



Actions to Mitigate Energy Poverty
in the Private Rented Sector

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D2.5

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1

INTRODUCTION

The Energy Poverty Dashboard (EPD) is an integral part of the ENPOR project ('Actions to Mitigate Energy Poverty in the Private Rented Sector'), which seeks to provide an in-depth examination of energy poverty policies for the Private Rented Sector (PRS) across the European Union (EU) while supporting the adaptation and implementation of policies tailored to the specific needs of the sector. The project also monitors various dimensions of energy poverty in the PRS, while providing a structured knowledge exchange platform and policy recommendations that can be upscaled to a wide range of contexts.

The EPD aims to provide a pan-European platform for the spatial visualisation and quantification of energy poverty patterns in the PRS across Europe, as well as associated actions to address the issue. It responds to the lack of Europe-wide data on the PRS, as well as the need for spatial and temporal disaggregation of relevant information and interventions. It also establishes an online space for sharing knowledge and practice.

In line with ENPOR's grant agreement, the EPD presents relevant aspects of energy poverty in the PRS (including physical health and well-being) and their links to other social dimensions, so as to define suitable measures for energy poverty alleviation as a result of specific policies. The Dashboard also provides novel methods to collect and represent data on policies aimed at addressing the specificities of the PRS, while capturing the impacts of interventions. The indicators included in the Dashboard can be used to investigate structural factors that underpin inequalities in the PRS.

This guidance document describes the content of the dashboard, and the steps that are needed to use it. It also briefly discusses the indicators presented in the dashboard as well as future development plans.

The Dashboard can be accessed using the following URL: <https://energypoverty.info>.

The ENPOR project acknowledges the work of Studio Mothership, a UK-based web design company, in building the EPD.

2

FEATURES AND FUNCTIONS OF THE DASHBOARD

The EPD data is twofold. The first element is Eurostat, SILC and Household Budget Survey (HBS) indicator data displayed to show visual trends and patterns. The second is to display policies and measures that are working to tackle energy poverty in the PRS across Europe.

2.1 The Dashboard – Indicator Data

The EPD webpage opens onto a map of Europe displaying indicator data cartographically, to visually show patterns and trends in the data over space and time. There is a Zoom function, to allow the user to zoom in and out as necessary. Clicking on a country or region automatically zooms the user in to that area.

Figure 1 below details the different functions available which allow the user to view and select different data views which appear on the map. A detailed description of the indicators available to the user are outlined in Section 3. With regards to the scale of data, the user can toggle between National, NUTS1 and NUTS2 levels (depending on data availability). Users can also toggle between population data (representing the whole of the population in the country or region), and private rented tenant data (representing the data within the number of privately renting households in that country or region). The data scale at the bottom of the dashboard shows the percentage for each indicator in each country or region. The darker the colour, the higher the percentage. Where the country or region appears white, there is no data for that indicator, NUTS level or year.

