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The relation between quality of dwelling, socio-economic status and health in EU28 and its Member States

Scientific report as input for Healthy Homes Barometer 2017

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1 Introduction

Around 508 million European citizens (EUROSTAT, 2015) spend about 90% of their time indoors (living and working). Therefore Europe's buildings have a major impact on Europeans' health. According to WHO's definition (since 1948) "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[1] Yet, research assessing the statistical links between health and housing conditions is largely missing. This insight triggered a detailed Ecofys study on the relation between health and housing conditions across EU28 and its Member States. As "social-well-being" is not an intuitive part of health, the research title is "the relation between quality of dwelling, socio-economic status and health in EU28 and its Member States". This is our first major report that explains the methodology used and first key results.

Table 1 illustrates issues related to indoor aspects based on publicly available data on the Eurostat website.

Table 1. Public Eurostat data on indoor related aspects

Issues related to indoor comfort (EUROSTAT, EU-SILC database)	Affected number of Europeans (2014)
Leaky roof, dampness, rot	80 million
Unable to keep dwelling warm in winter	50 million
Unable to keep dwelling cool in summer	100 million
Environmental pollution in neighbourhood	70 million
Daylight	30 million

In order to fully grasp the implications, risks and chances of the drastic building renovation effort needed in Europe it must be understood that such effort also means a huge social intervention - because renovation of buildings implicates the change of socio-technical systems. Although this is obvious, there is completely insufficient evidence about the link between different types of buildings, such as single-family or multi-family houses (which need different sets of technical measures), some of their more specific characteristics which determine the health of their dwellers (like brightness of rooms) and the socio-demographic characteristics of their dwellers, owners as well as the magnitude of their health including satisfaction. Therefore, a main research objective is to identify these links and to highlight which part of Europe's and MS's population is most in need of building renovation. Another objective is to identify which technical aspects need to be included in a comprehensive building strategy, for the proper order of measures which should not just be derived from the

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[1] WHO (1946)

energetic quality of the buildings but also from the vulnerability of the people linked to specific buildings clusters.

Altogether this is to use the huge challenge of building renovation at the same time as good as possible for improving living conditions in a broader sense for the EU population.

The research results will add to an initiative of VELUX A/S to build a "Healthy Homes Barometer (HHB)". The survey of the HHB 2016[2] so far focuses on nine indicators of perceptions, attitudes and behaviours related to a healthy home, including environmental and energy aspects.

1. What does healthy living mean to Europeans?
2. How concerned are Europeans about an unhealthy home?
3. Who are responsible for ensuring healthy buildings?
4. How important is daylight at home to Europeans?
5. How important is indoor air quality to Europeans?
6. How do Europeans experience the quality of their sleep?
7. Do Europeans link indoor climate to health?
8. How important are home energy costs to Europeans?
9. How important is the environmental impact of the home to Europeans?

The generation of this year's HHB includes also the broader approach described in this study.

This study also addresses aspects of *energy poverty* since correlations between variables such as "Ability to keep dwelling warm" or "Leaking roof, damp walls/floors/foundation, or rot in windows or floor" are considered. According to Thomson and Snell (2012) only three EU member states[3] have an official definition of *energy poverty*, i.e. an official definition on EU level is missing yet. EU documents, such as the recently published proposal for a revision of the EPBD refer to the study of Healy and Clinch (2002) which "operationalised [energy poverty] by the following indicators in EU-SILC: leaking roof, damp walls/floors/foundation, or rot in window frames or floor, ability to keep home adequately warm and arrears on utility bills.[4] In the scope of this study a more practical approach to identify energy poverty will be followed: it is understood as a the ability of a person to keep the dwelling adequately warm since energy poverty is an interaction between non-energy-efficient buildings, low income and energy prices.

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[2] Velux (2016)

[3] Following Member states have a legal definition of energy poverty: Ireland, France and United Kingdom

[4] Impact Assessment accompanying the document "Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings": p. 40.

2 Methodology

The research is based on analysing Eurostat microdata from the EU-wide survey „Income and Living Conditions in Europe".(EU-SILC). EU-SILC – is a Eurostat **S**urvey, which is conducted in a European-wide household panel, to assess the status and development of **I**ncome and **L**iving **C**onditions in Europe. The EU SILC survey covers the domains income, poverty, social exclusion, housing, education, labour and health. Currently (2017) all 28 EU Member States participate in EU SILC. EU-SILC data is collected by the statistical offices of each Member State. The research presented here is based on anonymised self-reported observations, i.e. micro-data has been analysed for this study. Data in EU-SILC are collected either on household or individual level. Eurostat provides these data for approved research proposals handed in by accredited research institutions like Ecofys Germany.

For this research anonymised results for each EU-SILC variable for more than 100,000 individual households and more than 250,000 adults (16 +) across all EU Member States – except Germany - were made available by Eurostat. For each Member State individual information about at least 3,000 households and 6,000 persons have been analysed for the years in focus. A focal point of the research is data from 2012, where more detailed information on housing conditions was collected in the survey. In order to handle the massive amount of data the statistical computing program R (version 3.3.0) was used for statistical analyses of the microdata.

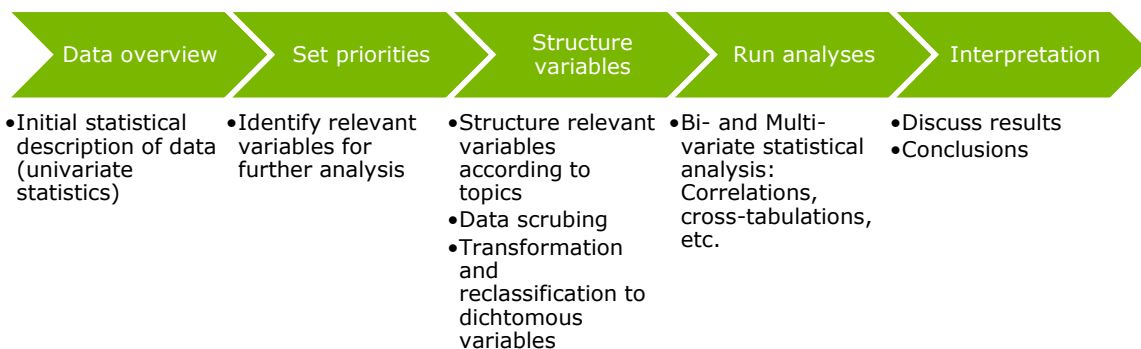The major steps of our research are summarised in Figure 1.

