Employment effects of building retrofits in Hungary and Poland: A critical assessment

CROSSROADS FOR CLIMATE CHANGE AND SUSTAINABLE ENERGY POLICY

CENTRAL EUROPEAN UNIVERSITY

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Capturing the multiple benefits of energy efficiency
Roundtable on macroeconomic impacts
BACKGROUND
The projects in a nutshell

- **Objective**: to gauge the net employment impacts of a large-scale deep building energy-efficiency renovation programme in Poland and Hungary

- **Time framework**:
  - Hungary: June 2010 / Poland: spring 2012

- **Scope of the research**:
  - **Type of buildings**: residential and public buildings
  - **Type of renovation**: reduce demand for space and water heating (no appliances, space heating only in Hungary)
  - **Employment effects**: direct, indirect and induced

- **Expected results**: bottom-up modelling + I/O analysis
  - Net employment impacts and non-employment results
  - Assessment and quantification of additional CO-BENEFITS

- **Impact on Hungary’s policies**, unclear for Poland
MID scenario = faluház
50% energy savings
DEEP scenarios = SOLANOVA

85% energy savings
CRITICAL ASSESSMENT OF KEY ASSUMPTIONS AND RESULTS
Cost of the retrofits

Average renovation costs for all types of buildings (with learning factor)

Learning curve: no data on shape of the curve and intensity of costs reduction
Cost categories not considered

- **Transaction costs**
  - Informing/liasing with owners, facilitating agreements
  - 10% retrofit costs (Radian, 2010)
  - Quality checks, access to credit, temporary relocation during retrofit, administration costs

- **2nd round retrofit costs**
  - Elements of deep (*passive*) retrofits replaced after 15 (fans in air renewal systems) to 50 years (insulation)

- **Higher implementation costs** result in larger employment creation potentials
Limitations: Input/Output analysis

- **I/O tables = snapshot of the economy (2005)**
  - Fixed coefficients in transaction tables
  - Uncertainty about the mid to long-term evolution of the structure of a national economy

- **Dynamic effects not properly captured**
  - e.g., shortages in the supply of labour and material costs may increase the price of production factors (cost of the retrofits)

- **Uncertainty about indirect employment effects**
  - Local production vs. import of retrofit materials
Results - net employment impacts
Snapshot in 2020 (Hungary)

Total employment impacts for 2020

-40
-20
0
20
40
60
80
100
120
140
160
S-BASE S-DEEP1 S-DEEP2 S-DEEP3 ...

Net job creation potential

Induced impacts from energy savings
Induced impacts from lost jobs created by reduced demand for energy
Indirect impacts from reduced demand for energy
Direct impacts on energy supply sector
Induced impacts from additional jobs created by investments in construction
Indirect impacts from investments in construction
Direct impacts on construction sector
Total impacts

Thousands FTE

European Climate Foundation

3CSEP
Results - net employment impacts
Snapshot in 2020 (Poland)

Forecasted layoffs in the mining and quarrying sector: max. 6% of gross job losses: RESISTANCE!
Results - net employment impacts
Short and medium-term view (Poland)

Total employment impacts - short and medium term

- Ramp-up period
- Learning curve
  Productivity increases: costs and labour intensities decrease
- Negative net employment impacts in the mid term
  Permanent destruction of employment in energy-related sectors
Results - net employment impacts
Short and medium-term view (Hungary)

Total employment impacts - short and medium term

ADDITIONAL job creation potential vs. BASE scenario
The issue of additionality

- Are retrofits simply **reallocating** existing labour?
  - **Financing** as a key element – *pay-as-you-save*
    - **Reallocation** of existing subsidies and EU funds
    - **Additional external funds** (Green Investment Scheme)

- If the **same amount of resources** would have been **directed** to an **alternative investment**, how many jobs would have been created?
  - … or are **additional jobs being created** vs. a best-case alternative (e.g., transport infrastructure, renewables)?
CONCLUSIONS
Conclusions

- To what extent retrofits **create additional jobs**?
  - Financing from external resources (GIS)

- Are building retrofits **job creation strategies**?
  - **Key policy motivations**: energy savings, reduced GHG and non-GHG emissions, energy security, fuel poverty, etc.
  - ...plus they create **more jobs** than what they destroy

- **Stable implementation framework** and **public involvement** required
  - for the **learning curve** to deliver cost reductions;
  - for **avoiding the export** of manufacturing jobs;
  - to minimise **transaction** and **ancillary costs**.
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Thank you for your attention

http://3csep.ceu.hu/
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Learning curve – reality check

Additional costs of building a new passive terraced house

Harvey, 2010,
Comparison with transport infrastructure investments

Direct employment impacts for a specific year (2020) compared with transport infrastructural developments

High labour intensity (FTE per million EUR) of building retrofit activities

Scenarios:
- S-BASE
- S-DEEP1
- S-DEEP2
- S-DEEP3
- S-SUB

Direct impacts of retrofit programme
Direct investments for same transport infrastructural developments
Employment effects: overview

- **BUILDINGS RETROFITTING programme**
  - Job losses to **ENERGY gen. & distr. sector**
  - Additional disposable income to **HOUSEHOLDS**
  - Job gains to **CONSTRUCTION sector**

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  - Job gains to **ENERGY gen. & distr. sector**
  - Job gains to **SUPPLY-CHAIN related sectors**

- **ENERGY gen. & distr. sector**
  - Job losses to **SUPPLY-CHAIN related sectors**

- **SUPPLY-CHAIN related sectors**
  - Job losses to **OTHER sectors**
  - Job losses to **CONSTRUCTION sector**

- **OTHER sectors**
  - Job gains to **SUPPLY-CHAIN related sectors**

- **HOUSEHOLDS**
  - Additional spending and job gains to **OTHER sectors**

- **DIRECT effects**
  - **INDIRECT effects**
  - **INDUCED effects**