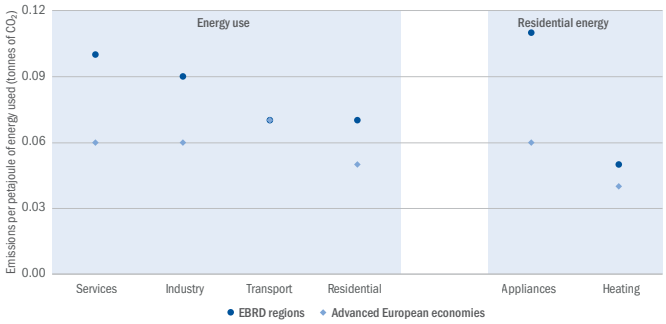
The correlation between emissions per capita generated by housing and emissions per unit of value added in industry is positive, but relatively weak (see Chart 4.14). In some economies (particularly Kazakhstan and the Western Balkans), industrial and residential emissions are both high. In contrast, economies in eastern Europe and the Caucasus have industrial sectors that pollute more than their residential sectors, while economies in central Europe have fairly carbon-efficient industrial sectors relative to their residential sectors (partly reflecting technology upgrades and decarbonisation policies focused on the manufacturing sector).

CHART 4.15. Residential emissions per capita are only weakly correlated with energy use per capita



Source: IEA and authors' calculations.
Note: Data relate to 2021 or the latest available year.

CHART 4.16. In the EBRD regions, heating and residential appliances pollute more per unit of energy used than in advanced European economies



Source: IEA and authors' calculations.
Note: Population-weighted averages based on data for 2021 or the latest available year. "Appliances" includes cooking, cooling and lighting; "heating" refers to all heating, including hot water (such as gas boilers). Data are based on 27 economies in the EBRD regions and 15 advanced European economies.

Differences in residential energy use explain only 22 per cent of total cross-country variation in residential emissions per capita (see Chart 4.15). For instance, residential emissions per capita in Kazakhstan are around 2.5 times the level seen in Estonia, despite Kazakhstan's residential sector using only 4 per cent more energy per capita. Similarly, Bosnia and Herzegovina, Poland and Serbia emit about twice as much as Slovenia and the Slovak Republic while using similar amounts of energy.

Differences in the carbon intensity of residential energy use

Economies with high emissions for a given level of energy use tend to be more dependent on coal for their energy. In contrast, economies where renewables account for a large proportion of energy generation (such as Albania, which gets almost all of its energy from hydroelectric power, or Lithuania, where wind and solar power play a significant role) have relatively low emissions for the same level of energy use.

While residential energy use per capita in the EBRD regions is less than half of the level seen in advanced European economies, the EBRD regions emit 43 per cent more carbon per unit of energy used (see Chart 4.16). As a result, total residential emissions per capita are only 3 per cent lower in the EBRD regions. The differential between advanced European economies and the EBRD regions in terms of the carbon efficiency of their energy supply is even larger for the industrial sector, with the EBRD regions emitting 57 per cent more carbon per unit of energy used.

In the EBRD regions, heating accounts for a smaller share of total residential energy use and emissions than in advanced European economies, partly reflecting the widespread use of district heating (see Box 4.3). However, it pollutes somewhat more per unit of energy used than in advanced European economies (see Chart 4.16). Appliances are even more emission-intensive in the EBRD regions than in advanced European economies, a fact that is largely explained by those economies' reliance on fossil fuels (particularly coal) for the generation of electricity.