Data overview	Set priorities	Structure variables	Run analyses	Interpretation
•Initial statistical description of data (univariate statistics)	•Identify relevant variables for further analysis	•Structure relevant variables according to topics •Data scrubing •Transformation and reclassification to dichtomous variables	•Bi- and Multi-variate statistical analysis: Correlations, cross-tabulations, etc.	•Discuss results •Conclusions

Figure 1: Analysis approach

For this study, socio-economy, state of building and health were identified as major clusters of interest. SILC variables have been structured accordingly. The graph below illustrates the focus of the analysis, i.e. all areas have been analysed focusing on the impact on health.
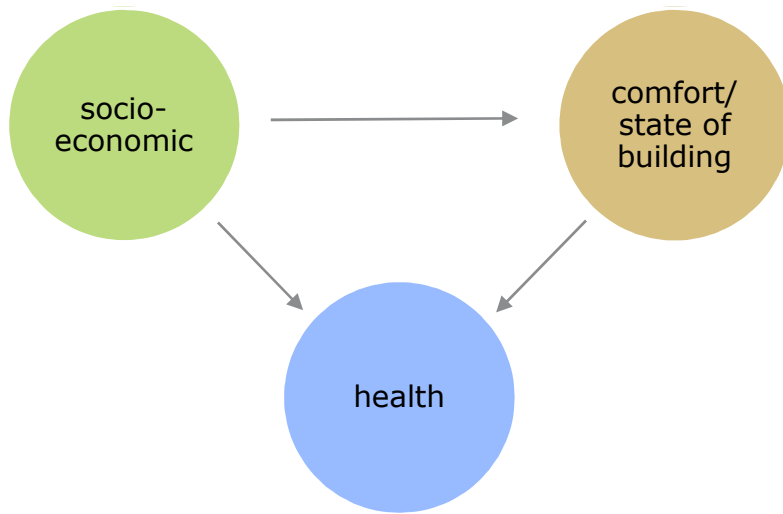
Figure 2: Focus areas of the study

Table 2 contains some examples of variables which were structured into the above-mentioned areas of interests:

Table 2: Variables structured according to the focus areas (Example)

Variables related to socio-economic	Variables related to health	Variables related to state of building
Total household gross income	Feeling downhearted/depressed	Type of building (SFH, RH, MFH)
Number of persons/household	General Health	Floor area
Monthly net income of household	Suffer from chronic illness	Number of rooms
Owner or tenant	Feeling down in the dumps	Leaky roof, dampness or rot in window frames
Arrear on utility bills	Feeling calm and peaceful	Satisfaction with accomodation/ dwelling
Pressure caused by living cost	Being Happy	
What can household afford	Satisfaction with living environment	Dwelling to dark, not enough light
Occupation of person with highest income	…	Pollution in neighbourhood of building

In order to filter out the most relevant variables an extensive series of correlation analysis was run between variables in the same basket and variables across baskets. Table 3 shows the identified variables which are relevant for this study:

Table 3: Selected variables per area of interest

Variables related to socio-economic factors	Variables related to health	Variables related to state of building
Ability to make ends meet	General Health	Size of dwelling in square metre
Ability to keep home adequately warm	Suffer from any a chronic (long-standing) illness or condition	Leaking roof, damp walls/floors/foundation, or rot in windows or floor
Tenure Status	Overall satisfaction with the dwelling	Problems with the dwelling: too dark, not enough light
Shortage of space in the dwelling		Pollution in neighbourhood of building
Ability to keep home adequately warm		Dwelling comfortably cool during summer time
		Dwelling comfortably warm during winter time
		Bath or shower in dwelling
		Indoor flushing toilet for sole use of household
		Adequate plumbing/water installations

Additionally, the following variables have been used to build subsets[5]: Dwelling type and Degree of Urbanisation. For the subset dwelling types in most cases „detached and semi-detached" buildings have been grouped to „single-family homes (SFH)", whereas multi-family homes < 10 units and ≥ 10 units have been grouped to „multi-family homes (MFH)". Degree of Urbanisation is structured into densely populated area (~urban), intermediate area (~suburban) and thinly populated areas (~rural).

As described above analyses have been conducted on „household" level or "personal" level, i.e percentages shown for households is not equivalent to shares of „population". Analysis on personal

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[5] The evaluation of the impact of these subsets is ongoing, not all subsets are taken up again in this report.

level has usually been conducted for „health" (and related analyses) and only includes adults (≥ 16 years) covering approx. 83% of Europe's population.

With selected variables, different types of transformations and analysis were conducted. A list of relevant variables with exact wording and original scaling according to EU-SILC as well as reclassified scales can be found below. Re-scaling of variables became necessary in order to have the same „direction" (e.g. from poor values to good values) of each scale. Grouping of scale values, e.g. transforming a 1-5 scale into a 1,2,3 scale was performed to get classes of results like „poor", „neutral" and „good". Sometimes by this aggregation and then only looking at groups reporting „rather poor" or „rather good" status leaves out one or more groups in between. This is why in some cases results do not add up to 100%.

Table 4: List of relevant variables with exact wording, original values according to EU-SILC and reclassified scale

Variable name	Code	Level of interview	Question/ Remark in interview on household or personal level (example)	Values	Reclassified/ grouped values
Tenure Status	HH021	Household level	Household by tenure status	1 Outright owner 2 Owner paying mortgage 3 Tenant or subtenant paying rent at prevailing or market rate 4 Accommodation is rented at a reduced rate 5 Accommodation is provided free	1 Owner/ Owner paying mortgage 2 Accommodation is rented at a reduced rate/ Accommodation is provided free 99 Tenant or subtenant paying rent at prevailing or market rate
Leaking roof, damp walls/floors/foundation or rot in window frames or floor	HH040	Household level	"Do you have any of the following problems with your dwelling / accommodation? − a leaking roof − damp walls/floors/foundation − rot in window frames or floor"	1 Yes 2 No	1 No 2 Yes
Ability to keep home adequately warm	HH050	Household level	"Can your household afford to keep its home adequately warm?"	1 Yes 2 No	1 Yes 2 No
Bath or shower in dwelling	HH081	Household level	"Is there a shower unit or a bathtub in your dwelling?"	1 Yes, for sole use 2 Yes, shared 3 No	1 Yes 2 No 99 Yes, shared
Indoor flushing toilet for sole use of household	HH091	Household level	"Is there an indoor flushing toilet in your dwelling?"	1 Yes, for sole use 2 Yes, shared 3 No	1 Yes 2 No 99 Yes, shared

Variable name	Code	Level of interview	Question/ Remark in interview on household or personal level (example)	Values	Reclassified/ grouped values
Ability to make ends meet	HS120	Household level	"Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?"	1 with great difficulty 2 with difficulty 3 with some difficulty 4 fairly easily 5 easily 6 very easily	1 easily/ very easily 2 with great difficulty/ with difficulty 99 with some difficulty/ fairly easily
Problems with the dwelling: too dark, not enough light	HS160	Household level	"Is your dwelling too dark, meaning is there not enough day-light coming through the windows?"	1 Yes 2 No	1 No 2 Yes
Noise from neighbours or from the street	HS170	Household level	"Do you have any of the following problems related to the place where you live? Too much noise in your dwelling from neighbours or from outside (traffic, business, factory, etc.)?"	1 Yes 2 No	1 No 2 Yes
Pollution, grime or other environmental problems	HS180	Household level	"Do you have any of the following problems related to the place where you live? - Pollution, grime or other environmental problems in the local area such as: smoke, dust, unpleasant smells or polluted water?"	1 Yes 2 No	1 No 2 Yes
General Health	PH010	Personal level	"How is your health in general?"	1 very good 2 good 3 fair 4 bad 5 very bad	1 Very good/ good 2 Bad/ Very bad 99 fair
Suffer from any chronic (long-standing) illness or condition	PH020	Personal level	"Do you have any longstanding illness or [longstanding] health problem?"	1 Yes 2 No	1 No 2 Yes

