

Living conditions in Europe - energy efficiency in households

Statistics Explained

Data extracted in September 2024.
No planned article update.

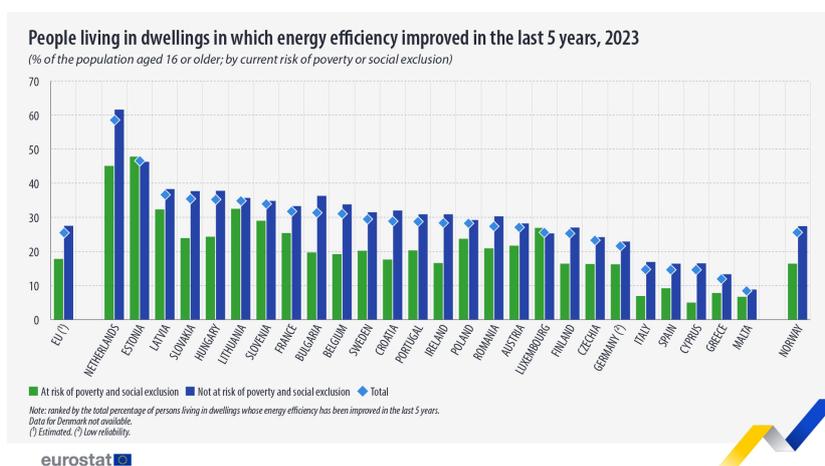
Highlights

In 2023, 25.5% of EU residents lived in dwellings in which energy efficiency had been improved in the last 5 years. The Netherlands had the highest rate at 58.7%, while Malta had the lowest at 8.4%.

People at risk of poverty or social exclusion were less likely to report living in dwellings with improved energy efficiency (17.8%) compared with those not at risk (27.5%).

In 2023, cities had the highest rates of people living in dwellings that were not comfortably warm in winter, with 19.1% of people affected, compared with 17.6% in towns and 16.3% in rural areas.

In 2023, 23.1% of people with activity limitations in the EU lived in dwellings that were not comfortably warm during winter, compared with 16.9% of those without limitations.



This article presents data on people aged 16 years or over living in the [European Union \(EU\)](#) in 2023, focusing on those living in dwellings in which the energy efficiency had been improved in the last five years and that were not comfortably warm during winter. The analysis is broken down by risk of poverty or social exclusion (AROPE), degree of urbanisation, and level of disability (measured as activity limitation), illustrating how these factors affected households' energy efficiency conditions.

Key findings

In 2023, at EU level, 25.5% of people aged 16 or older reported living in a dwelling in which the energy efficiency had been improved within the last five years.

- 17.8% of those at risk of poverty or social exclusion reported living in a dwelling with improved energy efficiency compared with 27.5% of those not at risk.
- 29.4% of rural residents reported living in a dwelling with improved energy efficiency, compared with 25.4% in towns and 22.9% in cities.
- 24.6% of people with no activity limitations reported living in a dwelling with improved energy efficiency, compared with 24.3% of those with some or severe limitations.

17.9% of the EU population lived in dwellings that were not comfortably warm during winter.

- 31.2% of people at risk of poverty lived in dwellings that were not comfortably warm, compared with 14.4% of those not at risk.
- 19.1% of city residents lived in dwellings that were not comfortably warm, compared with 17.6% in towns and 16.3% in rural areas.
- 23.1% of people with some or severe limitations lived in dwellings that were not comfortably warm, compared with 16.9% of those without limitations.

Energy efficiency improvements in households

The percentage of people (aged 16 years or older) who live in dwellings in which energy efficiency has been improved in the last five years shows the extent to which residential properties have undergone renovations to enhance energy performance. This includes all measures that impact the thermal conditions of the dwelling. Key renovation activities covered by this indicator are: the upgrading of thermal insulation in external walls, roofs, or floors; the replacement of single-glazed windows with double or triple-glazed units; and the installation of more efficient heating systems. Both comprehensive building-wide renovations and those specific to individual dwellings are considered. Renovations can be undertaken by the household itself or facilitated by external parties, such as property owners. Buildings that are less than five years old, or any other buildings that have not undergone energy renovations for any reason, are considered as not having been improved their energy efficiency.

