

Obligations in the existing housing stock: who pays the bill?

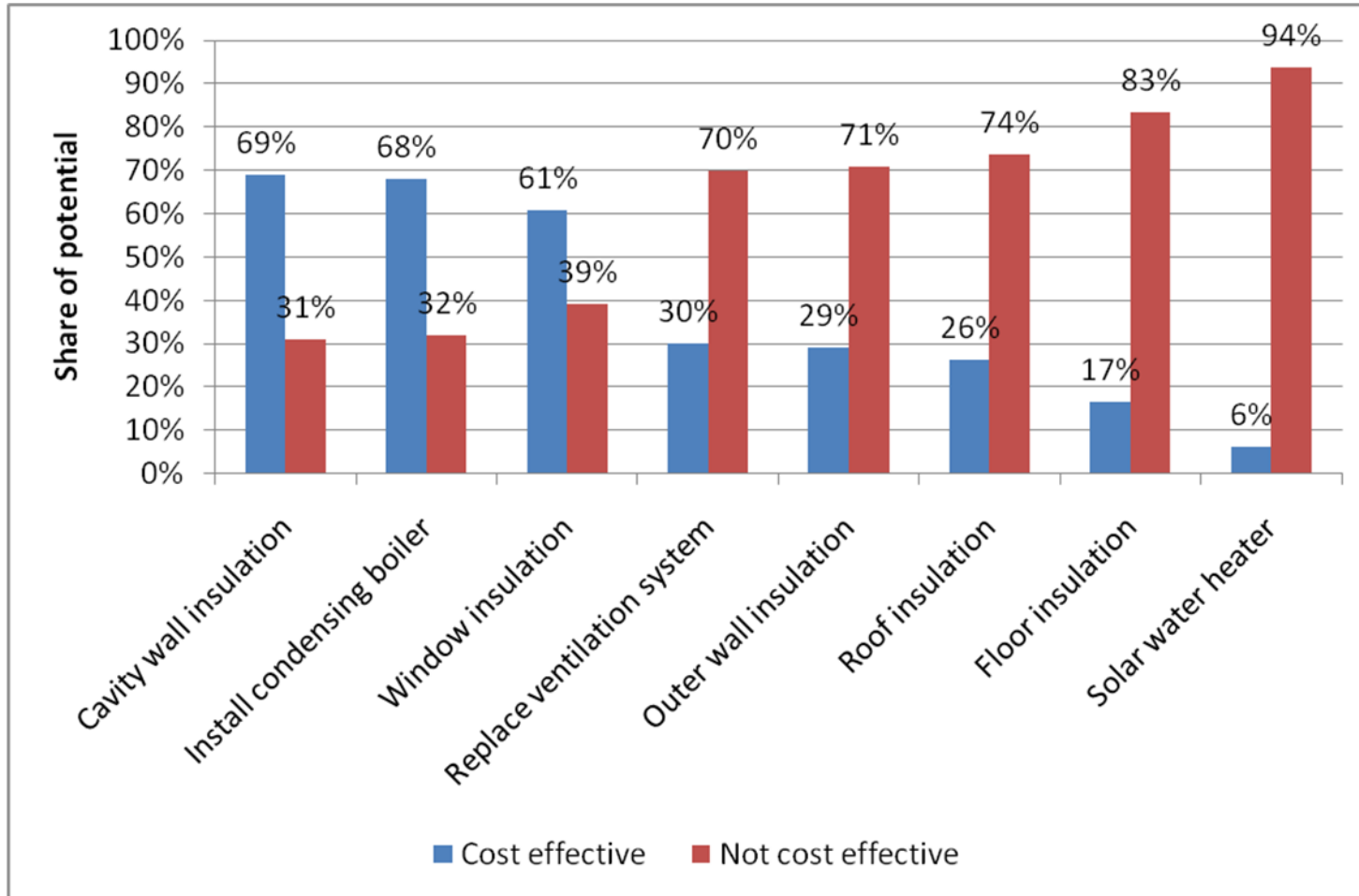
Casper Tigchelaar (co-authors B.W. Daniels, M. Menkveld)



Virtual testing group (model) to test different policy measures

1. Representative survey households (N > 4700)
2. Packages of measures
 - On average 60 packages per respondent (total over 300.000 different options)
 - Tailor-made for specific dwellings
3. Calculation costs and benefits
 - Based on individual investments & real energy consumption figures
 - Including specific taxes and rental support schemes
4. Selecting most appealing packages
 - With respect to boundary conditions such as mandatory standards = **Policy effect!**

Average ≠ individual cost effectiveness



Why these differences?