Variable name	Code	Level of interview	Question/ Remark in interview on household or personal level (example)	Values	Reclassified/ grouped values
Shortage of space in the dwelling	HC010	Household level	This variable refers to the respondent's opinion/feeling about shortage of space in dwelling.	1 Yes 2 No	1 Yes 2 No
Adequate plumbing/water installations	HC030	Household level	"The term *adequate* means sufficient to satisfy the general requirements/needs of the household. An installation which is permanently out of order is considered as no installation."	1 Yes 2 No	1 Yes 2 No
Adequate plumbing/water installations	HC040	Household level	"The term *adequate* means sufficient to satisfy the general requirements/needs of the household. An installation which is permanently out of order is considered as no installation."	1 Yes 2 No	1 Yes 2 No
Dwelling comfortably warm during winter time	HC060	Household level	"Is the heating system efficient enough to keep the dwelling warm?" or "Is the dwelling sufficiently insulated against the cold?"	1 Yes 2 No	1 Yes 2 No
Dwelling comfortably cool during summer time	HC070	Household level	"Is the cooling system efficient enough to keep the dwelling cool?" or "Is the dwelling sufficiently insulated against the warm?"	1 Yes 2 No	1 Yes 2 No
Overall satisfaction with the dwelling	HC080	Household level: Module	"The variable refers to the respondent's opinion/feeling about the degree of satisfaction with the in terms of meeting the household needs/opinion on the price, space, neighbourhood, distance to work, quality and other aspects."	1 Very dissatisfied 2 Dissatisfied 3 Satisfied 4 Very satisfied	1 Satisfied/ Very satisfied 2 Very dissatisfied/ Dissatisfied

3 Results and Conclusion

For the analysis, generally two groups within the population are compared to each other following this pattern:

- Group A = the group of people reporting that variable X (e.g. leaking roof) is in a poor condition (here: yes)
- Group B = the group of people reporting that variable X (e.g. leaking roof) is in a good condition (here: no)

A comparison between these groups is then done based on a second variable Y, e.g. general health (rather good/poor?), i.e. the percentage *within* Group A that reports general health is rather poor was compared to that percentage in Group B (see example below). Moreover, in some cases results are discerned between multi family- (MFH) and single family-homes (SFH). Approx. 58% of the EU population live in SFH (detached/semi-detached), where more than 110 million dwellings are located.

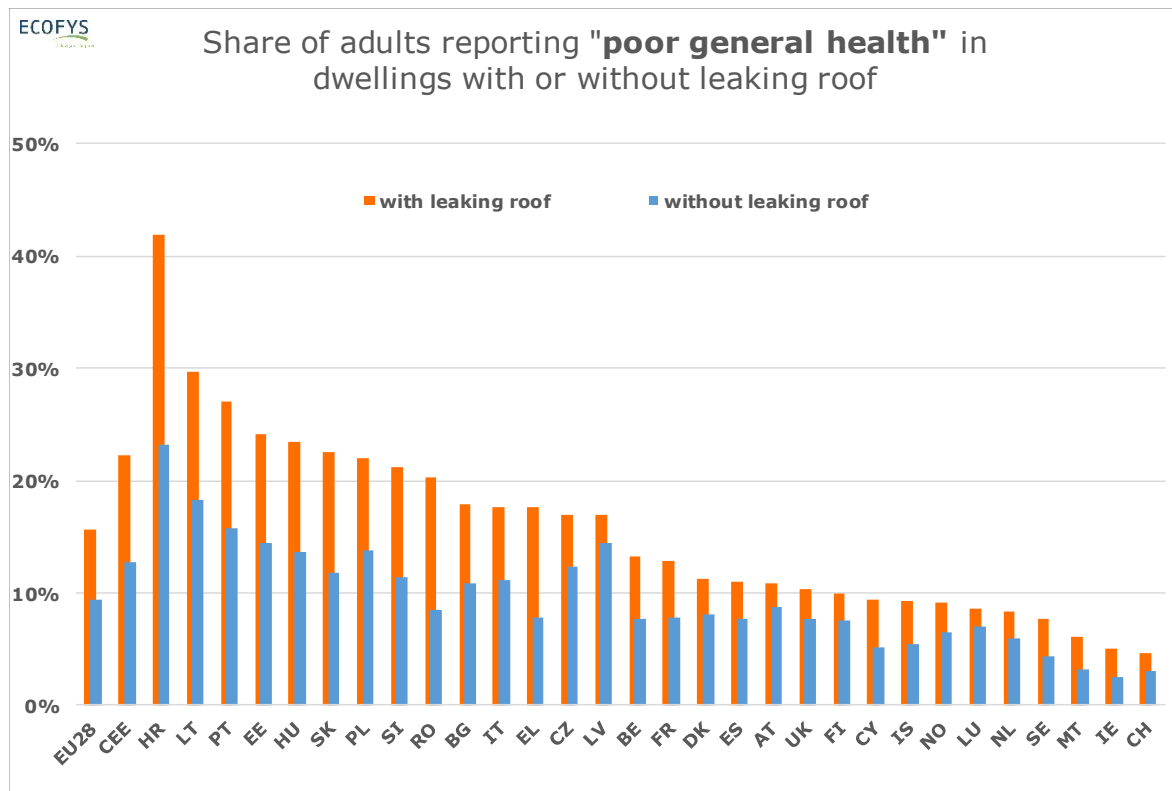In the following section extracts of the results of the analysis will be shown in detail.

Figure 3: Example of analysis pattern

3.1 Health in damp buildings

15% of EU households (more than 30 Mio; or more than 60 Mio adults) report to live in damp buildings (leaking roof, damp floor/walls /roof/ foundation etc.).

- When adults report no dampness 9% report poor health
- When adults report dampness 16% report poor health

It can be concluded that the probability that adults report poor health is significantly higher in homes with reported dampness; across the EU the probability is 1.7 times higher than with no dampness.
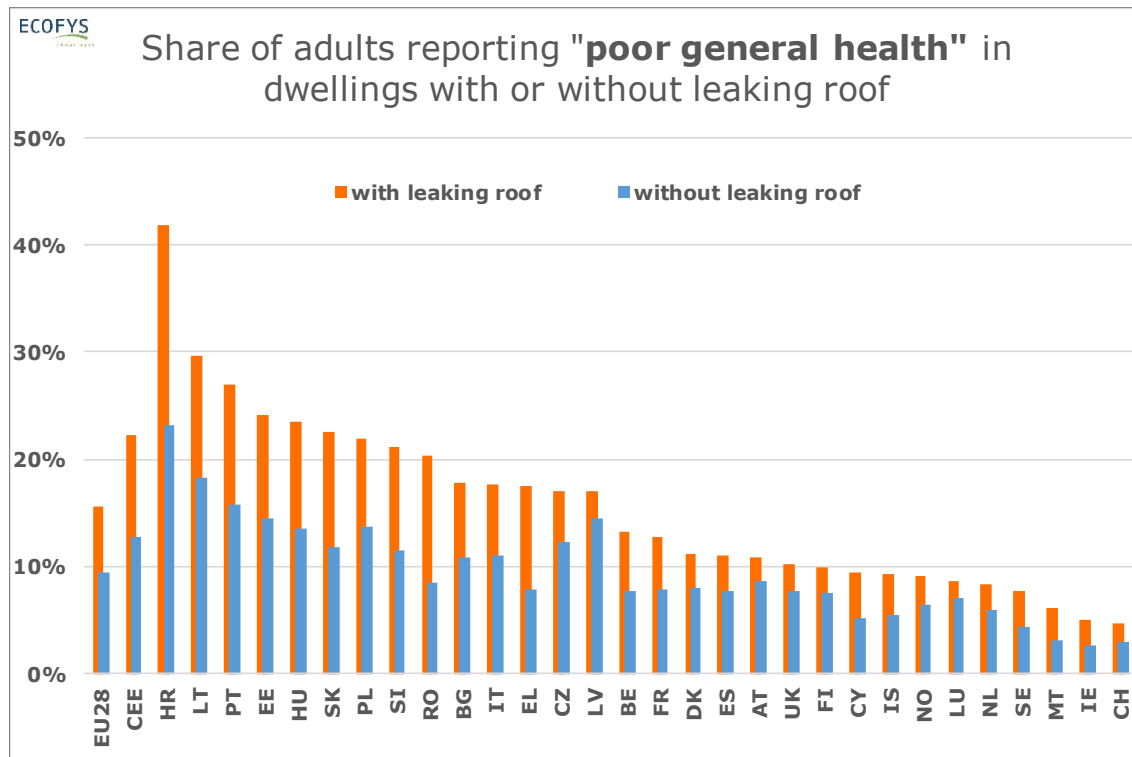
| Country	EU28	CEE	HR	LT	PT	EE	HU	SK	PL	SI	RO	BG	IT	EL	CZ	LV	BE	FR	DK	ES	AT	UK	FI	CY	IS	NO	LU	NL	SE	MT	IE	CH
without leaking roof (%)	9	13	23	18	16	14	14	12	14	11	8	11	11	8	12	14	8	8	8	8	9	8	8	5	5	6	7	6	4	3	3	3
with leaking roof (%)	16	22	42	30	27	24	23	23	22	21	20	18	18	18	17	17	13	13	11	11	11	10	10	9	9	9	9	8	8	6	5	5