Energy efficiency improvements in dwellings highest in the Netherlands and lowest in Malta

In 2023, 25.5% of the EU population reported living in a dwelling in which the energy efficiency had been improved within the last five years (Figure 1). The highest proportion of improvements was recorded in the Netherlands (58.7%), followed by Estonia (46.7%) and Latvia (36.7%). At the lower end, Malta (8.4%) had the lowest rate, followed by Greece (11.9%), Cyprus and Spain (both 14.6%) and Italy (14.7%).

Fewer energy efficiency improvements in dwellings of those currently at risk of poverty or social exclusion

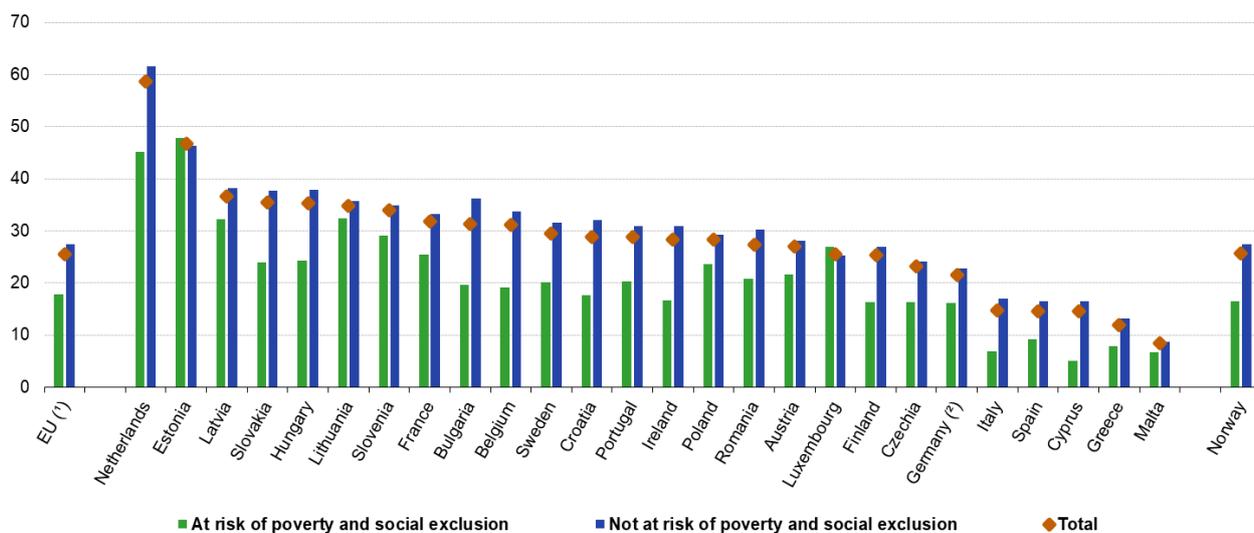
In 2023, 17.8% of people currently at risk of poverty or social exclusion in the EU reported that the energy efficiency of their dwellings had been improved in the last five years, compared with 27.5% of those not at risk (Figure 1).

Estonia had the highest proportion of improvements among those at risk of poverty or social exclusion (47.8%), followed by the Netherlands (45.1%), Lithuania (32.5%) and Latvia (32.3%). In contrast, Cyprus (5.0%), Malta (6.7%) and Italy (6.9%) had the lowest rates for this group. Among those not at risk of poverty or social exclusion, the Netherlands had the highest rate (61.6%), while Malta (8.8%) and Greece (13.3%) had the lowest.

The gap between the two groups was most notable in Bulgaria, with a 16.6 [percentage point \(pp\)](#) difference between those not at risk (36.3%) and those at risk (19.7%). Significant gaps were also observed in the Netherlands (16.5 pp), Belgium (14.6 pp), Croatia (14.4 pp), and Ireland (14.3 pp). Estonia (-1.5 pp) and Luxembourg (-1.6 pp) were the only countries where those at risk were more likely to live in dwellings with improved energy efficiency than those not at risk.

People living in dwellings in which energy efficiency had been improved in the last 5 years, 2023

Analysed by current risk of poverty or social exclusion situation (% population aged 16 or older)



Note: ranked by the total percentage of people living in dwellings in which energy efficiency had been improved in the last 5 years; data for Denmark not available.