Drivers of cross-country differences in residential emissions per capita

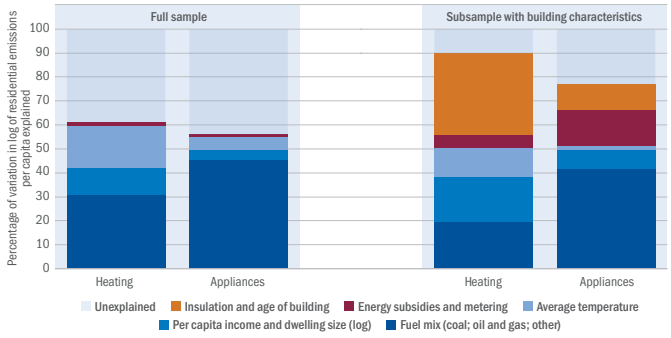
In addition to the fuel mix in the energy sector (that is, the relative shares of coal and other fossil fuels such as oil and gas), several other factors can also affect the environmental footprint of housing. For instance, people in economies with higher income per capita (at market exchange rates) may have greater purchasing power when it comes to energy-efficient boilers and other appliances.

Demand for heating and cooling is largely determined by the climate of the relevant economy. In general, demand for heating tends to rise linearly when average monthly temperatures fall below 15°C.[53] In Europe, a 1°C drop in the average winter temperature is associated with an increase of around 5 per cent in total consumption of natural gas, for instance.

Proper metering of heating and water, as well as cost-reflective pricing of gas and electricity, will strengthen incentives to use energy efficiently. Various characteristics of the building stock, such as its average age or the use of double or triple-glazed windows, will also affect energy consumption, while more spacious housing will consume more energy.

[53] See Plekhanov and Sassoon (2023).

CHART 4.17. Differences in countries' fuel mix, the use of metering and the condition of the housing stock explain the bulk of the cross-country variation in residential emissions



Source: IEA, LiTS IV and authors' calculations.

Note: Data relate to 2021 or the latest available year. "Heating" refers to all heating, including hot water; "appliances" includes cooking, cooling and lighting. Shapley decomposition based on a linear model regressing the logarithm of residential emissions per capita on various explanatory variables. "Fuel mix" comprises the share of coal and the share of oil and gas in total energy production. GDP per capita is measured at market exchange rates. In the case of heating, the "average temperature" variable is the sum of all downward deviations in average monthly temperatures from 15°C across all months; in the case of appliances, it is the sum of all downward deviations in average monthly temperatures from 15°C across all months plus the sum of all upward deviations in average monthly temperatures from 21°C. "Dwelling size" is measured as the logarithm of square metres per capita. "Metering" is the average share of metered heating (in percentage terms) plus the average share of smart meters (so smart meters are counted twice). "Energy subsidies" is calculated as the inverse hyperbolic sine transformation of the fossil-fuel subsidy as a percentage of GDP, based on data from the IMF and the IEA. "Insulation" is the percentage of buildings with at least some double-glazed windows plus the percentage of buildings with all windows double-glazed (so again, fully double-glazed buildings are counted twice).

The following regression analysis looks at these various factors and their relative importance in explaining differences in the logarithm of residential emissions per capita. The contributions of various groups of factors are derived using a Shapley decomposition. The left-hand panel in Chart 4.17 focuses on key variables available for a larger sample of countries; the right-hand panel presents more detailed analysis based on a small sample of 20 economies,[54] using information on building characteristics and metering derived from the Life in Transition Survey.

On average, differences in the prevalence of various fossil fuels in countries' fuel mixes can explain around 25 per cent of total cross-country variation in heating-related emissions per capita, and over 40 per cent for emissions caused by the operation of domestic appliances.

Higher income per capita and larger dwellings per capita significantly increase demand for heating, accounting for close to 20 per cent of total variation in emissions (and, unsurprisingly, a much smaller share of variation in total emissions from appliances).

Colder and longer winters can explain some of the cross-country variation in heating-related emissions. While on average they only explain around 12 to 18 per cent, colder winters in Estonia, for instance, are estimated to result in 65 per cent more heating emissions per capita than colder winters in Croatia. As expected, the climate matters less for emissions from appliances: average temperatures explain only 2 to 6 per cent of total variation in the environmental footprint of appliances, even taking demand for cooling into account.

