Employment Impacts of a Large-Scale Deep Building Energy Retrofit Programme
the case of Hungary

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Key findings: energy and CO2 savings

- Up to 87% of Hungarian heating/cooling energy use and the corresponding CO2 emissions can be avoided by a wide-spread deep retrofit programme (saving 75 – 90% of e)
  - A suboptimal scenario (saving only 40% of energy use) locks in 45% of 2010 building heating-related emissions at the end of the programme
  - This makes medium-term national emission reduction targets (75 – 85%) very difficult and expensive to achieve
Energy and CO2 emission reductions until 2050: 45% locked in by suboptimal renovations

Final Heating Energy Use - Residential and Public Buildings
Including Buildings Built After 2010

Energy and CO2 emission reductions until 2050:
45% locked in by suboptimal renovations

85% savings
Key findings: fuel poverty and energy security

- Since passive buildings need little if any heating, the program eradicates fuel poverty.
- A deep retrofit programme can reduce significantly Hungary’s natural gas import dependence (in % of 2006-2008 average NG imports):
  - Up to 39% annual import needs by 2030
  - Up to 59% of the January import needs (the most critical month for energy security)
- A suboptimal retrofit programme would lack the same strength
  - Only 10% of natural gas imports saved in 2030
  - Peak (January) savings reduced to 18%
Employment benefits

- **Up to 131,000 net jobs created** by 2020 in Hungary alone, including the losses in the energy supply sector
  - This value is **184,000** in 2015
  - 38% of this value: indirect and induced effects in other sectors than construction
  - Suboptimal scenario: 43,000 jobs

- Deep renovation activities are much more labour intensive than other economic recovery activities
  - e.g. 5 times more jobs are created than with the same investments in road construction

- Jobs are mostly distributed evenly throughout the country
  - Fostering regional development
Recommendations

- Similarly significant employment, energy saving, climate, fuel poverty and energy security benefits are expected in all EU MSs by wide-scale, deep renovation programs.

- However, governments should not support suboptimal renovations (saving less than app. 70% of energy) to avoid the lock-in effect.
Thank you for your attention

They just keep promising this global warming; but they won’t keep this promise of theirs either…

(with permission of HVG)

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Supplementary slides
Summary: Recommendation

- Recommendation: deep renovation programme with more gradual implementation
  - App. 8 million sqm per year, 2.3% of the floor area, 100,000 dwellings-equivalent
  - 52,000 jobs created by 2020
  - Initial costs peak at 2 Bln EUR per year, and are reduced to less than 1 Bln EUR in the final phases of the programme
  - Take advantage of the initial learning period
- App. 1 billion Euros public funds per year could potentially be made available
  - Partly from EU funding
  - Partly from redirecting current energy subsidies
- Pay-as-you-save schemes and other innovative financing schemes also relieve the financing burden
- More gradual implementation means less shock for the labour market
- For all scenarios:
  - Employment created is long-term
  - New jobs will be distributed across the country
- Public administration should be heavily involved
  - To the achievement of deep savings through deep renovations
  - To reduce the risks of supply bottlenecks
### Scenarios considered

<table>
<thead>
<tr>
<th>Name</th>
<th>Scenario</th>
<th>Retrofit rate</th>
<th>Type of retrofits</th>
<th>Forecasted completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S$-<strong>BASE</strong></td>
<td>Baseline scenario: no intervention</td>
<td>1.3% of the total building stock (around 4.5 million square metres a year, equivalent to 55,000 dwellings)</td>
<td>“Business as usual” retrofits</td>
<td>N/A</td>
</tr>
<tr>
<td>$S$-<strong>DEEP1</strong></td>
<td>Deep retrofit with fast implementation rate</td>
<td>Around 20 million square metres (equivalent to 5.7% of floor area, 250,000 dwellings) per year</td>
<td>Deep retrofits</td>
<td>17-18 years</td>
</tr>
<tr>
<td>$S$-<strong>DEEP2</strong></td>
<td>Deep retrofit with medium implementation rate</td>
<td>Around 12 million square metres (equivalent to 3.4% of floor area, 150,000 dwellings) per year</td>
<td>Deep retrofits</td>
<td>26-28 years</td>
</tr>
<tr>
<td>$S$-<strong>DEEP3</strong></td>
<td>Deep retrofit with slow implementation rate</td>
<td>Around 8 million square metres (equivalent to 2.3% of floor area, 100,000 dwellings) per year</td>
<td>Deep retrofits</td>
<td>39-41 years</td>
</tr>
<tr>
<td>$S$-<strong>SUB</strong></td>
<td>Suboptimal retrofit with medium implementation rate</td>
<td>Around 12 million square metres (equivalent to 3.4% of floor area, 150,000 dwellings) per year</td>
<td>Suboptimal retrofits</td>
<td>26-28 years</td>
</tr>
</tbody>
</table>

#### Energy efficiency gains (% of kWh/sqm/y)

- **S**-**BASE**: 1%
- **S**-**DEEP1**: 3%
- **S**-**DEEP2**: 6%
- **S**-**DEEP3**: 9%
- **S**-**SUB**: 5%

#### Retrofit Rate (% of building stock)

- **S**-**BASE**: 1%
- **S**-**DEEP1**: 50%
- **S**-**DEEP2**: 90%
- **S**-**DEEP3**: 10%
- **S**-**SUB**: 6%
Key findings – Employment impacts

- Employment benefits
  - Up to 131,000 net jobs created by 2020, including the losses in the energy supply sector
    - This value is 184,000 in 2015
    - 38% of this value: indirect and induced effects in other sectors than construction
  - Suboptimal scenario: 43,000 jobs
- Deep renovation activities are much more labour intensive than other economic recovery activities
  - e.g. 5 times more jobs are created than with the same investments in road construction
- The corresponding investment needs are also higher
  - For the most ambitious programme (5.7% floor area/yr): 4.5 Bln EUR/year initially, and 2.8 Bln EUR/year towards the end
  - For the more gradual programme: 2 bln/year (2.3% floor area renovated/year), declining to 1 bln/year
- Employment effects are geographically distributed in the country and durable (the programme lasts 20-30 years)
Total net employment impacts: snapshot in 2020

- The figure summarises direct, indirect and induced impacts
  - Up to 131,000 jobs are created by 2020 with the most ambitious programme
  - 52,000 jobs created by 2020 with the more gradual programme