(1) Estimated.

(2) Low reliability.

Source: Eurostat (online data code: ilc_lvhe08)

eurostat

Figure 1: Persons living in dwellings in which energy efficiency has been improved in the last 5 years, 2023 (Analysed by current risk of poverty or social exclusion situation (% population aged 16 or older)) Source: Eurostat (ilc_lvhe08)

People in rural areas reported the highest rates of energy efficiency improvements in most countries

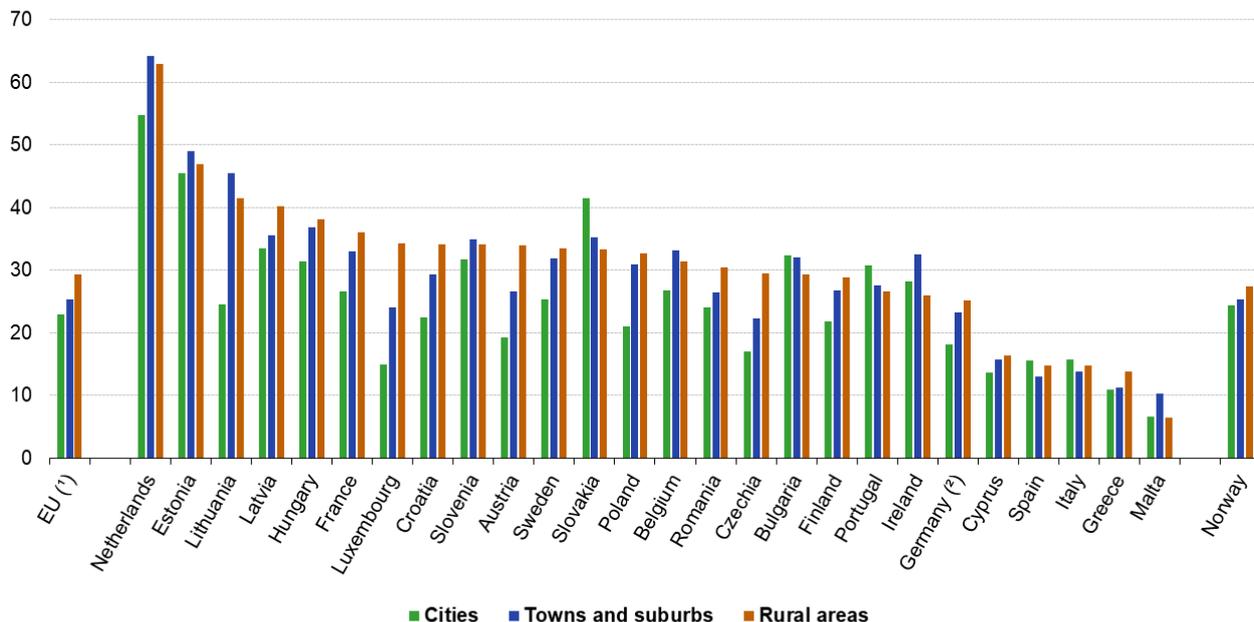
In 2023, energy efficiency improvements were most reported in rural areas across the EU, with an average of 29.4%, compared with 25.4% in towns and suburbs and 22.9% in cities (Figure 2).

People in rural areas reported the highest rates of improvements in 14 countries. Among these countries, Latvia led with 40.2% of rural residents reporting improvements, followed by Hungary (38.2%) and France (36.1%). In contrast, towns and suburbs had the highest rates of energy efficiency improvements in the Netherlands (64.2%) and Estonia (49.1%). Slovenia, Belgium, Ireland, and Malta also saw more improvements in towns and suburbs than in cities or rural areas.

Cities showed the highest rates of energy efficiency improvements in Slovakia (41.5%), Bulgaria (32.4%) and Portugal (30.7%). Italy and Spain (both 15.5%) also reported higher improvement rates in cities compared with other regions.

People living in dwellings in which energy efficiency had been improved in the last 5 years, 2023

Analysed by degree of urbanisation (%)



Note: ranked by the percentage of people living in rural areas; data for Denmark not available.

(*) Estimated.

(?) Low reliability.