- We've looked at differences in:
 - Technical properties dwelling
 - Construction year
 - Income of household
 - Household types
- These factors can't explain differences in cost-effectiveness
- **Heating behaviour correlates strongly with cost-effectiveness.**

Heating factor

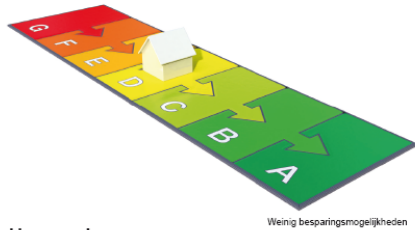
Energy bill

EPC

Energie label woning

Afgegeven conform de Regeling energieprestatie gebouwen.

Veel besparingsmogelijkheden



D
(zie toelichting in bijlage)



Uw woning

Labelklasse maakt vergelijking met woning(en) van het volgende type mogelijk.

Rijwoning - Tussen

Gebruiksoppervlakte	Adviesbedrijf	Straat Dorpstraat Nummertoevoeging 1 Postcode 9999 AA Woonplaats Hoofdstad
131,0 m ²	Advies BV	
Opnamedatum	Inschrijffnummer	
01-01-2010		
Energie label geldig tot	Handtekening	
01-01-2020		
Afmeldnummer		

Energie label op basis van een ander representatief gebouw of gebouwdeel? -
Adres representatief gebouw of gebouwdeel: -

Standaard energiegebruik voor

Energiegebruik maakt vergelijking met andere woning(en) voor de

- Het standaard energiegebruik is de hoeveelheid primair energie voor de verwarming van uw woning, de productie van warm water, de eventuele opbrengst van een zonnepaneel voor de verwarming van uw woning.
- Het energiegebruik wordt berekend op basis van de oppervlakte van de woning en de installaties van uw woning.
- Bij de berekening wordt uitgegaan van het gemiddelde aantal bewoners en gemiddeld bewoners.
- Het standaard energiegebruik wordt uitgedrukt in de vorm van elektriciteit (kWh), gas (m³) en warmte (GJ).

76705 MJ
(megajoules)

1037 kWh (elektriciteit)
1909 m³ (gas)
0 GJ (warmte)