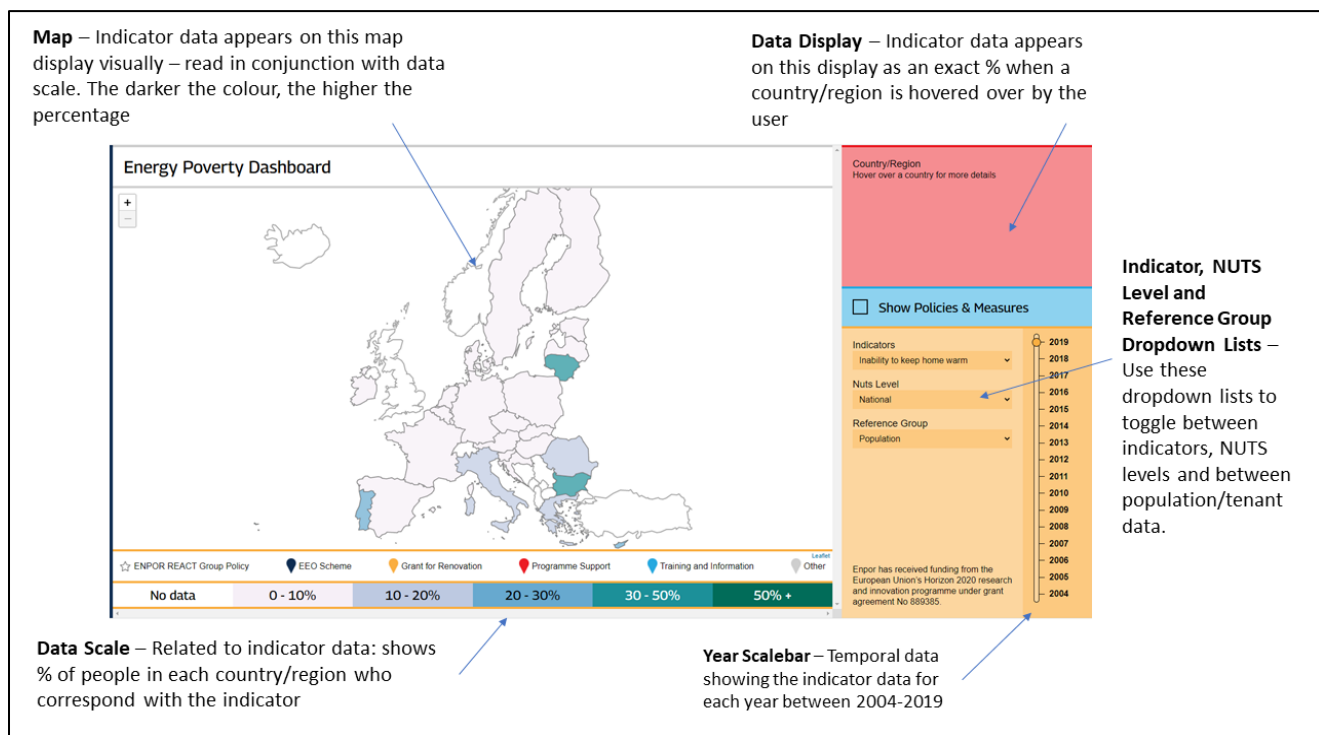


Figure 1 - Diagram of Indicator Data Functions

2.2 The Dashboard – Policies and Measures

Selecting the Show Policies and Measures box on the right-hand side of the EPD brings up pins on the map, each representing a policy or measure that in some way tackles energy poverty in the PRS.

Figure 2 below details the different functions available which allow the user to view and select different policies and measures.

When a user selects a policy/ measure pin from the map, a module is brought up containing various information regarding that policy (see Figure 3 below). The module contains

- The policy/measure title.
 - Its category according to the ENPOR project.
 - The scale (whether it is implemented at a national, regional or local scale).
 - The year the policy commenced, and ended, if it is no longer being implemented.
 - The name of the policy implementing authority and where it is headquartered.
 - Weblinks containing further information for the user to follow up on.
- A brief description of the policy or measure.