Incentives to use energy efficiently, captured here as the use of metering and fossil fuel energy subsidies, explain 5 per cent of total variation in heating-related emissions and 15 per cent of emissions from appliances. In a broad sample of countries, the doubling of fossil-fuel subsidies (as a percentage of GDP) is associated with a 40 per cent increase in heating-related emissions per capita. Smart meters provide additional incentives. Unlike traditional meters, which provide a running total of the amount of energy used, smart meters can record consumption at a high frequency, providing more information about energy use and automatically sending meter readings to the energy supplier, making it easier for residents (and energy suppliers) to monitor the cost of energy consumption in real time.

Older buildings are, on average, associated with a significant increase in emissions from heating (but not emissions from appliances). Building age and the percentage of buildings with double-glazed windows explain around a third of total variation in emissions from heating and a tenth of total variation in emissions from appliances. These variables are likely to reflect insulation that is not directly reported in the data (since newer buildings and those with double or triple-glazed windows are also likely to be better insulated). Around 10 to 40 per cent of total variation in emissions from heating and appliances remains unexplained.

DIFFERENCES IN RESIDENTIAL ENERGY USE EXPLAIN ONLY

22%

OF TOTAL CROSS-COUNTRY VARIATION IN RESIDENTIAL EMISSIONS PER CAPITA

[54] Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Germany, Greece, Hungary, Kosovo, Latvia, Lithuania, Morocco, North Macedonia, Poland, Romania, Serbia, Slovenia and Türkiye.

Installing meters

Overall, this analysis suggests that relatively low-cost, technologically straightforward improvements, such as installing meters for water and heating, upgrading conventional meters to smart meters, and installing double-glazed windows, can help to significantly reduce residential emissions, taking the existing housing stock as given.

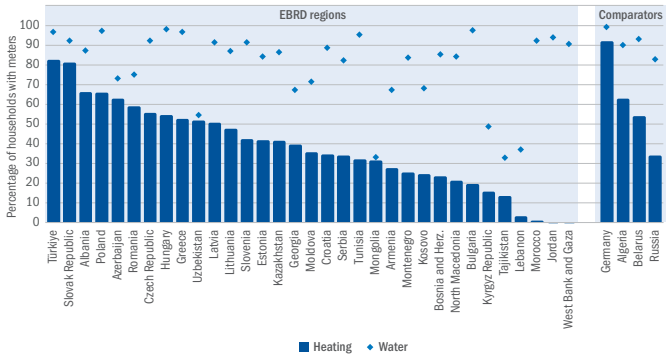
Proper metering of water and heating, as well as cost-reflective pricing of gas and electricity, will strengthen incentives to use energy efficiently. This allows consumers to pay for the energy units that they actually use and can support more demand-driven provision of services.[55] At present, 38 per cent of households across the EBRD regions report that they pay for heating on the basis of meter readings (see Chart 4.18). While there is some ambiguity in the way that respondents have interpreted the question about metered heating, given the variety of heating arrangements available (ranging from individual wood stoves to stand-alone gas boilers to district heating), the answers reflect substantial use of unmetered energy for heating. By way of comparison, 80 per cent of households across the EBRD regions (and 99 per cent in Germany) report having metered water. In addition to reflecting the metering of water, the figure for water meters also appears to be a good proxy for the prevalence of the metered supply of utilities in general and is therefore integrated into the regression analysis. Smart meters are not common in the EBRD regions: only 12 per cent of households have a smart meter for water, while 10 per cent have a smart meter for heating.

Insulating existing buildings

The use of double-glazing (which helps to keep homes warmer in the winter and cooler in the summer) is relatively common in emerging Europe, while single-glazing is particularly widespread in Central Asia and the SEMED region (see Chart 4.19). Across all economies in the EBRD regions, around 55 per cent of dwellings have at least some double-glazed windows, compared with 65 per cent in Germany.