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Figure 2: Persons living in dwellings in which energy efficiency has been improved in the last 5 years, 2023 (Analysed by degree of urbanisation (%)) Source: Eurostat (ilc_ivhe09)

Minimal differences in energy efficiency improvements by current level of disability across the EU

In 2023, energy efficiency improvements were reported at similar rates between people with no activity limitation (24.6%) and those with some or severe activity limitation (24.3%) across the EU (Figure 3).

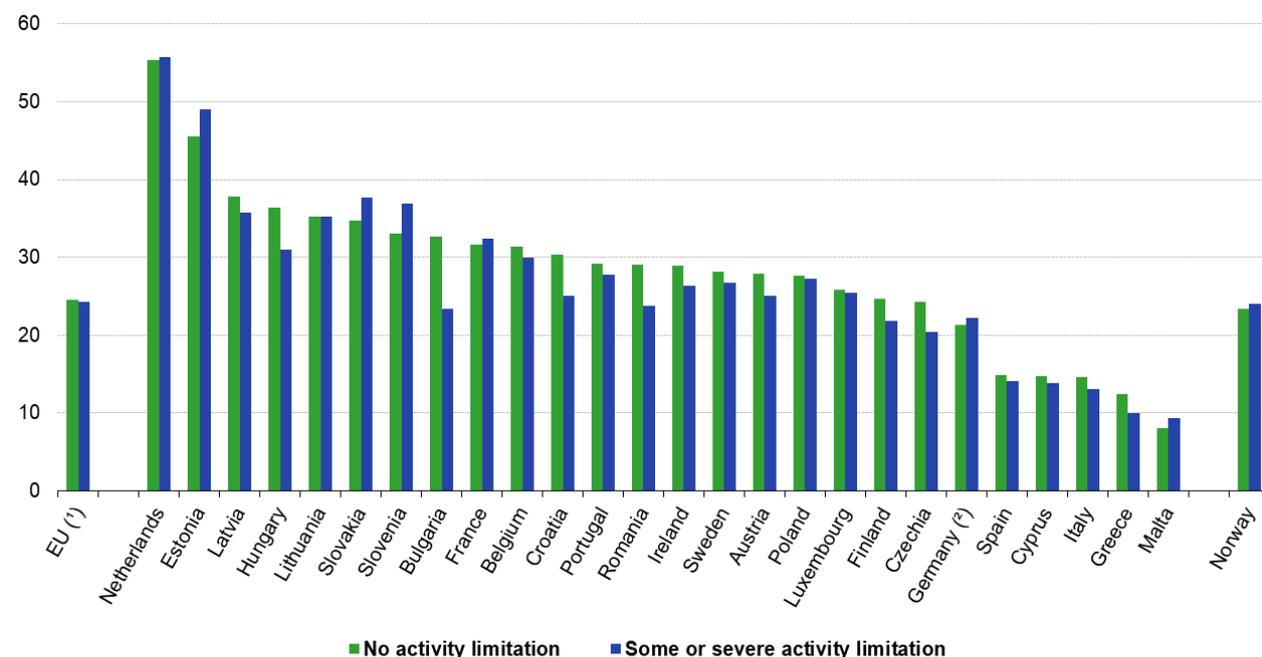
In many countries, the difference between these two groups was minimal. In particular, Lithuania (0.0 pp), the Netherlands (0.3 pp), Luxembourg and Poland (both 0.4 pp) showed little variation.

Several countries displayed more pronounced gaps. In total, 18 countries reported higher improvement rates among those with no activity limitations. Bulgaria had the largest gap, with a 9.2 pp difference (32.6% vs. 23.4%). Croatia (5.4 pp), Hungary (5.3 pp), and Romania (5.2 pp) also showed notable differences.

In contrast, 8 countries reported higher improvement rates among people with some or severe activity limitations. Slovenia had the largest gap, with a 3.9 pp difference (36.9% vs. 33.0%). Estonia (3.4 pp) and Slovakia (2.9 pp) also showed significant differences in favour of those with limitations.

People living in dwellings in which energy efficiency had been improved in the last 5 years, 2023

Analysed by level of disability (activity limitation) (% population aged 16 or older)



Note: ranked by the percentage of people with no activity limitation; data for Denmark not available.

(*) Estimated.

(²) Low reliability.