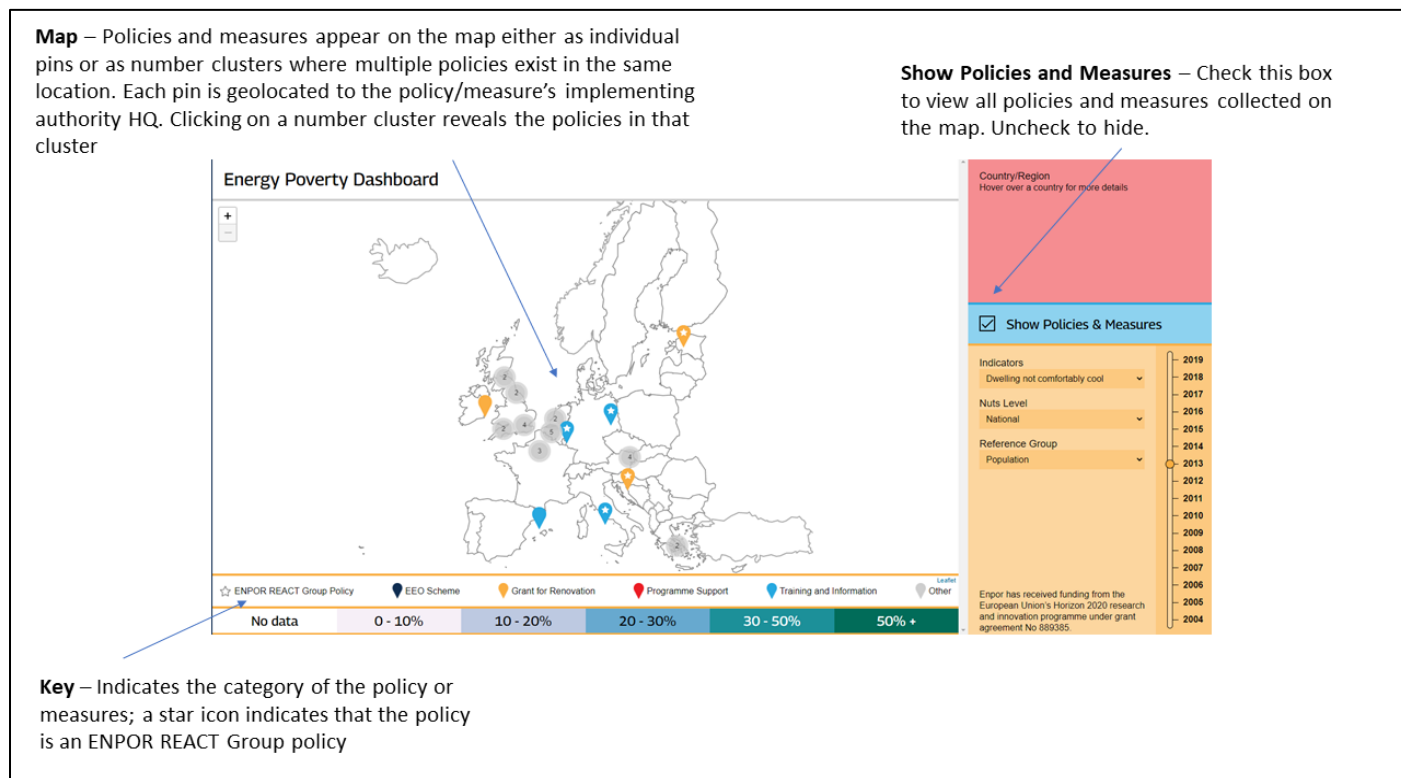


Figure 2 - Diagram of Policy & Measure Display Functions

The EPD also allows users to submit policies and measures that tackle energy poverty that they are aware of in the PRS in any European country. In the top left corner of the EPD is a menu button, which when clicked, brings up a menu. Users should navigate to the item “Submit a Policy”.

Figure 3 demonstrates how this can be done.