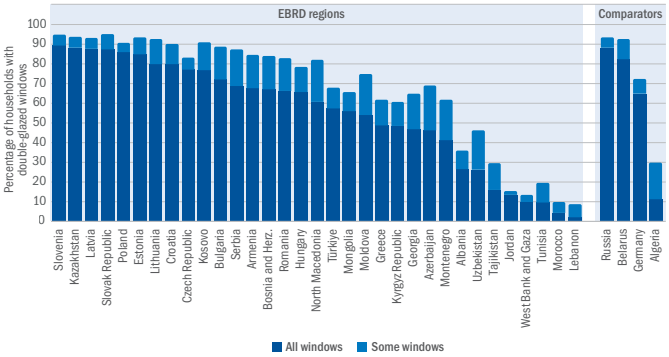
One of the key challenges when it comes to improving the energy efficiency of buildings is the availability of finance. The commercial banking sector is often unable to provide the necessary funding owing to its inability to assess projects and its focus on shorter-term lending. One example of a successful alternative financing vehicle is the Public Investment Development Agency (VIPA) in Lithuania, which was established in 2012. That agency oversees the Apartment Buildings Renovation Fund, a state-backed initiative targeting the renovation of older, energy-inefficient buildings. This initiative combines several different funding sources, including general government funding, government funding from earmarked emission levy revenues, EU structural funds and loans from multilateral development banks (including the EBRD). It works with Lithuania's Housing Efficiency Agency (BETA) to provide low-interest loans and grants covering the cost of setting up energy-efficiency projects, for example. The use of blended funding comes with strict eligibility criteria: energy savings must total at least 40 per cent (indeed, they average 60 per cent), with an energy performance rating of C or above.

CHART 4.18. There is substantial use of unmetered energy for heating in the EBRD regions



Source: LiTS IV and authors' calculations.
Note: This includes both smart meters and regular meters. Data for heating/water indicate the percentage of respondents replying "yes" to the question "Is heating/water metered?" If respondents decline to answer or respond "I don't know", that is treated as a "no".

CHART 4.19. Double-glazed windows are common in the EBRD regions



Source: LiTS IV and authors' calculations.

[55] See Akcura et al. (2023), EBRD (2018) and World Bank (2023).

Conclusion and policy implications

This chapter has discussed and illustrated several characteristics of housing and home ownership in the EBRD regions: many people live in multi-apartment buildings (which are often prefabricated) constructed between the 1960s and the 1980s, and home ownership rates are high across the income distribution. However, poorer households tend to live in buildings that are in a worse condition and have more limited access to public transport and green spaces. Wealth inequality, while modest by international standards, has risen. Greater use of mortgages creates new opportunities, but also vulnerabilities, reflecting the prevalence of variable-rate mortgages and the fact that some mortgages are denominated in foreign currency. Meanwhile, the gap between rent payments and mortgage payments as a share of income has been widening, partly reflecting limited construction of new buildings and the state's withdrawal from the provision of social housing.

These trends call for policy measures to address rising inequality in access to opportunities and public transport, and to maintain and restore green spaces and other communal areas. Macroprudential policies and lending standards need to properly account for the risks associated with variable-rate mortgages and foreign currency-denominated loans.[56] Increased provision of social housing based on clearly defined eligibility criteria can help to improve security of tenure for vulnerable households.

This chapter has also highlighted the significant environmental footprint of housing in the EBRD regions (as well as advanced economies), which is, to a large extent, shaped by countries' use of coal and other fossil fuels for the generation of electricity. While greening the electricity mix can reduce the emissions associated with appliances, decarbonising heating in cold climates presents unique technological and policy challenges. At the same time, however, differences in average temperatures explain only 15 per cent of total variation in heating-related emissions per capita across economies.