Figure 4: Health status in damp buildings for EU28, CEE and its MS

3.2 Health in dark buildings

Approx. 6% of all EU households (14 million; or approx. 30 Mio adults) report a lack of daylight

- When adults report no lack of daylight 10% report poor health
- When adults report lack of daylight 15% report poor health

The probability that adults report bad health is significantly higher when a lack of daylight is perceived; across the EU this probability is 1.5 times the one when no lack of daylight is perceived. Altogether approx. 10% of all adults reporting poor health live in buildings lacking daylight, where only 7% of all adults live.

Share of adults reporting "**poor general health**" in dwellings with good or bad lighting conditions
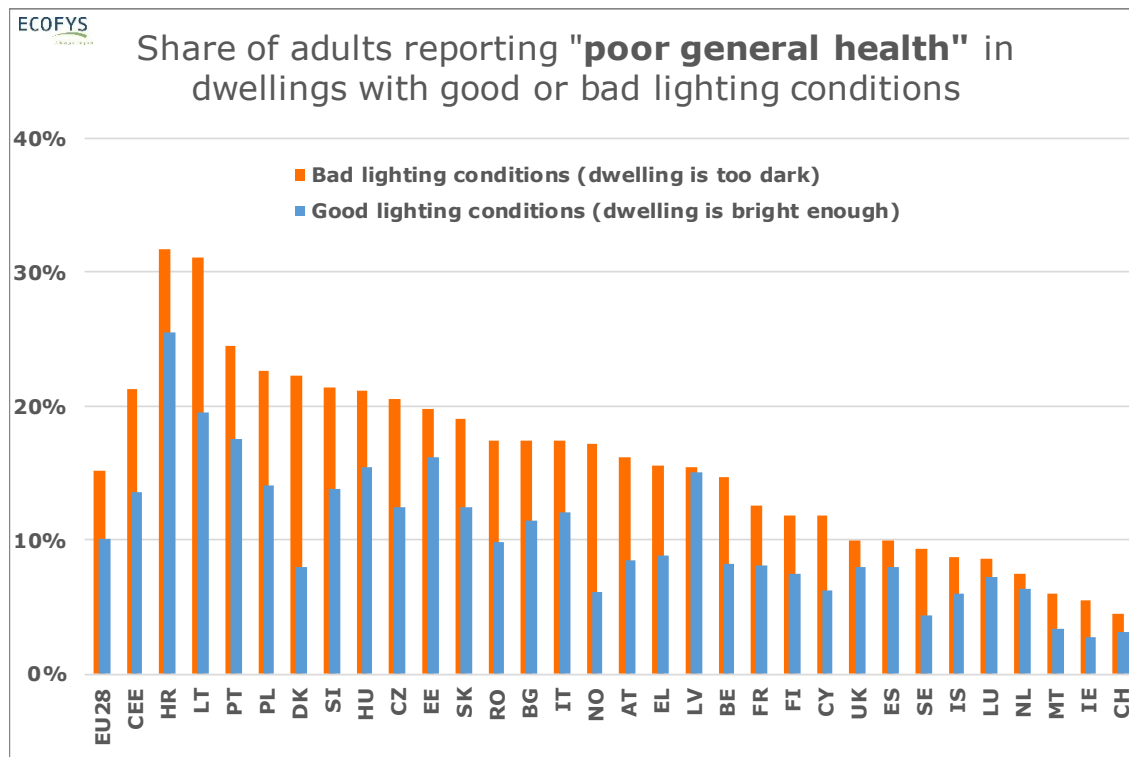
Country	EU28	CEE	HR	LT	PT	PL	DK	SI	HU	CZ	EE	SK	RO	BG	IT	NO	AT	EL	LV	BE	FR	FI	CY	UK	ES	SE	IS	LU	NL	MT	IE	CH
Good lighting (%)	10	14	26	19	18	14	8	14	15	13	16	12	10	11	12	6	9	9	15	8	8	7	6	8	8	4	6	7	6	3	3	3
Bad lighting (%)	15	21	32	31	25	23	22	21	21	21	20	19	17	17	17	17	16	16	15	15	13	12	12	10	10	9	9	9	7	6	5	5

Figure 5: Health status in dark building for EU28, CEE and its MS

3.3 Economic situation and dampness

Around 33% of adults (16.2 millions) report dampness when being unable to keep dwelling warm, but only 12% when being able to do so.

When adults report to be able to keep dwelling warm and live in …

- multi-family buildings: 12% report dampness
- Single-family buildings: 13% report dampness

When adults report to be unable to keep dwelling warm and live in …:

- multi-family buildings: 27% report dampness
- Single-family buildings: 37% report dampness

The probability that adults report dampness is 2.8 times higher when they are unable to keep the dwelling warm. In multi-family buildings this probability is around 2.5 times higher and in single-family buildings this probability is approx. 3 times the one when there are no difficulties.
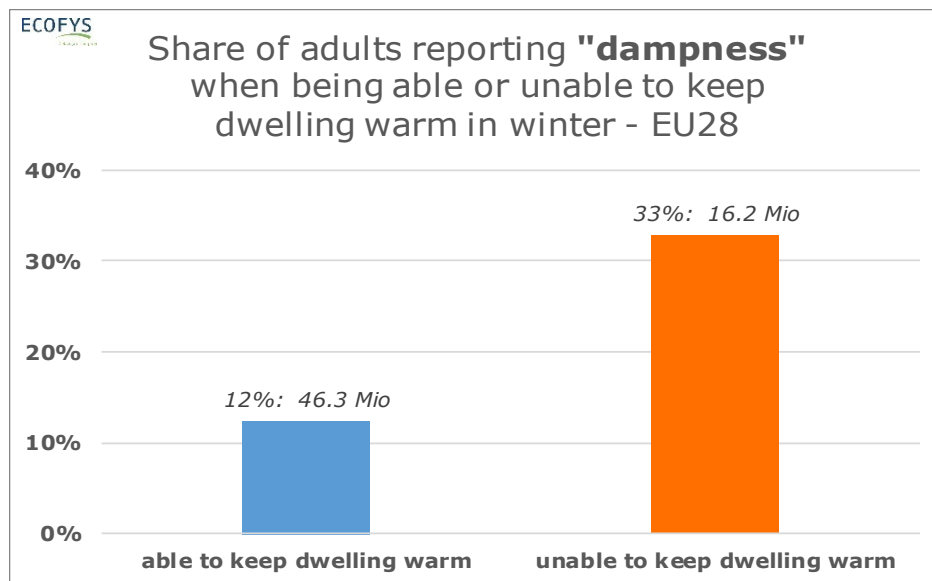