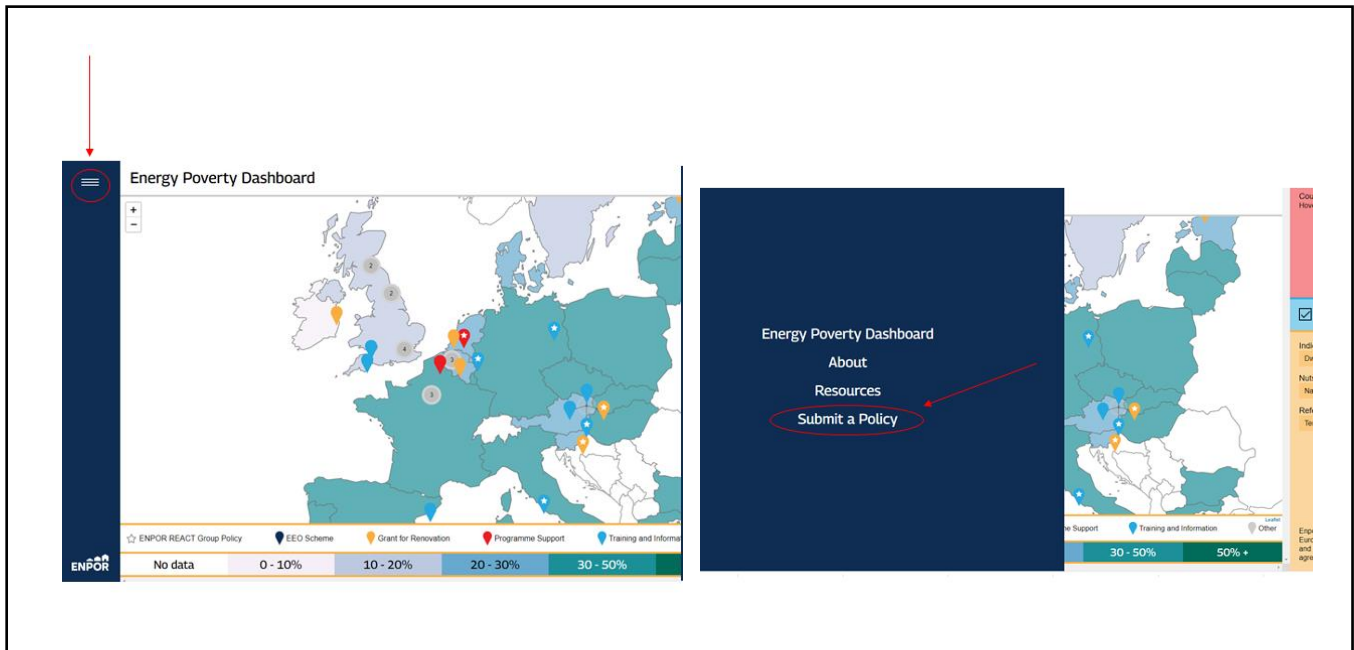
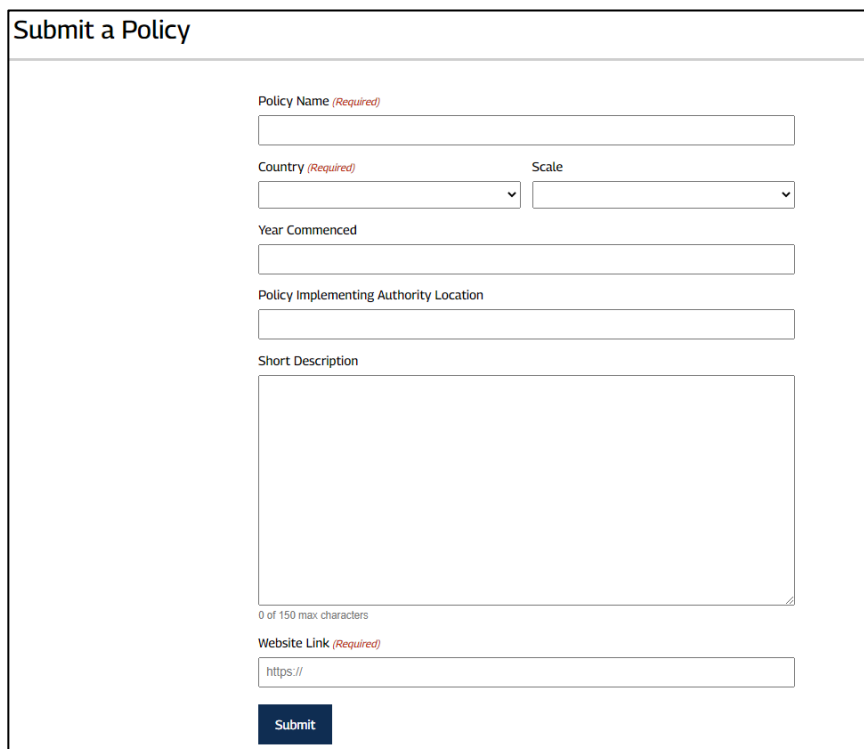