Source: Eurostat (online data code: ilc_lvhe10)

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Figure 3: Persons living in dwellings in which energy efficiency has been improved in the last 5 years, 2023 (Analysed by degree of urbanisation (%)) Source: Eurostat (ilc_lvhe09)

Households unable to keep warm in winter

Portugal had highest percentage of people living in a dwelling that was not comfortably warm during winter, Austria the lowest

In 2023, 17.9% of the EU population reported living in a dwelling that was not comfortably warm during winter (Figure 4). The highest percentage was recorded in Portugal, where 38.0% of the population faced this issue, followed by Ireland (34.3%), Greece (28.5%), France (28.1%) and Spain (27.3%).

At the other end of the scale, Austria had the lowest share of the population reporting insufficient warmth during winter (3.7%), followed by Estonia (4.3%), Slovenia (4.7%), the Netherlands (4.8%) and Belgium (5.8%).

People at risk of poverty or social exclusion more likely to live in a dwelling that was not comfortably warm during winter

In 2023, 31.2% of people at risk of poverty or social exclusion in the EU reported living in a dwelling that was not comfortably warm during winter, compared with 14.4% of those not at risk (Figure 4).

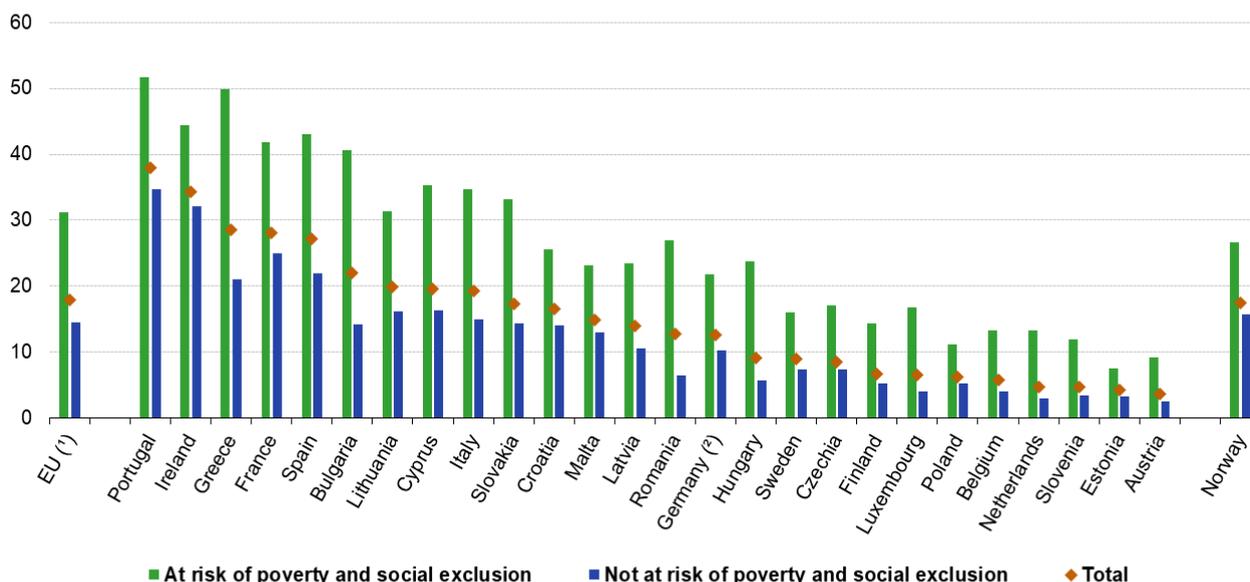
The highest rates among those at risk were observed in Portugal (51.6%), Greece (49.9%), Ireland (44.5%), Spain (43.0%) and France (41.8%). In contrast, the lowest rates were recorded in northern and central European countries, with Estonia (7.5%), Austria (9.3%), and Poland (11.2%) reporting the smallest rates.

Among those not at risk of poverty or social exclusion, southern European countries also showed higher rates of inadequate warmth. Portugal (34.6%) and Ireland (32.2%) topped the list, followed by France (25.0%) and Spain (22.0%). By contrast, Austria (2.6%), the Netherlands (3.0%), Estonia (3.2%), Slovenia (3.5%), and Luxembourg (4.0%) had the lowest rates.