Figure 6: Ability to keep homes warm in winter when reporting dampness in winter (EU28)[6]

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[6] Additional numbers on status regarding damp buildings when being able or unable to keep dwelling warm for CEE and EU's member states can be found in the annex (see Figure 11)
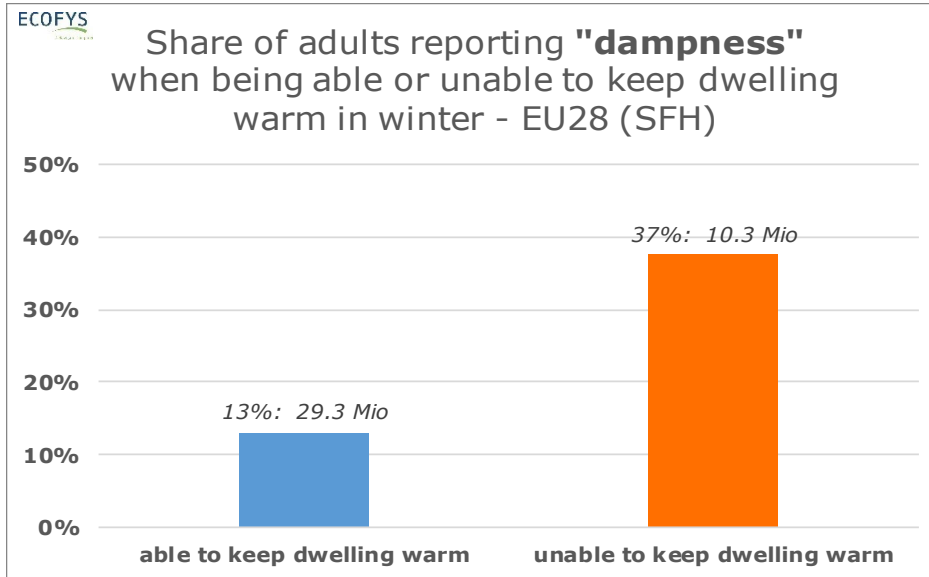
Figure 7: Ability to keep dwelling warm in winter when reporting dampness in single-family houses (EU28)
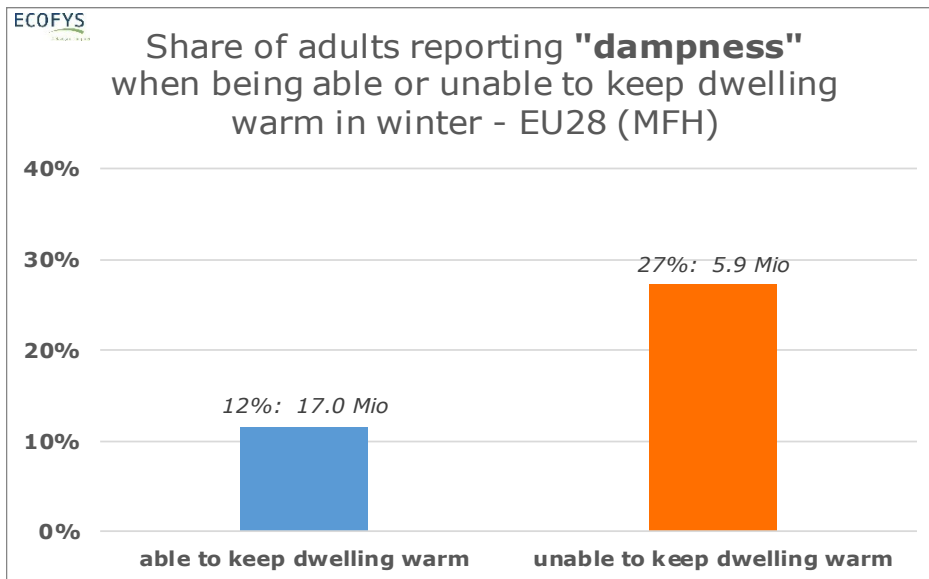

Figure 8: Ability to keep dwelling warm in winter when reporting dampness in multi-family houses (EU28)

3.4 Economic situation (ability to keep dwelling warm) and lack of daylight

A share of 13% of adults (6.4 millions) report lack of daylight when being unable to keep dwelling warm, but only 6% when being able to do so.

When adults report to be able to keep dwelling warm and live in …

- multi-family buildings: 6% report lack of daylight
- Single-family buildings: 5% report lack of daylight

When adults report to be unable to keep dwelling warm and live in …:

- multi-family buildings: 12% report lack of daylight
- Single-family buildings: 14% report lack of daylight

The probability that adults report lack of daylight is significantly higher when they are unable to keep dwelling warm. In multi-family buildings, this probability is around 2 times and in single-family buildings this probability is nearly 3 times the one when being able to keep the dwelling warm.
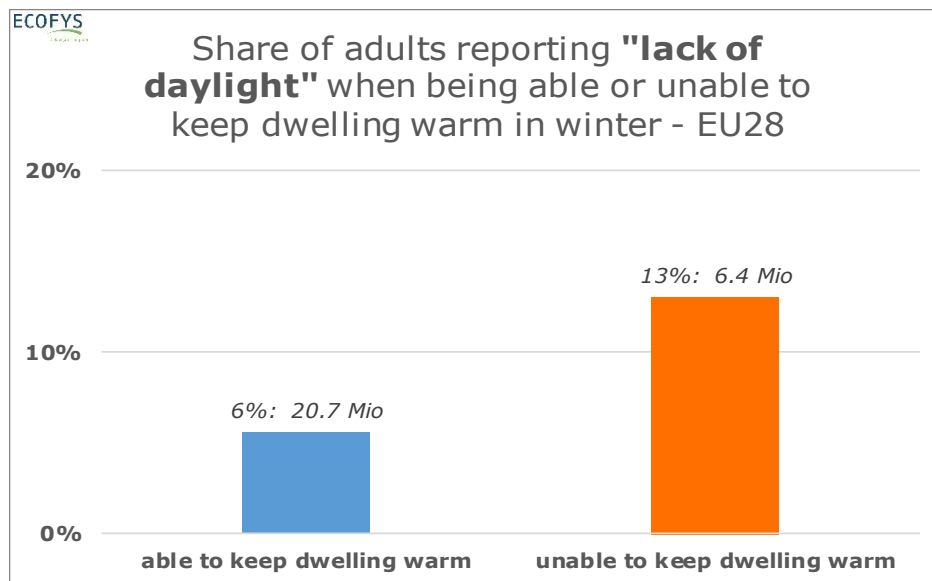

Figure 9: Ability to keep homes warm in winter when reporting lack of daylight in EU28[7]

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[7] Additional numbers on status regarding lack of daylights when being able or unable to keep dwelling warm for CEE and EU's member states can be found in the annex (see Figure 12)

3.5 Economic situation (ability to keep dwelling warm) and health

20% of adults (10 millions) report poor health when being unable to keep dwelling warm, but only 9% when being able to do so.