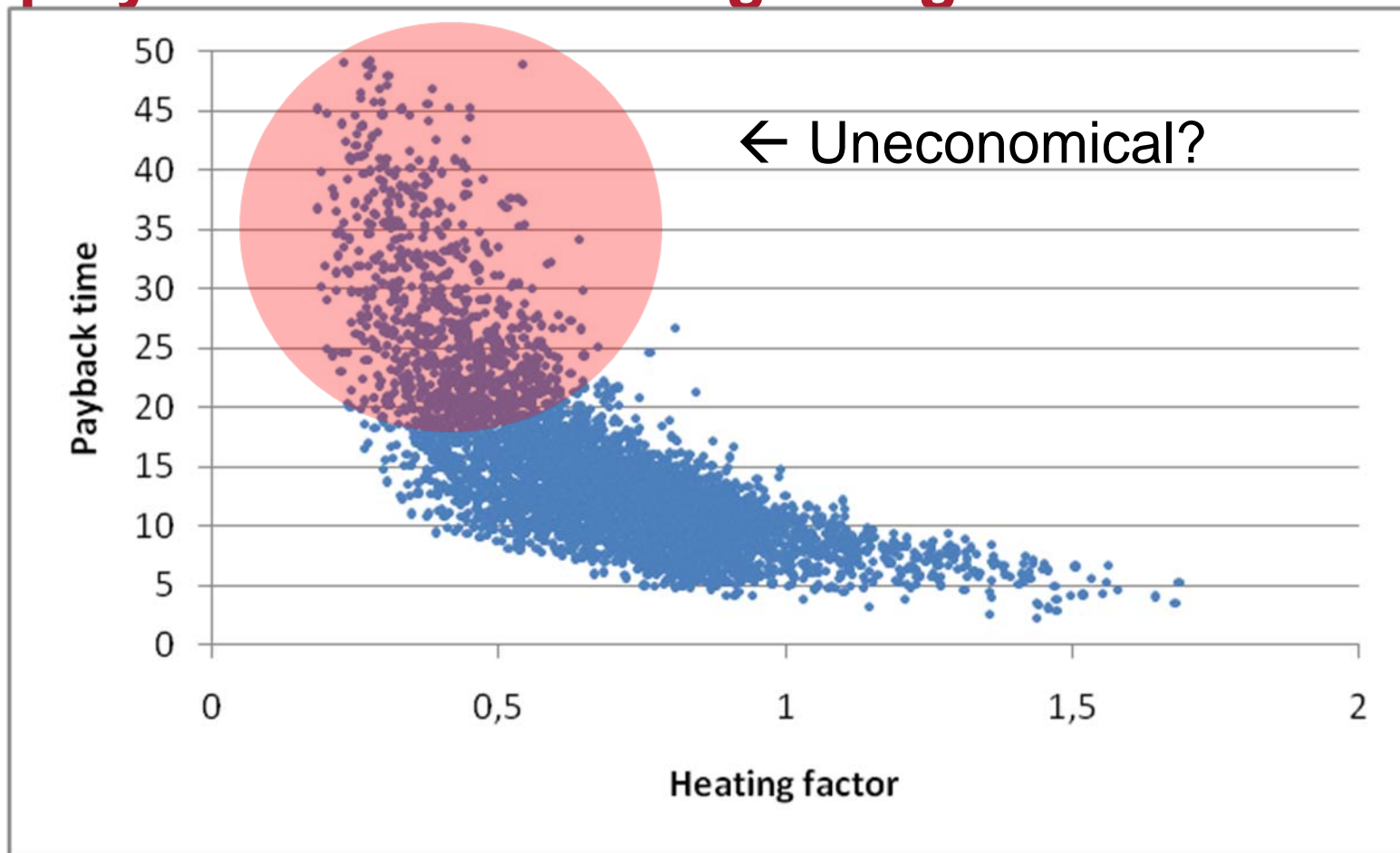
Totale kosten op deze jaark... 1.273,87

Producten	Verbruik	van	tot
Gas (m ³)	1070	07-12-2007	08-12-2008
Elektriciteit laag tarief (kWh)	1208	07-12-2007	08-12-2008
Elektriciteit normaal tarief (kWh)	1023	07-12-2007	08-12-2008