Findings from the latest round of the Life in Transition Survey suggest that there is scope to significantly reduce emissions by improving insulation and metering, even taking the building stock as given. The renovation of existing buildings and the incorporation of energy-efficiency requirements into construction standards for new buildings can help to reduce heating demand. The experiences of individual countries suggest that a combination of (i) incentives encouraging energy-efficient renovations and (ii) clearly defined and ambitious eligibility criteria can be effective in upgrading the EBRD regions' existing stock of ageing multi-apartment buildings.

More broadly, a combination of incentive schemes and financing mechanisms can help to increase energy efficiency. Incentives can include metering and pricing that takes account of environmental externalities, as well as schemes encouraging energy-efficient improvements and investments (such as partial investment grants, rebates, interest subsidies and tax incentives). Governments can work with banks and other financial institutions to develop appropriate financial products (possibly combined with subsidies and risk-sharing mechanisms) that support household investment. For instance, municipal credit lines could be used to help improve the energy efficiency of buildings. Such schemes could be complemented by other actions that help to publicise programmes, recruit participants, promote behavioural change, share good practices and lessons, lower transaction costs through standardised audits and other templates, offer training, and conduct monitoring and reporting.[57]

Such initiatives often involve a range of actors, including financial intermediaries (such as development, commercial or community banks), tax agencies (through tax credits or exemptions), public agencies or third parties appointed by the government (such as energy-efficiency or environmental funds, or energy agencies), or private companies (such as equipment vendors or energy providers). A central institution such as an energy-efficiency fund can help to coordinate the various actors involved by serving as a "one-stop shop" for financing, incentives, information and technical expertise.[58]

[56] See Causa et al. (2019).

[57] See EBRD (2018) and World Bank (2023).

[58] See EBRD (2018) and World Bank (2023).

BOX 4.1.

Renovating prefabricated housing

Prefabricated housing – buildings consisting of factory-made components that were transported to the relevant location and assembled on-site (known, for example, as *panelák*, *panelház*, *panelki*, *wielka płyta* or *ugsarmal* in the EBRD regions) – was the main type of urban housing under central planning. It continues to dominate many cityscapes today, from Bratislava to Bishkek and from Tallinn to Tirana.

The concept of prefabricated housing originally dates back to pre-war France, where architects were focused on enabling large groups of people to live comfortably in the city while having easy access to green areas. It then came into its own in the aftermath of the Second World War, when the use of load-bearing panels made from pre-stressed concrete allowed large amounts of housing to be built all year round at lower cost (with savings of between 5 and 20 per cent) and at greater speed than with conventional techniques. Construction times dropped by 30 to 45 per cent, while labour requirements were reduced by 40 to 50 per cent. In contrast, bricklaying required skilled masons and could not easily be scaled up, while the use of cast-in-place concrete was limited by severe winters.[59] Pre-casting also allowed for closer quality control.[60]

In the Soviet Union, standardised prefabricated housing accounted for 54 per cent of construction in 1980, up from just 1.3 per cent in 1959. In cities with a population of over a million, it accounted for more than 75 per cent of all construction by 1980.[61]

While some post-war housing estates have been demolished prematurely, others have been renovated and adapted to modern life. Their key shortcoming is poor thermal insulation. Retrofitting buildings can result in significant energy savings, create jobs and improve comfort. It is estimated to deliver €2 million in energy cost savings and create between 18 and 37 jobs for every €1 million invested.[62]

In the Baltic states, Bulgaria, the Czech Republic, Hungary, Poland, Romania and the Slovak Republic, the renovation of such housing estates has typically been heavily subsidised by the state (in some cases involving the use of EU funding). This has generally increased the value of such apartments, sometimes transforming the appearance of entire neighbourhoods through the use of coloured cladding panels.