The largest gaps between people at risk of poverty or social exclusion and those not at risk were observed in Greece (28.8 pp), Bulgaria (26.3 pp), and Spain (21.1 pp). In contrast, Estonia (4.3 pp), Poland (5.9 pp), and Austria (6.7 pp) showed the smallest disparities.

People living in a dwelling not comfortably warm during winter, 2023

Analysed by current risk of poverty or social exclusion situation (% population aged 16 or older)



Note: ranked by the total percentage of people living in a dwelling not comfortably warm during winter; data for Denmark not available.
 (*) Estimated.
 (?) Low reliability.



Figure 4: Persons living in a dwelling not comfortably warm during winter, 2023 (Analysed by current risk of poverty or social exclusion situation (% population aged 16 or older)) Source: Eurostat (ilc_ivhe11)

Highest rates of people living in dwellings that were not comfortably warm reported in cities for most countries

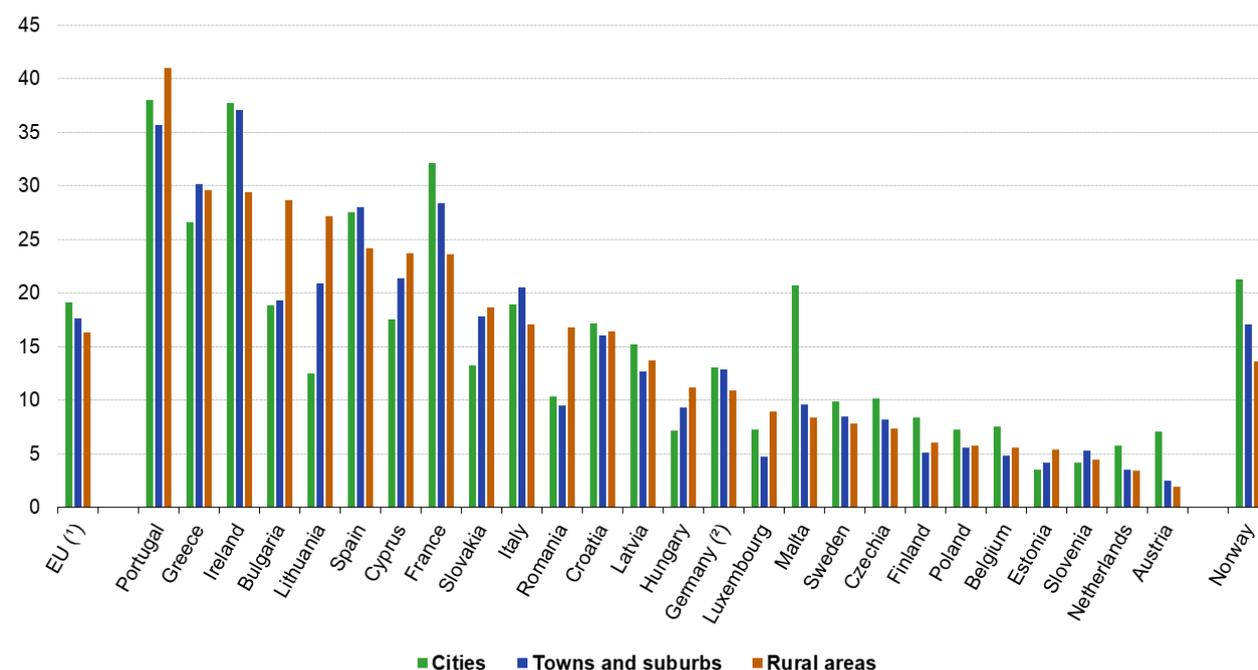
In 2023, 19.1% of people in the EU living in cities reported that their dwelling was not comfortably warm during winter, compared with 17.6% in towns and suburbs and 16.3% in rural areas (Figure 5).

Cities recorded the highest rates compared with towns and rural areas in 13 countries. The highest rate in cities was recorded in Portugal (38.0%) followed by Ireland (37.8%) and France (32.1%). In contrast, towns and suburbs reported the highest rates in Greece (30.2%), Spain (28.0%), Italy (20.5%) and Slovenia (5.3%), where more people were affected than in cities or rural areas.