Door uzelf doorgegeven via internet

Example heating factor: 1070 m³ / 1909 m³ = 56%

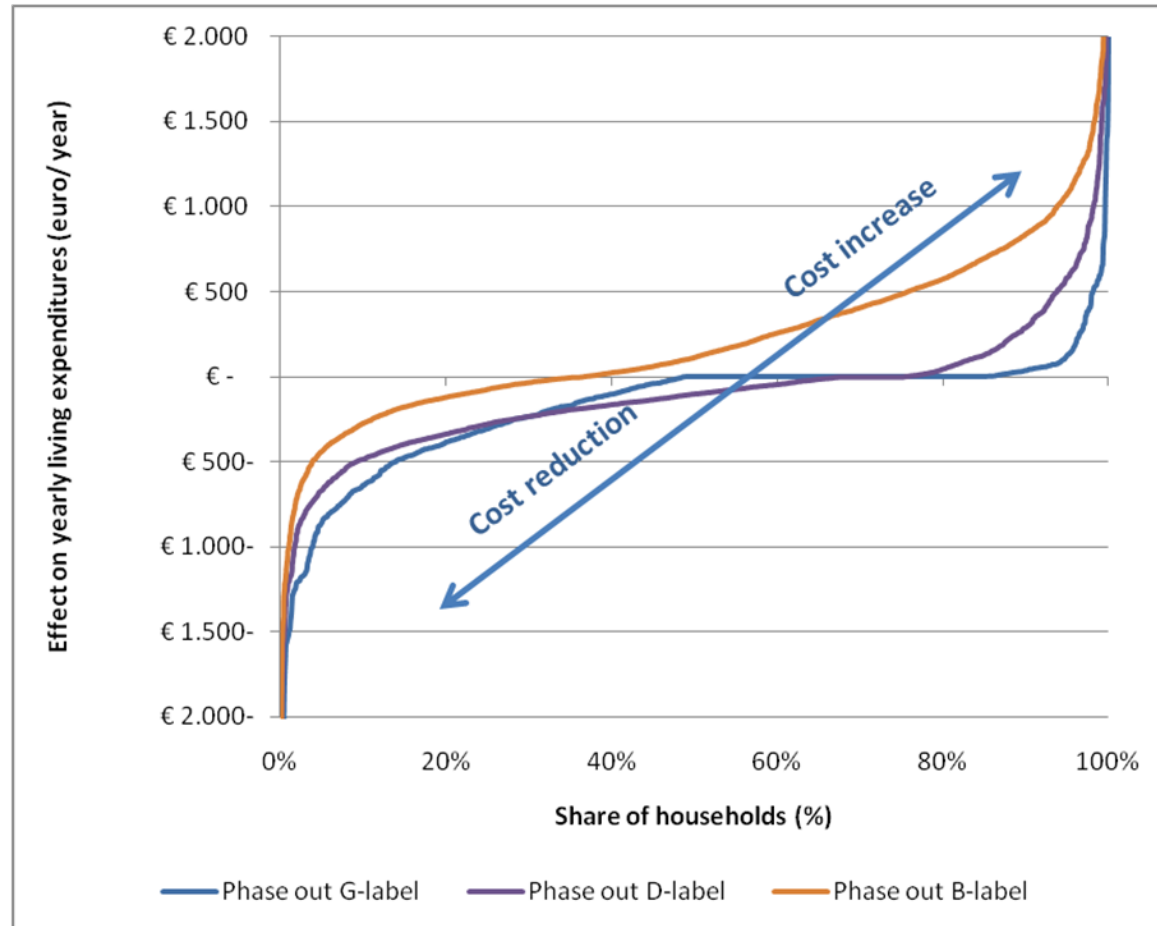
Example: Correlation heating behaviour/ playback time Low E- glazing



Obligations based on technical properties force households to uneconomical investments

- The stricter the obligations the higher the energy saving, but the more households will be harmed
- We looked at different types of obligations in different variations (over 60 in total)
 - Mandatory standards on components
 - Mandatory integral standards on houses based on EPC
 - White certificate schemes
 - Based on cost-effectiveness
 - etcetera