In Hungary, for instance, about 788,000 prefabricated dwellings were built, predominantly in the 1960s and 1970s, and those dwellings still house about 18 per cent of the country's population today. Indeed, there are some cities, such as Székesfehérvár, where they house almost the entire population.[63] Almost a quarter of Hungary's prefabricated buildings were renovated between 2000 and 2007, reducing energy use by between 8 and 50 per cent. That renovation work, some of which was paid for using state and municipal funding, included repainting, the replacement of doors and windows, and the upgrading of heating systems. In Szeged, where prefabricated housing blocks account for about 38 per cent of all dwellings, 75 per cent of all prefabricated dwellings were renovated between 2002 and 2009. Those renovations cost around €3,900 per apartment,[64] with a third being covered by state funding and another third being paid for by the municipality, and achieved energy savings of 30 per cent for heating. Demand for renovated apartments has been high, resulting in a price premium of around 50 per cent for apartments located in refurbished buildings.[65]

Some cities have sought to turn their refurbished buildings into the next generation of smart homes. SmartEnCity, an EU-funded project focusing on the Estonian city of Tartu, has transformed 18 Khrushchev-era apartment blocks (a total of 664 apartments housing about 1,500 people) into self declared "smart blocks" ("smartkovki"). In addition to a thicker insulation layer, all buildings have been equipped with triple-glazed windows, a demand-based heat recovery ventilation system and roof-mounted solar panels. The hot water supply, which was previously generated by stand-alone boilers, has been integrated into district heating. The project also involved smart solutions in the areas of transport and street lighting through the creation of a city-level portal collecting city, building and apartment-level data, including information on energy use, lighting and vehicle traffic. Total energy demand has been reduced by 36 per cent overall (with a 54 per cent reduction for heating, corresponding to an average saving of €350 per year per tenant).[66]

Further east, in the Caucasus and Central Asia, such renovation work has been much less common, resulting in buildings becoming more dilapidated and eventually being demolished. Here, private renovation has been the norm, resulting in greater variation in the quality of buildings and the communal areas associated with them.

[59] See Navarro and Sobecka (2023).
[60] See US Department of Commerce (1971).
[61] See Malaia (2020).
[62] See IEA (2020), Buildings Performance Institute Europe (2023) and Government of the Republic of Lithuania (2021).
[63] Data taken from the country's 2011 census.
[64] Based on data for the period 2005-08.
[65] See Rafai (2019).
[66] See SmartEnCity (2022).

BOX 4.2.

Housing and mobility

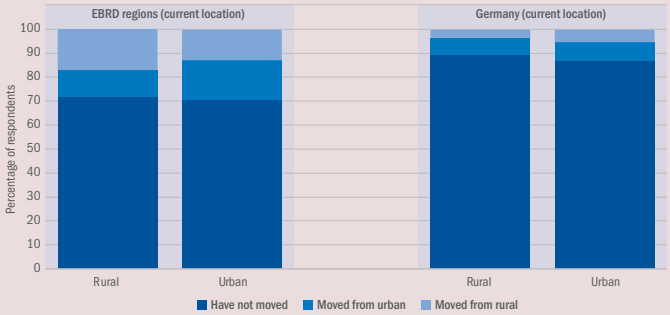
As documented in this chapter, the characteristics of neighbourhoods matter for economic outcomes and are highly persistent. With that in mind, it is not surprising that people choose to move during their lifetime, but they typically remain within their country of residence (with only around 3.5 per cent of the world's population living outside their country of birth). As part of the fourth round of the Life in Transition Survey, which will conclude later this year, respondents have been asked whether they have always lived in their current city, town or village and about their most recent move, as well as being asked about their place of birth. Across the EBRD regions, almost 30 per cent of respondents no longer live in the place where they were born (compared with around 12 per cent in Germany). Significant migration occurs not only from rural to urban areas (with 13 per cent of respondents in urban areas having moved there from rural areas), but also across urban areas (with 17 per cent of people in urban locations having moved there from other urban areas), across rural areas (17 per cent of respondents in rural areas) and from urban to rural areas (11 per cent of respondents in rural areas; see Chart 4.2.1).