Figure 3 - How to Navigate to the "Submit a Policy Page"

Once on the "Submit a Policy" page, the user can fill out the simple webform. The only compulsory fields are the policy/measure's name, the country it pertains to, and a weblink to further information. Other optional fields can be filled in if the user is aware of these details. Once submitted, the policy is sent through to the ENPOR team, who moderate and review the submissions. The information is then uploaded to the EPD and is available to be viewed by all website visitors.

Figure 4 shows how this can be done.



Submit a Policy

Policy Name *(Required)*

Country *(Required)* Scale

Year Commenced

Policy Implementing Authority Location

Short Description

0 of 150 max characters

Website Link *(Required)*

Submit

Figure 4 - The "Submit a Policy" Webform

2.3 The Dashboard – Resource Hub

The third element of the EPD is the Resources page, designed to be a resource hub for research, academic papers, projects and other useful information related to energy poverty in the PRS and more broadly. This will be a dynamic and regularly updated page as new research is conducted and as the ENPOR project progresses.

Resources

Information on Energy Poverty:

Energy Poverty Advisory Hub – <https://www.energy-poverty.eu/>

Grants and Support:

Energy Advice Tool – www.energyadvice.info

Projects Tackling Energy Poverty:

ENPOR (Energy Poverty in the Private Rented Sector) – <https://www.enpor.eu/>

COMACT (Community Actions for Energy Poverty Mitigation) – <https://comact-project.eu/>

EMPOWERMED (Empowering Women to Take Action Against Energy Poverty) – <https://www.empowermed.eu/>

ENERGY MEASURES (Tailored Measures Supporting Energy Vulnerable Households) – <https://energymeasures.eu/>

ENPOWER (Mitigating GHG Emissions Through Energy Poverty Alleviation in Romania) – <https://www.enpor.eu/sister-project/enpower/>

POWERPOOR (Empowering Energy Poor Citizens Through Joint Energy Initiatives) – <https://powerpoor.eu/>

POWERTY (Renewable Energies for Vulnerable Groups) – <https://www.interregeurope.eu/powerity/>

SCORE (Supporting Consumer Ownership In Renewable Energies) – <https://www.score-h2020.eu/>

SOCIALWATT – <https://socialwatt.eu/STEP> (Solutions to Tackle Energy Poverty) – <https://www.stepenergy.eu/>

Figure 5 - The EPD Resource Hub

3

DATABASE AND INDICATORS USED

3.1 EU-SILC Data Indicators

The EU-SILC survey is collected EU-wide and has widespread data coverage; all EU-member states have data availability from 2010 and most since 2004 (Thema & Vondung, 2020).

3.1.1 Consensual EU-SILC Data Indicators

Consensual SILC data indicators included in the EPD are as follows:

- **Inability to keep home warm** (ESTAT indicator *ilc_mdcs01*) – the share of a population not able to keep their home adequately warm, based on the question “can your household afford to keep its home adequately warm?”
- **Arrears on utility bills** (ESTAT indicator *ilc_mdcs07*) – the share of a population having arrears on their utility (water, electricity, gas, heating, etc.) bills, based on the question “in the last twelve months, has the household been in arrears, unable to pay on time due to financial difficulties for utilities?”
- **Presence of leak/damp/rot** (ESTAT indicator *ilc_mdho01*) – the share of a population with either leak (leaking roof), damp (damp walls/floors/foundation) or rot (rot in window frames or floor) (or all three) in their dwelling.
- **Dwelling not comfortably cool** (ESTAT indicator *ilc_hcmp03*) – based on the question “is the dwelling sufficiently insulated against the warm” and/or “is the cooling system efficient enough to keep the dwelling cool”. Data collected within ad-hoc modules for 2007 and 2012 only.