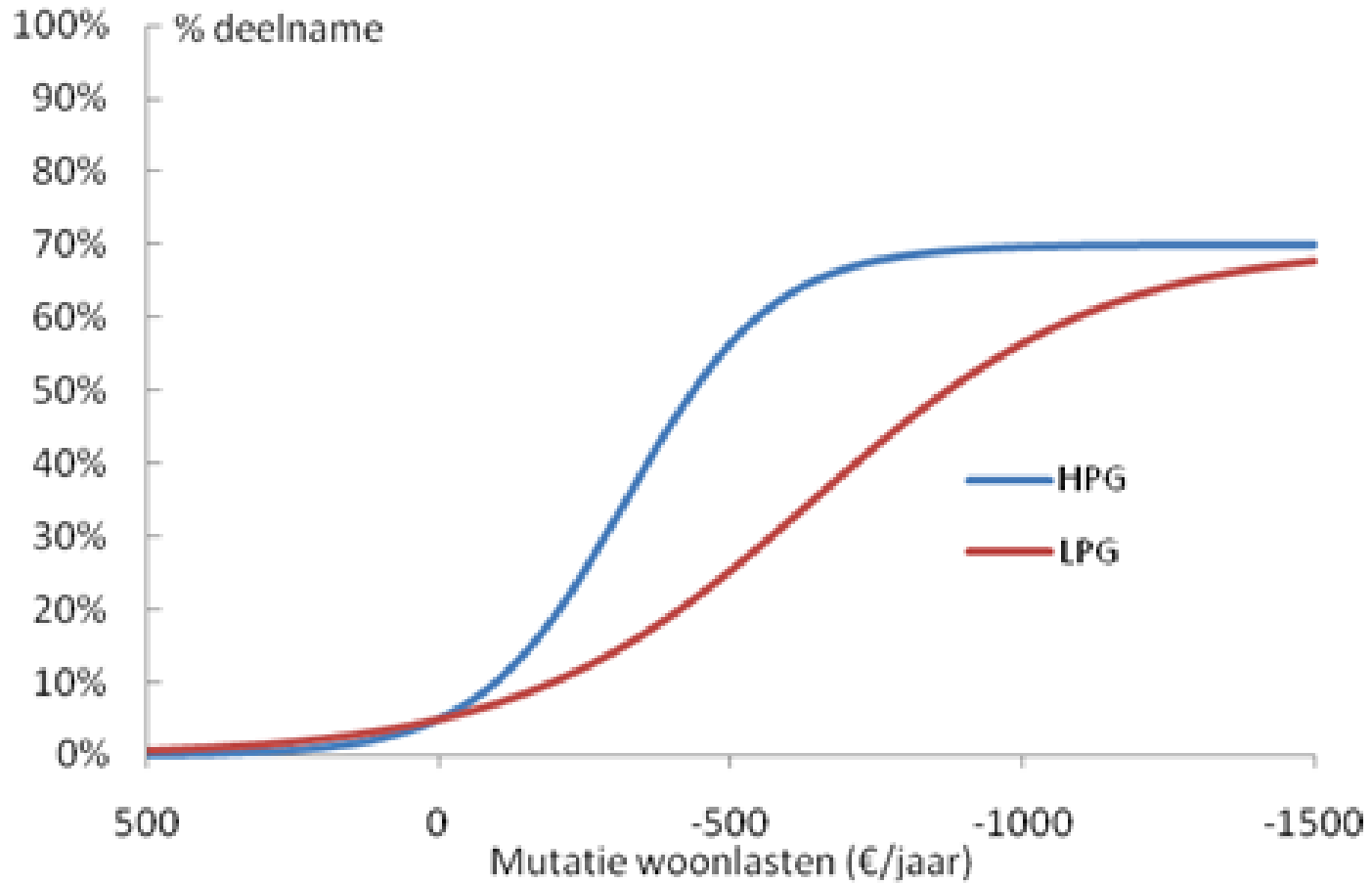
Obligation example 1: Mandatory standards based on EPC's