Those high mobility rates are, in part, a legacy of the transition away from central planning and the associated structural changes, such as the decline in the importance of industry (and one-company towns) and the rise of services. At the country level, mobility peaked in the 1980s and has declined sharply since 2000 (with a similar pattern being observed in Germany).

Older respondents and women are more likely to have moved, while education, current employment status and household income are not predictors of mobility. Those working in higher-skill occupations are somewhat more likely to have moved than people with medium or low-skill jobs, with medium-skilled respondents the least mobile on average (although differences across skill groups are not statistically significant). Mobility and preferences regarding mobility are closely linked: those who have always lived in their current location (or have lived there for longer) are, on average, significantly more satisfied with life and less likely to want to move. Similarly, homeowners are also less likely to express an intention to move in the future. These correlations hold when taking into account a range of individual and household-level characteristics, such as age, gender, education, employment status, household income, household size, urban or rural location, the condition of the building and country fixed effects. In contrast, those who have moved recently (within the last five years) are more likely to want to move again.

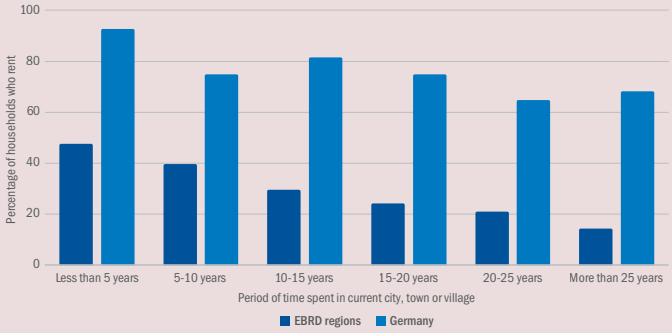
The rental market, while relatively modest in size in the EBRD regions, plays an important role in facilitating regional mobility. People who move are much more likely to rent (rather than own) accommodation in the years following the move, taking into account various individual and household-level characteristics (see Chart 4.2.2).

CHART 4.2.1. Domestic mobility is higher in the EBRD regions than in Germany



Source: LiTS IV and authors' calculations.

CHART 4.2.2. People who have recently moved are more likely to rent



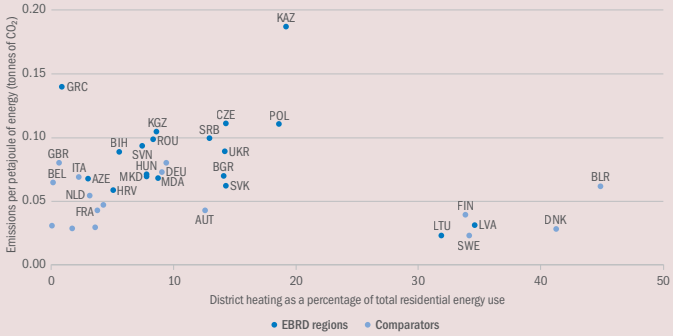
Source: LiTS IV and authors' calculations.
Note: Renters are defined as everyone who does not own their home.

BOX 4.3.
District heating

District heating systems – systems that generate heat centrally and distribute it to residential areas – are an alternative to stand-alone household boilers or apartment block boilers. The first known district heating system was established in Chaudes-Aigues, France, in the 14th century. Since then, those systems have evolved to incorporate alternative sources of energy, improving the efficiency of generation and reducing losses in distribution.[67]

District heating systems are especially prevalent in emerging Europe, a legacy of central planning. In the average economy in the EBRD regions, 14 per cent of total residential energy use is accounted for by centralised heating, ranging from less than 1 per cent in Greece to 35 per cent in Latvia (see Chart 4.3.1). Some advanced European economies with cold winters – Scandinavian countries, Austria and Germany – have comparable levels of penetration for district heating. The five largest district heating systems in the world are found in Moscow, St Petersburg, Kyiv, Warsaw and Stockholm.[68] Many smaller cities and towns rely on district heating systems connected to large industrial plants.