When adults report to be able to keep dwelling warm and live in …

- multi-family buildings: 9% report poor health
- Single-family buildings: 9% report poor health

When adults report to be unable to keep dwelling warm and live in …:

- multi-family buildings: 18% report poor health
- Single-family buildings: 21% report poor health

The probability that adults report poor health is significantly higher when they are unable to keep the dwelling warm. In multi-family buildings, this probability is approx. 2.3 times the one when being able to keep the dwelling warm, in single family buildings it is approx. 1.9 times.
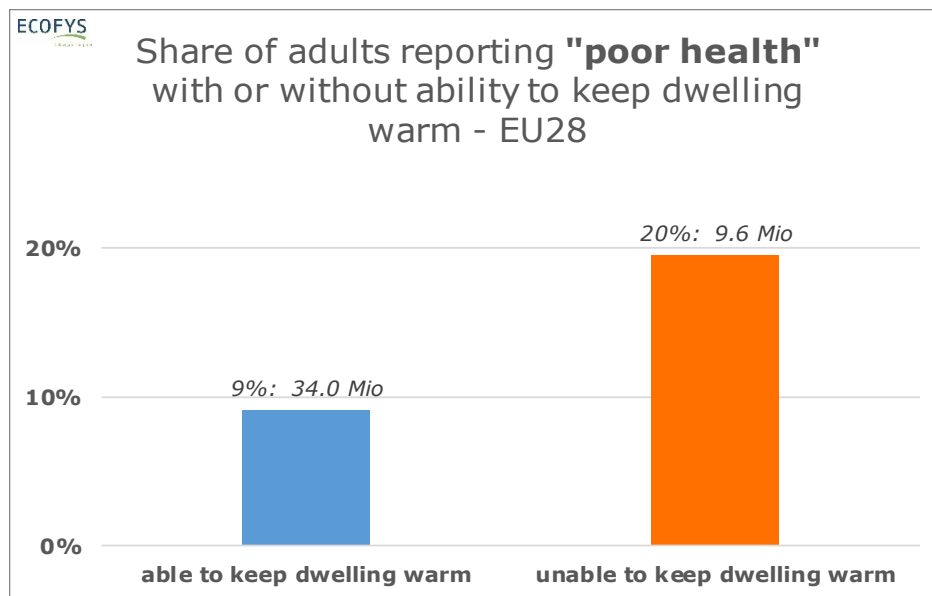

Figure 10: Share of adults with or without ability to keep dwelling warm in winter reporting poor health (EU28)[8]

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[8] Additional numbers for CEE and EU's member states can be found in the annex (see Figure 13)

4 Discussion

The first-time correlation of EU-SILC variables on quality of buildings and general health has shown very significant interdependencies, also showing in statistically very significant correlations. We observed that structural problems of the building like leaking roofs, damp walls (etc.), buildings' ability to provide comfortable temperatures in winter, lack of daylight seem to act as similarly strong accelerators and/or indicators for health problems. On average the relative share of adults reporting poor health increases by 50% up to a doubling when at least one of the above-mentioned deficiencies is reported compared to the group of people who do not perceive such deficiencies. First results on overheating in summer not presented here have a similar but less pronounced impact.

However, this study so far focused on a small selected sample of relevant variables influencing health. This is why on the one hand we found statistically highly significant correlations between the variables presented here. On the other hand like in the analyses of Thomson and Snell (2012) who focused their EU SILC analyses on energy poverty, the strengths of the correlations are moderate. This actually and of course means, that there are many other variables apart from the ones analysed here, also having a very significant impact on a person's perceived general health. Obviously personal *and* environmental variables determine health. Yet, we feel that buildings, which in this equation at least in Europe occupy 90% of the environmental variables' time are very much under-represented in today's overarching discussion about sustainability, which eventually is about shaping the world in a way that leads to sustained individual and societal health.

Further research is ongoing and needed considering additional variables such as health prevalence of building occupants for example due to age, occupancy status and income level, existing chronical illnesses, medical care system of respective country, etc. In this sense, a prediction model for health considering selected variables of building status, economic status and previous mentioned variables could be developed based on a logistic regression model. Additional multiple correlations could reveal insights on the impact of building status and economic status on health, but also more general insights into causes and effects within the triangle of clusters of variables underlying this study, see Figure 11.
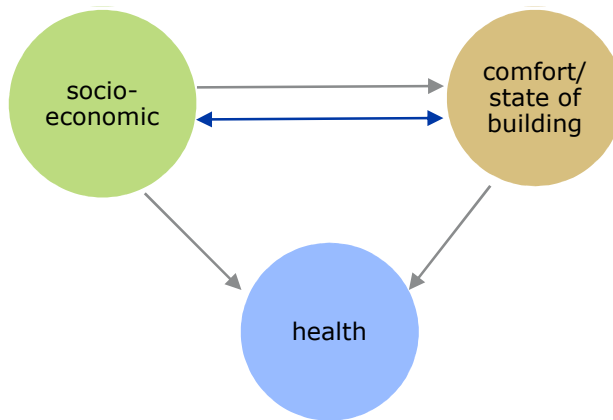
Figure 11: Research focus of Thomson & Snell 2012 (blue arrow) and this study (grey arrow)

The above-mentioned prediction model could follow the approach of Thomson and Snell (2012) for energy poverty which focused on the impact of socio-economic variables on state of building and vice versa. The study presented here, analysed the impact of socio-economic variables on state of building and health, as well as the impact of state of building on health, i.e. an additional aspect (health) has been included in the analysis. In Figure 11 the blue arrow indicates the research focus of Thomson and Snell (ibd.) while the grey arrow indicate the focus of this study.

In general, Thomson and Snell (ibd.) and Healy and Clinch (2002) conducted important and major research in the field of energy poverty using the EU-SILC data set. According to their studies energy poverty is defined as composition of the variables leaking roof, damp walls or rotten windows, ability to keep dwelling adequately warm and arrears on utility bills. Thomson and Snell (ibd.) state that these variables have been chosen "due to lack of European micro data concerning fuel expenditures"[9]. However, it should be discussed whether this definition is fully adequate since leaking roofs are mainly addressing the building status and not directly the economic status of occupants; additionally, other variables could be considered. Thus, this study focuses on a more intuitive definition of energy poverty as indicated in the introduction, i.e. the ability of a person to keep the dwelling adequately warm since this addresses only the economic situation of occupants.

Furthermore, studies are missing, that evaluate the development of the building and economic status as well as general health aspects over time to observe the impact of policy measures and to derive recommendations for priority areas for action. This can also reveal insights on causal chains between building status, economic situation and health aspects explaining energy poverty. However, it needs to be evaluated whether and which EU-SILC data are adequate to conduct this kind of analysis. For example, ad-hoc modules on health and housing condition provided by EU-SILC usually refer only to cross-sectional datasets, i.e. changes over time cannot be observed for the modules. Beside that

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[9] Thomson and Snell (2012): p. 566

cross-sectional data cannot be linked to previous years, i.e. ad-hoc modules from 2012 containing valuable information on housing condition and 2013 focusing on well-being cannot be combined on an individual level, which makes further analyses impossible.