3.1.2 Other EU-SILC Data Indicators

Other indicators derived from SILC data included in the EPD are as follows:

- **Poverty risk** (ESTAT indicator *ilc_peps01*) – the percentage of a population that is at risk of poverty or social exclusion, defined as having a household income that is below 60% of the median household income in a country/region.
- **Relative Risk of Asthma** – the share of a population with asthma due to dampness and mould in the building, calculated using a population attributable fraction of bad indoor conditions on asthma occurrence (PAF), based on data on exposure to leak, damp or rot (ESTAT indicator *ilc_mdho01*), a relative risk rate (cf. Quansah et al 2012) and applied to incidence rates of asthma within a country.
- **Size of rental sector** – the percentage of people which privately rent (i.e., do not own their homes or live in social housing) in a given country/region.

3.2 Expenditure-Based Household Budget Survey Data Indicators

Expenditure-Based Household Budget Survey Indicators included in the EPD are as follows:

- **High share of energy expenditure in income** (also known as 2M) – the proportion of households whose share of energy expenditure in their income is more than twice the national median share. This indicator captures how energy bills burden a household relative to its income.

- **Low absolute energy expenditure** (also known as M/2) – the share of households whose income and absolute energy expenditure is below half the respective national median values, capturing the underconsumption of energy relative to national mean energy expenditure. Those with expenditure below half the national median value are considered to be energy poor. National contexts and information on the energy performance of the building stock/respective regulation and social welfare policy may be needed to interpret this data.
- **Low income, high cost (LIHC)** – the share of households, whose energy expenditure is above the median energy expenditure in a country/region and whose income falls below the respective poverty risk threshold (below 60% of national median household income) after subtracting energy expenditure.

3.3 Rented Private Housing Energy Poverty Indicator

A key element of the Dashboard is a specialised multidimensional indicator to capture energy poverty in the PRS. The indicator titled REPI (Rented Private Housing Energy Poverty Indicator) is expressed in the following form:

$$\text{REPI} = (a+b+(c/2))/3 * d$$

Where:

a = the share of people unable to keep the home adequately warm in the PRS.

b = the share of people reporting utility bill arrears in the PRS.

c = the share of people reporting housing faults (damp, mould, rot in window frames or doors) in the PRS.

d = the share of people living in the PRS.

REPI essentially contains a composite energy poverty indicator (combining standard consensual measures of energy poverty, with a lower weighting for the share of people living in poor housing) and an indicator of the size of the PRS in a given area. REPI will have a higher value in cases where any of these values are higher, meaning that countries where energy poverty in the PRS is greater, and the size of the PRS is significant, will combine to yield an elevated score. Countries like Germany and the UK, which score relatively low on conventional energy poverty measures, record high values of the REPI.

3.4 Reliability, Coverage and Other Data Issues

Reliability: Due to the disaggregation of data by tenure and NUTS-level, in some instances the underlying sub-sample becomes quite small, limiting the reliability of the displayed information. Where this is the case, an additional disclaimer has been integrated in the data display of the EPD. Reliability is considered a) low for (sub)population shares that are based on a sample equal to or smaller than 20 observations ($n \leq 20$) and b) limited for (sub)population shares based on sample equal or smaller than 50 observations ($n \leq 50$).

Temporal coverage: While due to its regulated nature the EU SILC dataset comprises information for most indicators (apart from `ilc_hcmp03`) from 2004 until 2019, the household budget surveys are implemented by the Member States in differing intervals and are only assembled by Eurostat into a harmonised dataset in five-year intervals. Accordingly, information for these indicators is only available for the years 2010 and 2015.

Geographical coverage: Geographical coverage of the data varies between databases, years and countries. **Table 1** provides an overview.