Rural areas had the highest rates of insufficient warmth in 9 countries, with Portugal reporting the largest proportion of people affected (41.0%), followed by Bulgaria (28.7%) and Lithuania (27.1%). Cyprus, Slovakia, Romania, Hungary, Luxembourg, and Estonia also recorded higher rates in rural areas compared with cities or towns and suburbs.

People living in a dwelling not comfortably warm during winter, 2023

Analysed by degree of urbanisation (%)



Note: ranked by the percentage of people living in rural areas; data for Denmark not available.

(*) Estimated.

(?) Low reliability.

Source: Eurostat (online data code: ilc_lvhe12)



Figure 5: Persons living in a dwelling not comfortably warm during winter, 2023 (Analysed by degree of urbanisation (%)) Source: Eurostat (ilc_lvhe12)

People with activity limitations more likely to live in dwellings that were not comfortably warm during winter than those with no limitation

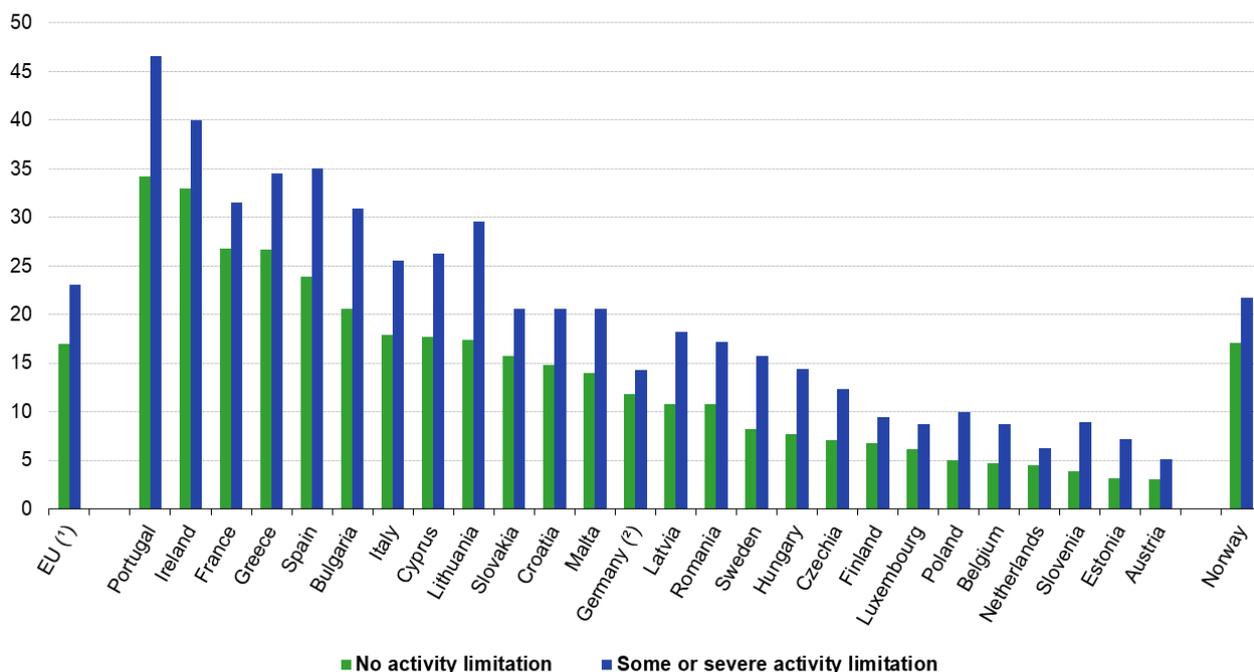
In 2023, 16.9% of the EU population without activity limitations lived in dwellings that were not comfortably warm during winter, while 23.1% of those with some or severe activity limitations experienced the same (Figure 6).

At national level, Portugal had the highest rates for both groups: 34.2% of those without activity limitations and 46.6% of those with limitations lived in dwellings that were not comfortably warm during winter. In contrast, Austria reported the lowest rates, with 3.1% of people without limitations and 5.1% of those with limitations experiencing this issue.

Countries with the most significant differences between the two groups included Portugal (12.4 pp), Lithuania (12.2 pp), Spain (11.1 pp) and Bulgaria (10.4 pp). On the other hand, the Netherlands, Austria, Germany, Luxembourg and Finland had differences smaller than 4 pp between the two groups.