CHART 4.3.1. District heating is more prevalent in the EBRD regions than in advanced European economies – but also more emission-intensive



Source: LiTS IV and authors' calculations.
Note: The analysis assumes that the fuel source "heat" in the IEA dataset is equated with district heating.

While district heating can be less emission-intensive than individual heating systems, this depends on the type of fuel used. On average, district heating systems in the EBRD regions emit around 70 per cent more CO_2 per unit of generated heat than those in advanced comparator economies. District heating is most emission-intensive in coal-dependent economies in the EBRD regions such as the Czech Republic, Kazakhstan, Poland and Serbia. In contrast, a number of economies in Scandinavia and the Baltic states have both high levels of district heating and low emissions, with more than 50 per cent of that heat being generated using renewables (see Chart 4.3.1).[69]

The largest comparative advantage of district heating lies in its network infrastructure, which enables the use of local renewable heat and electricity sources and large-scale heat pumps, combined with the recovery of excess or waste heat from industrial and urban sources.[70] Combined heat and power plants generate electricity and use large amounts of waste heat as an input for the heating system. The Győrhő plant in Hungary, for example, achieves fuel efficiency of almost 82 per cent, converting about 43 per cent of fuel into electricity and around 38 per cent into heat.[71] Coal-fired cogeneration plants produce around half of the emissions produced by conventional coal plants in terms of greenhouse gases per unit of energy generated, with similar efficiency gains being observed for other fuels.[72] Cogeneration systems can also make use of industrial processes that generate large quantities of heat, such as steelmaking. For example, the Toplana Zenica project in Bosnia and Herzegovina – a joint venture between ArcelorMittal and local authorities in the city of Zenica (which involves funding from the EBRD) – uses waste gases from steelmaking to generate heat. Many initiatives at the frontier of waste heat technology are now seeking to recover heat from sources where heat recovery was previously considered uneconomical. For instance, the city of Odense in Denmark is using waste heat from a Facebook data centre, while the Hammarbyverket heat plant in Stockholm supplies 100 per cent of heating in the local area using heat from the treatment of wastewater.[73] Stockholm is also currently trying to incorporate heat generated by data centres into its district heating network.[74]

However, district heating systems have clear limitations. Heat is lost in transmission, and district heating is uneconomical in many rural and mountainous regions. In many cases, the supply of heat to individual apartments cannot be adjusted, which results in excess supply (as indoor temperature preferences vary).[75] In Hungary, for example, it was found that households in prefabricated housing blocks with district heating that could not be regulated at the level of individual apartments spent more of their income on energy and were more likely to accumulate energy-related debt than households with metered district heating or other heating systems. High levels of non-payment resulted in a vicious circle, with the supplier, in turn, having fewer resources and weaker incentives to modernise the district heating network.[76] Consumers' inability to change suppliers leads to a lack of customer focus, inefficiency and underinvestment.[77] Resolving these issues is crucial in order to successfully leverage the existing cogeneration infrastructure in emerging Europe and Central Asia.

Warsaw's district heating system, which was built during Poland's post-war reconstruction, is the largest in the EU.[78] Heating in Warsaw pollutes less than in Krakow, where coal-based heating of individual dwellings is still prevalent. At the same time, coal still powers around 70 per cent of Poland's district heating systems, despite ongoing work to replace coal as a fuel source.[79] At the same time, the installation of individual heating meters and apartment-level controls to regulate heat usage is under way.

[67] See Lake et al. (2017).
[68] See IEA (2004).
[69] See IEA (2023).
[70] See EBRD (2018) and World Bank (2023).
[71] See Rezaie and Rosen (2012).
[72] See IEA (2004).
[73] See Frost (2020) and Abbasi et al. (2021).
[74] See Biba (2017).
[75] See EBRD (2018) and World Bank (2023).
[76] See Herrero and Ürge-Vorsatz (2012).
[77] See IEA (2004).
[78] See Gardiner (2015).
[79] See Simon (2022).

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