Health and equity consequences of energy vulnerability in Europe

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Energy vulnerability in housing
=> problems to keep home warm
Fuel poverty is a big problem:

- Overall prevalence in the LARES survey: 37%
- Largest problems were identified in (1) Eastern European and (2) Southern European cities.
- Bratislava: 49%
WHO LARES (2003): Perception of too cold temperatures in winter time

In Eastern European cities, 45% of the poorest households report cold temperature in winter versus 26% of the most well-off households.

In Western European cities, 25% of the poorest households report cold temperature in winter versus 17% of the most well-off households.
Increase of energy prices:
Harmonised indices of consumer prices
(average increase, 2005 = 100)

EU27 - electricity, gas and fuels
EU27 - housing, water, power, heat
EU27 - housing rental only

Eurostat data
Increase of energy prices:
Harmonised indices of electricity, gas and fuels (average increase, 2005 = 100)

Eurostat data
Inability to afford keeping home warm (2012)

EQLS2012 data
“Fuel vulnerability” expressed by “Inability to keep home adequately warm” (SILC data)
“Fuel vulnerability” expressed by “Inability to keep home adequately warm” (SILC data)
Energy vulnerability in housing and health
The health impacts of...

Energy vulnerability => Cold

Cause: Social
Mechanism: Housing
Outcome: Health

World Health Organization
Health effects of indoor cold

- Respiratory: acute infectious diseases, enhanced asthma, chronic obstructive pulmonary disease
- Cardiovascular: coronary and other heart disease, myocardial infarct, cerebral vascular incidents, circulation problems
- Injuries: hypothermia, falls and accidents

⇒ leading to increased mortality rates:

- Every winter, there are thousands of cold-related excess deaths in Europe.
- The relative excess mortality increases with age
Ability to afford keeping home warm and self-reported health

EQLS2012 data
WHO Frankfurt Study

Self-reported occurrence of respiratory diseases and asthma during the winter (per dwelling temperature)

- Asthma (n=29)
- Cold (n=135)
- Acute bronchitis (n=21)
- Sinusitis (n=15)

Legend:
- Up to 19.5°C
- 19.51°C to 22°C
- Above 22°C
## Selected health impacts of thermal insulation in NZ

<table>
<thead>
<tr>
<th>Effect</th>
<th>Intervention group</th>
<th>Control group</th>
<th>Adjusted Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad self-reported health</td>
<td>~15%</td>
<td>~22.4%</td>
<td>0.5</td>
</tr>
<tr>
<td>Cold / flu</td>
<td>~57%</td>
<td>~67%</td>
<td>0.44</td>
</tr>
<tr>
<td>Low level of vitality (SF36)</td>
<td>~30%</td>
<td>~41%</td>
<td>0.51</td>
</tr>
<tr>
<td>Sleep disturbance by cough (in children)</td>
<td>~27%</td>
<td>~38%</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Source: Howden-Chapman 2007
Mortality (all causes) in relation to the lowest point in summer

- BLUE LINE: for coldest dwellings
- RED LINE: for hottest dwellings

UK estimation: up to 25% of Excess Winter Mortality may be due to housing

Source: Wilkinson et al. (2001)
Overall housing EBD assessment

Environmental burden of disease associated with inadequate housing

A method guide to the quantification of health effects of selected housing risks in the WHO European Region

Matthias Braubach
David E. Jacobs
David Oramdy

Indoor cold

Excess winter mortality
0.15% increased mortality per °C

11 European countries:
38 203 excess winter deaths (12.8 per 100 000)
Cold, fuel vulnerability and lack of heating also affects…

- Wellbeing and comfort
- Mental health
- Perception of home as a “safe harbour”
- Use of the home
- Social behaviour (inviting friends etc.)
- Budget available for other expenses (food, clothing, transport…)

- Use of harmful fuel types (coal, wood, etc.) => Greek example!
- Reduction of ventilation rates
Ability to afford keeping home warm and mental wellbeing (WHO_5 tool)

EQLS2012 data

Difference: 11-12
Difference: 4-17

Yes, can afford if wanted
No, cannot afford it
Warm Front Campaign effects

Before *Warm Front*: spatial shrink

After *Warm Front*: using the whole house
Warm Front results

Mental health increases with bedroom temperature

Odds ratio for mental health (GHQ12 < 4)

Standardised bedroom temperature/degrees Celsius
Cold-specific health vulnerability

- Elderly
- Infants, children and teenagers
- Persons fallen ill from disease
- People with chronic diseases or physical or mental limitations
- People using certain medications
- Malnourished
Inequalities in thermal comfort and affordability to keep homes warm
Housing conditions and social status (2000)

Data for 2000: Eurostat NewCronos
Fig. 15. Prevalence of inability to keep the home warm by relative poverty level (2009)

Source: data from EU-SILC, 2011.
Inability to afford keeping home warm by at risk of poverty status

EQLS2012 data
Inability to afford keeping home warm by income

EQLS2012 data
Being affected by the crisis: what effects?

Coping strategies employed by households

% of respondents

Active
Private safety nets
Public safety nets
Passive (staple food, and health expend.)
Passive (other expend.)

- Affected a great deal of a fair amount
- Not affected by crisis

Source: LiTS II (2010).

Source: EBRD, 2011
Being affected by the crisis: effect distribution

Proportion of affected households using various coping strategies, by subregion

Source: EBRD, 2011

Western Europe

New EU member States*

South-eastern Europe

Belarus – Moldova – Ukraine

South Caucasus

Turkey

Russia

Central Asia

Transition average

Legend:

- Active
- Private safety nets
- Public safety nets
- Reduced staple food and health expenditure
- Reduced other expenditure
Equity impacts beyond income and poverty
Inability to afford keeping home warm by social exclusion

EQLS2012 data
LARES: Heating-related expenses in elderly households (related to income)

- **Eastern Cities**:
  - More than 10%: 25.6%
  - Up to 10%: 74.4%

- **Western Cities**:
  - More than 10%: 17.8%
  - Up to 10%: 82.2%
Inability to keep home adequately warm in Poland by sociodemographic characteristics

- Single persons with kids at poverty risk: 49.3%
- Singles at poverty risk: 42.1%
- Single elderly at poverty risk: 41.9%
- Pop at risk of poverty: 27.6%
- Single persons with kid(s): 25.4%
- Single elderly: 23.7%
- Two adults with three 3 kids or more: 23.1%
- Single persons: 21.8%
- Two adults with three 3 kids or more at poverty risk: 15.2%
- Total pop: 13.2%
- Pop without poverty risk: 10.3%
- Two adults, one child without poverty risk: 6.4%

World Health Organization
Regional Office for Europe
Distributional effects of policies trigger inequity: The example of thermal insulation campaigns
Conclusion

• Inadequate housing has severe morbidity / mortality effects
• Thermal comfort is a key issue of inequality in housing
• Triggers for lack of thermal comfort are
  => Low-quality housing / ineffective heating => risk of cold
  => High energy price level, low incomes => risk of cold
  => Household type (and probably tenure) => risk of cold
• Indoor cold => physical & mental health / wellbeing effects
• Relative contributions of “vulnerable building”, “energy vulnerability” or “demographic vulnerability” to cold-related health effects are impossible to assess
• All vulnerabilities are relevant and interconnected
• Equity issues in Central/Eastern Europe are significant
Thank you!

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