Although EU-SILC already contains a large set of variables, it would be useful to add only few primary variables[10] on building status, such as year of construction, expenditures on fuels for heating/ cooling, size of dwelling (currently only in ad-hoc module available) or satisfaction with dwelling (currently only in ad-hoc module available) to allow much more meaningful insights. These and more variables could also be used to streamline the EU-SILC database with the EU Buildings Observatory [EU 2017], which monitors the energy performance of buildings across Europe. It mainly assesses improvements of the energy efficiency but also on the general quality of buildings and already includes some EU SILC variables like "leaking roofs, damp walls …". If EU-SILC and the observatory would be closer aligned, this could create a significant boost for valuable insights relative to the complex relationship between European's health and welfare, the EU building stock, EU energy and climate targets. Eventually these improved insights would allow more adequate policy measures and better monitoring of achieved progress.

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[10] These variables are collected every year.

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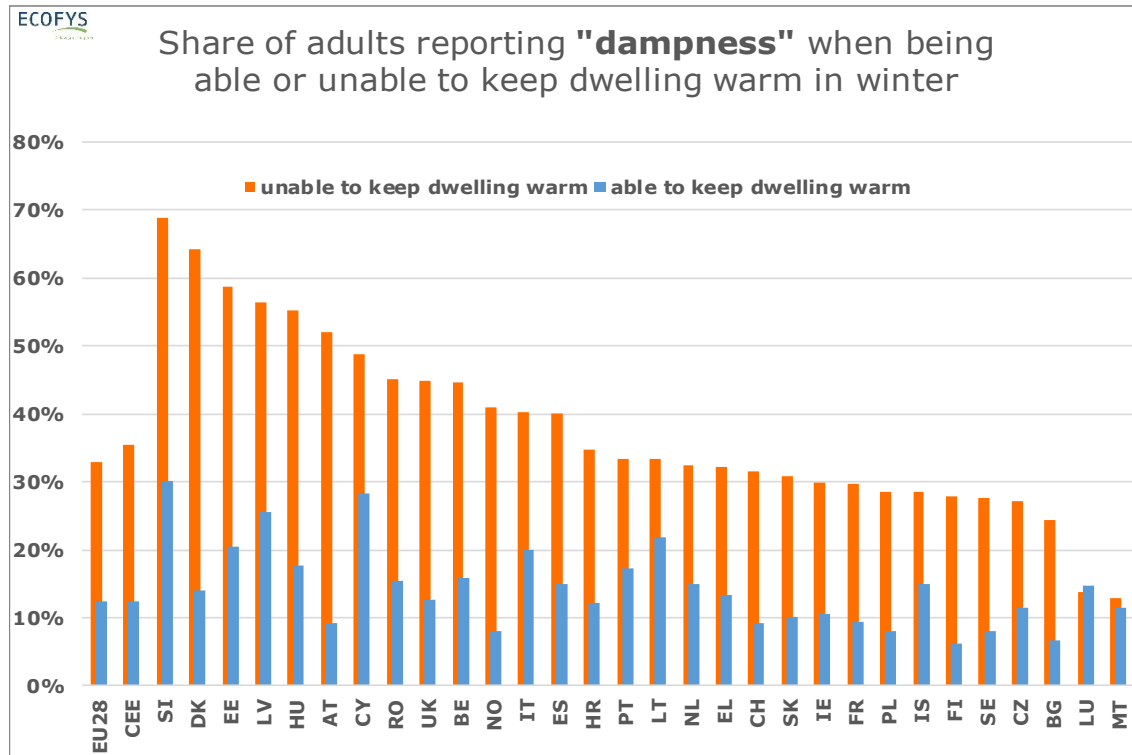Thomson, Harriet and Snell, Carolyn (2012): Quantifying the prevalence of fuel poverty across European Union. In: Energy Policy, 52 (2013), 563-572

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6 Annex

6.1 Economic situation and dampness for EU's member states

Share of adults reporting **"dampness"** when being able or unable to keep dwelling warm in winter

Country	EU28	CEE	SI	DK	EE	LV	HU	AT	CY	RO	UK	BE	NO	IT	ES	HR	PT	LT	NL	EL	CH	SK	IE	FR	PL	IS	FI	SE	CZ	BG	LU	MT
able to keep dwelling warm (%)	12	13	30	14	20	25	18	9	28	15	13	16	8	20	15	12	17	22	15	13	9	10	11	10	8	15	6	8	11	7	15	11
unable to keep dwelling warm (%)	33	35	69	64	59	56	55	52	49	45	45	45	41	40	40	35	33	33	32	32	32	31	30	30	29	28	28	28	27	24	14	13

Figure 12 Status regarding damp buildings when being able or unable to keep dwelling warm for EU28, CEE and its MS

6.2 Economic situation and lack of daylight for EU's member states
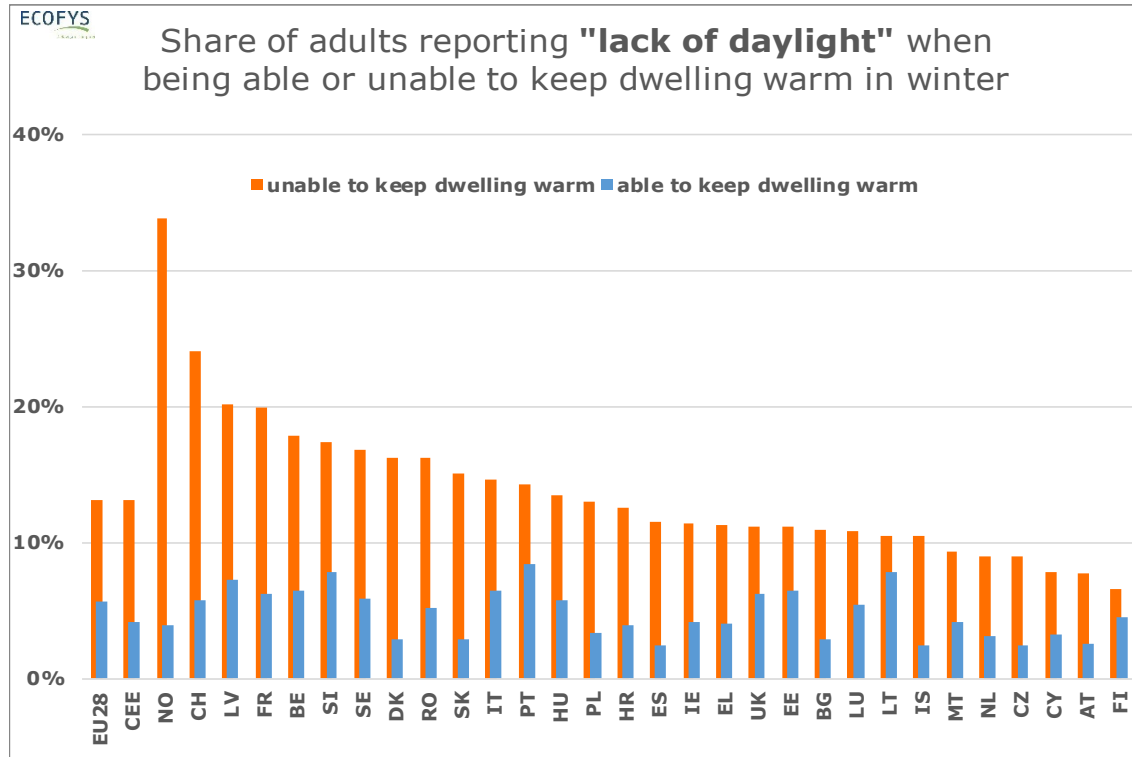
Country	EU28	CEE	NO	CH	LV	FR	BE	SI	SE	DK	RO	SK	IT	PT	HU	PL	HR	ES	IE	EL	UK	EE	BG	LU	LT	IS	MT	NL	CZ	CY	AT	FI
able to keep dwelling warm (%)	6	4	4	6	7	6	6	8	6	3	5	3	6	8	6	3	4	2	4	4	6	6	3	5	8	2	4	3	2	3	3	4
unable to keep dwelling warm (%)	13	13	34	24	20	20	18	17	17	16	16	15	15	14	13	13	13	12	11	11	11	11	11	11	11	10	9	9	9	8	8	7