Table 1: Geographical coverage of the EPD indicators by database, year and level

Database	Year	National	NUTS1	NUTS2
HBS	2010	EU28	AT, BE, BG, CY, DK, EE, HU, LT, LU, LV, MT, PL, RO, SE, SK	CZ
	2015	EU27 minus IT, MT, PT, SI	BE, BG, CY, DK, EE, EL, HR, HU, IE, LT, LU, LV, PL, RO, SE, SK	-
EU SILC	2004	AT, BE, DK, EE, EL, ES, FI, FR, IE, IT, LU, PT, SE	AT, BE, EL, IT	ES, FI, FR
	2005	EU28 minus BG, HR, MT, RO	AT, BE, DE, EL, HU, IT, PL	CZ, ES, FI, FR
	2006	EU28 minus BG, HR, MT, RO	AT, BE, DE, EL, HU, IT, PL	CZ, ES, FI, FR
	2007	EU28 minus HR	AT, BE, EL, HU, IT, PL, RO	CZ, ES, FI, FR
	2008	EU28 minus HR	AT, BE, BG, EL, HU, IT, PL, SE	CZ, ES, FI, FR, RO
	2009	EU28 minus HR	AT, BE, BG, EL, HU, IT, PL, RO, SE	CZ, ES, FI, FR
	2010	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE	CZ, ES, FI, FR, HR, UK
	2011	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE	CZ, ES, FI, FR, UK
	2012	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR
	2013	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR
	2014	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR
	2015	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR
	2016	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR
	2017	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR
	2018	EU28	AT, BE, BG, EL, HU, IT, PL, RO, SE, UK	CZ, ES, FI, FR, PT
2019	EU27	AT, BE, BG, EL, HU, IT, PL, RO, SE	CZ, ES, FI, FR, PT	

Gaps and other data issues: For some countries, HBS based indicators could not be calculated or disaggregated by tenure status due to lacking data. For DE, MT, PT, SI no shares for the

PRS could be calculated for 2015 as no data on rent expenditure¹ was provided. Due to a lack of income data in both years (2010 & 2015) neither 2M nor LIHC could be calculated for IT. In addition, in EL, FR, IT, NUTS regions have been re-labelled for administrative reasons or actual boundary shifts (cf. **Table 2**). Although possibly introducing bias, to allow for a subnational comparison of energy poverty over time, older labels have been replaced with the newest ones. Where this occurs, a disclaimer is included in the Data Display.

Table 2: Changes of NUTS regions labels

Country	NUTS label (old)	NUTS label (new)	Change
EL	EL1	EL5	Boundary shift in 2013
	EL2	EL6	
FR	FR21	FRF2	Relabelled in 2016
	FR22	FRE2	
	FR23	FRD2	
	FR24	FRB0	
	FR25	FRD1	
	FR26	FRC1	
	FR30	FRE1	
	FR41	FRF3	
	FR42	FRF1	
	FR43	FRC2	
	FR51	FRG0	
	FR52	FRH0	
	FR53	FRI3	
	FR61	FRI1	
	FR62	FRJ2	
	FR63	FRI2	
	FR71	FRK2	
	FR72	FRK1	
	FR81	FRJ1	
FR82	FRLO		
FR83	FRMO		
IT	ITD	ITH	Boundary shift in 2010
	ITE	ITI	

¹ While in SILC tenure status is defined by a specific item, identification of tenants in the HBS data is based on their expenditure data.

4

FUTURE DEVELOPMENT OF THE DASHBOARD

We see the Dashboard develop in the future as a more holistic energy justice hub, that can be expanded in scale and scope to present a wider range of indicators about, and initiatives to fight, energy poverty. The Dashboard can be developed by providing more detailed and comprehensive energy data, which could be disaggregated by housing sector (PRS, socially rented and owner-occupier where available), creating a useful pool of resources, increasing its geographical coverage beyond Europe, as well as creating a broader community of practitioners, citizens and experts.

5

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