People living in a dwelling not comfortably warm during winter, 2023

Analysed by current level of disability (activity limitation) (% population aged 16 or older)



Note: ranked by the percentage of people with no activity limitation; data for Denmark not available.

(*) Estimated.

(²) Low reliability.

Source: Eurostat (online data code: ilc_lvhe13)

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Figure 6: Persons living in a dwelling not comfortably warm during winter, 2023 (Analysed by current level of disability (activity limitation) (% population aged 16 or older)) Source: Eurostat (ilc_lvhe13)

Source data for tables and graphs

- [Living conditions in Europe – energy efficiency in households: tables and figures](#)

Data sources

The data used in this article are derived from the EU Statistics on income and living conditions (EU-SILC). EU-SILC data are compiled annually and are the main source of statistics that measure income and living conditions in Europe; it is also the main source of information used to link different aspects relating to the quality of life of households and people.

The reference population for the information presented in this article is all private [households](#) and their current members residing in the territory of an EU Member State (or non-member country) at the time of data collection; people living in collective households are generally excluded from the target population. The data for the EU are population-weighted averages of national data. The reference period for people's characteristics is 2023. The data is available for the 26 EU Member States (data for Denmark is unavailable) as well as the EFTA countries Norway, Switzerland, Iceland and the candidate countries Serbia, Montenegro, North Macedonia, Albania and Türkiye.

The term "disability" refers to activity limitations caused by ongoing physical, mental, or emotional health problems, including disease, impairment, or old age. This includes limitations due to long-standing conditions, such as injuries or congenital issues, but excludes limitations caused by non-health-related factors, such as financial or cultural reasons. The focus is on the persons's ability to perform usual activities in daily life (e.g., work, home, leisure), as opposed to specific activities like sports. Only limitations lasting at least six months are considered, and temporary or short-term limitations are excluded.

The percentage of people aged 16 years or older living in dwellings that are not comfortably warm during the winter

months evaluates the household's ability to maintain a comfortable indoor temperature, considering two main factors: the adequacy of the dwelling's insulation (e.g., "Is the dwelling sufficiently insulated against the cold?") and the effectiveness of the heating system (e.g., "Is the heating system used sufficiently to keep the dwelling warm?").

It is important to note that this indicator does not assess whether the household has the financial means to maintain warmth in winter. This is measured by the SILC variable 'Ability to keep home adequately warm' (HH050). Additionally, this indicator does not account for the ability to keep the dwelling warm during extreme weather conditions, such as severe cold spells.

The EU-SILC 2023 Ad hoc policy needs module – household energy efficiency – focuses on several key topics related to household energy use and efficiency. These include the type of heating systems and main energy sources used by households, as well as any renovations made to improve energy efficiency, such as thermal insulation or window upgrades. It also examines the household's ability to maintain a comfortable indoor temperature during both winter and summer.

Context

[Commission delegated Regulation \(EU\) 2020/2175](#) specifies that the 2023 SILC survey will collect three-yearly variables on labour market and housing; six-yearly variables on intergenerational transmission of advantages and disadvantages, housing difficulties as well as an ad hoc subject on households energy efficiency. Data on households' energy efficiency is of key importance to monitor the [European Green Deal Strategy](#) especially in view of the [Renovation Wave Strategy](#) and the Recommendation for Member States on tackling energy poverty.

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- [Income and living conditions — methodology](#)
- [Measuring material deprivation in the EU — Indicators for the whole population and child-specific indicators](#)

External links

- [European Commission — Directorate General for Employment, Social Affairs & Inclusion: Indicators' Sub-Group of the Social Protection Committee](#)
- [Social investment](#)
- [European pillar of social rights](#)
- [The European Green Deal Strategy](#)
- [The Renovation Wave Strategy](#)

Legislation

- [Detailed list of legislative information on EU-SILC provisions for survey design, survey characteristics, data transmission and ad-hoc modules](#)
- [Regulation \(EC\) No 2019/1700 — — the central piece of legislation for social surveys including EU-SILC](#)
- [Regulation \(EC\) No 2019/2242 — — additional central piece of legislation for EU-SILC](#)