Figure 13 Status regarding lack of daylights when being able or unable to keep dwelling warm for EU28, CEE and its MS

6.3 Economic situation and health in EU's member states

Share of adults reporting **"poor general health"** with or without ability to keep dwelling warm
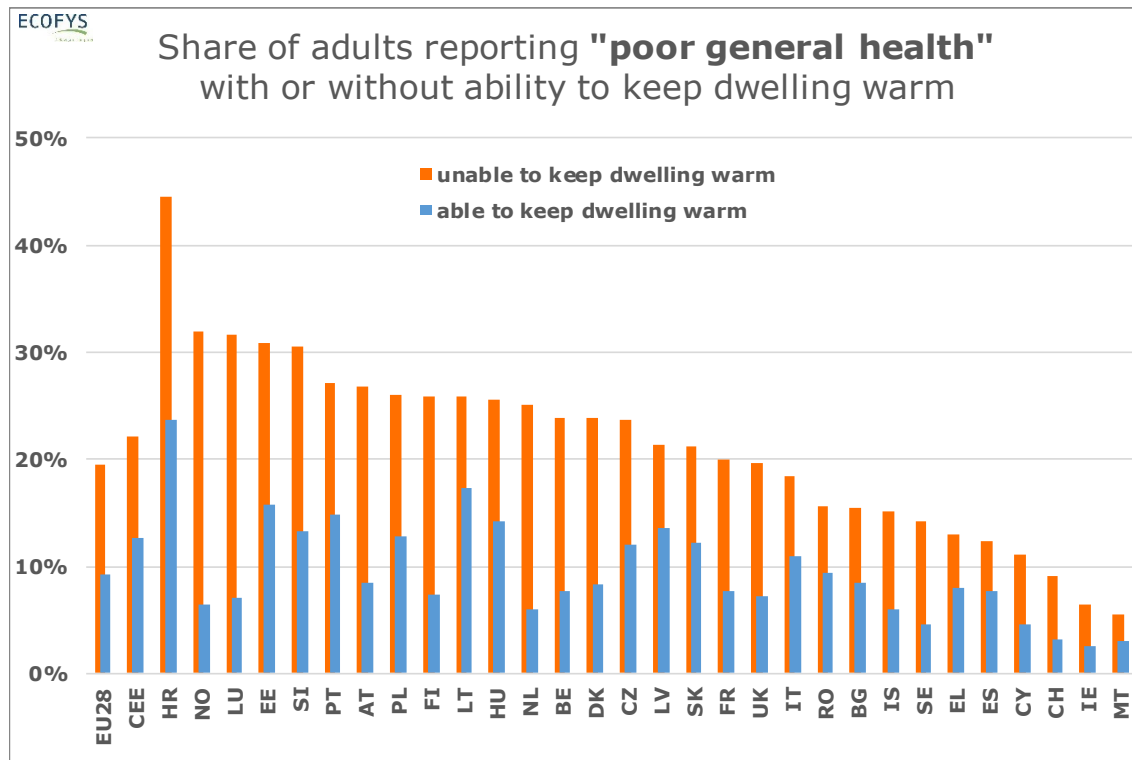
Country	EU28	CEE	HR	NO	LU	EE	SI	PT	AT	PL	FI	LT	HU	NL	BE	DK	CZ	LV	SK	FR	UK	IT	RO	BG	IS	SE	EL	ES	CY	CH	IE	MT
able to keep dwelling warm (%)	9	13	24	6	7	16	13	15	8	13	7	17	14	6	8	8	12	14	12	8	7	11	9	8	6	4	8	8	4	3	3	3
unable to keep dwelling warm (%)	20	22	45	32	32	31	31	27	27	26	26	26	26	25	24	24	24	21	21	20	20	18	16	15	15	14	13	12	11	9	6	6

Figure 14: Status regarding health when being able or unable to keep dwelling warm for EU28, CEE and its MS

6.4 Country Codes

AT	Austria	**HR**	Croatia	**RO**	Romania
BE	Belgium	**HU**	Hungary	**SE**	Sweden
BG	Bulgaria	**IE**	Ireland	**SI**	Slovenia
CY	Cyprus	**IT**	Italy	**SK**	Slovakia
CZ	Czech Republic	**LT**	Lithuania	**UK**	United Kingdom
DK	Denmark	**LU**	Luxembourg	**CH**	Switzerland
EE	Estonia	**LV**	Latvia	**IS**	Iceland
EL	Greece	**MT**	Malta	**NO**	Norway
ES	Spain	**NL**	Netherlands		
FI	Finland	**PL**	Poland	**EU28**	EU28 (without Germany who did not grant access to the data)
FR	France	**PT**	Portugal	**CEE**	Central & Eastern Europe (Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia)

6.5 Selected population and dwelling statistics (2012)

Country	Population	Population in SFH*	Estimated number of dwellings in SFH	Share of owners in SFH
EU 28	504,060,000	58%	113,000,000	83%
Austria	8,410,000	56%	1,900,000	78%
Belgium	11,090,000	79%	3,400,000	84%
Bulgaria	7,330,000	57%	1,600,000	88%
Croatia	4,280,000	79%	1,300,000	93%
Cyprus	860,000	75%	210,000	75%
Czech Republic	10,510,000	47%	2,000,000	90%
Denmark	5,580,000	71%	1,500,000	88%
Estonia	1,330,000	34%	160,000	85%
Greece	11,090,000	40%	1,800,000	90%
Spain	46,820,000	35%	6,000,000	87%
Finland	5,400,000	66%	1,300,000	90%
France	65,280,000	67%	17,000,000	82%
Hungary	9,930,000	68%	2,500,000	95%
Ireland	4,580,000	95%	1,700,000	74%
Italy	59,390,000	49%	11,400,000	83%
Lithuania	3,000,000	42%	500,000	95%

Luxembourg	520,000	66%	120,000	91%
Latvia	2,040,000	35%	270,000	90%
Malta	420,000	49%	70,000	85%
Netherlands	16,730,000	76%	4,700,000	81%
Poland	38,060,000	54%	6,400,000	92%
Portugal	10,540,000	58%	2,400,000	82%
Romania	20,100,000	62%	5,200,000	98%
Sweden	9,480,000	60%	2,000,000	94%
Slovenia	2,060,000	71%	450,000	84%
Slovakia	5,400,000	52%	900,000	96%
United Kingdom	63,500,000	85%	22,000,000	74%
(Germany)	80,330,000	45%	14,000,000	
SFH = detached and semi-detached single family homes				