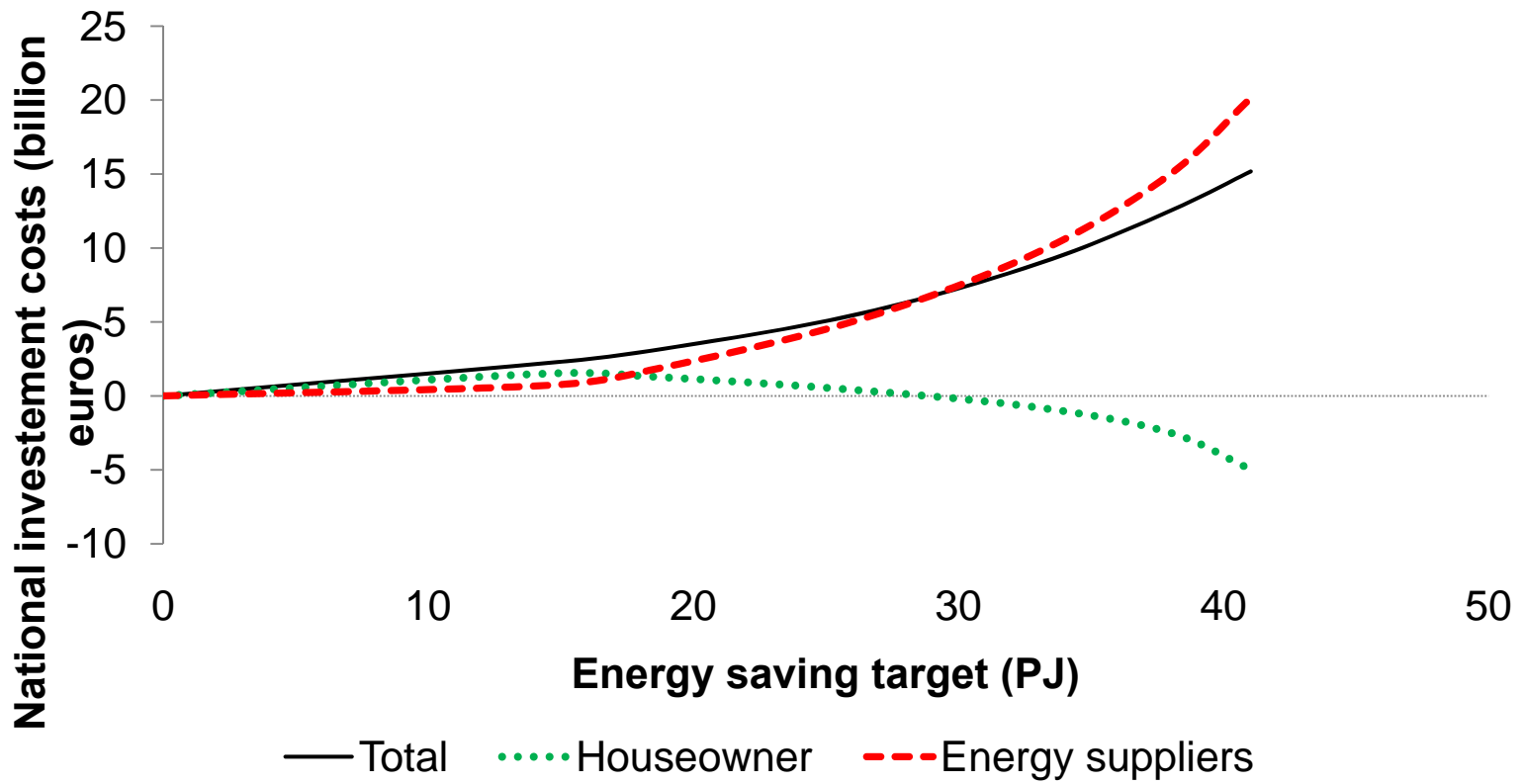
Obligation example 2: Energy supplier obligations (White certificate scheme)

- Positive:
 - Households aren't forced to do uneconomical investments,
- but:
 - Energy suppliers have to issue premiums for households.
 - Costs recharged in energy tariffs
 - More ambitious target → higher premium → higher tariffs → higher energy bill for all households
 - All households pay implicitly for efficiency measures minority

Assumption!



Division of costs with supplier obligations



Obligation type 3: Cost-optimality (recast EPBD)

- Obligations to install cost-optimal energy efficiency measures on major renovations
- Reference buildings used (theoretical heating behaviour)
- Households with a low energy demand are forced to do uneconomical investments
- Potential danger that can undermine the support for recast EPBD

Main conclusions

- There is a huge cost-effective energy saving potential in houses, but this doesn't mean that it's cost-effective for all households.
- Cost effectiveness isn't solely linked to technical features of buildings, but also to heating behaviour
- Every type of obligations (aimed at energy suppliers, end-user, or based on cost-optimality) will have it's negative side-effects.
- Heating factor could be used as a way to exclude groups of households.
- But in the end it's a political choice: "Who pays the Bill?"

Thank you

- More info:
 - ECEEE paper
 - www.ecn.nl
 - www.ecn.nl/units/ps/themes/built-environment/
 - Tigchelaar@ecn.nl

Additional slide (Rebound effect?):

