

# Unlocking energy efficiency in business

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# The story

- Lots of cost effective savings in the commercial sector
- Observing low uptake rates of energy efficiency in commercial buildings
- Barriers! Finance .. And others.
- How can policy design help increase rates of investment?

# New data - you have to ask!

1. Extensive survey of the building stock
2. Consumer behaviour - Explored attitudes to investment



INSIGHTS PAPER

Survey of consumer behaviour in the commercial sector in the Republic of Ireland



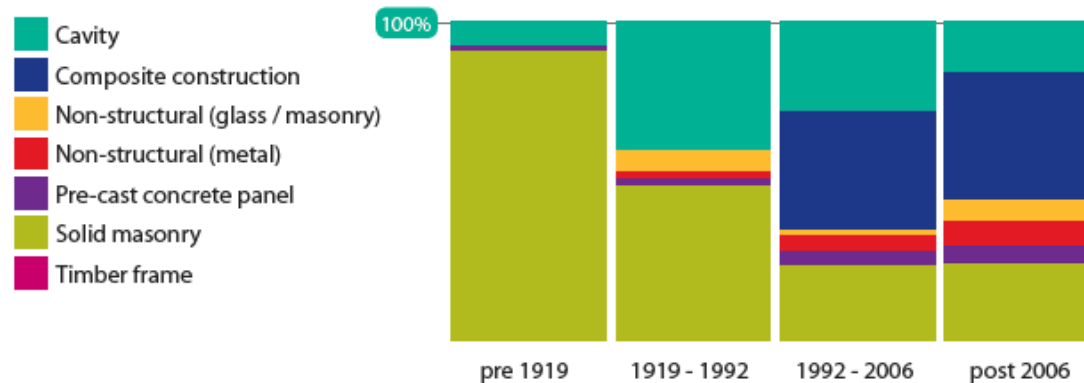
# The commercial building stock

Number of commercial buildings in Ireland (Total = 109,000)



Figure 3: Key survey results for building fabric variables

Wall type by year of construction

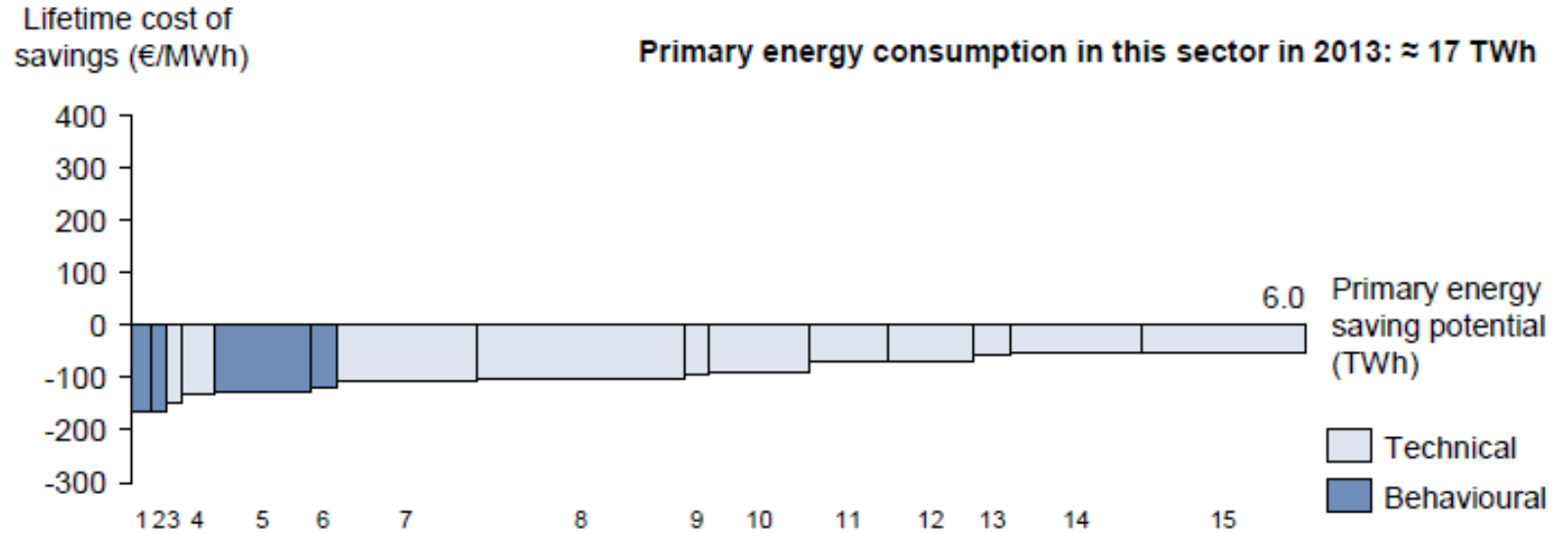


Fraction of double / triple glazing by sector



# Savings potential – Commercial sector

- Around 35% of total energy demand available
- All cost effective
- Around two thirds of commercial buildings have an electrical main (primary) heating system



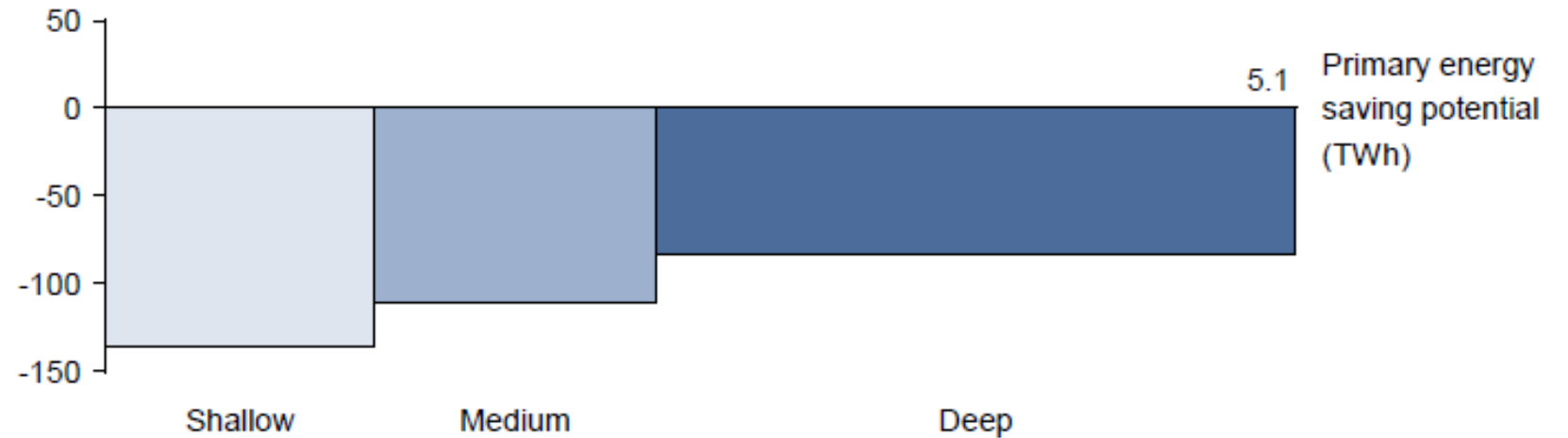
Measure	PE saving (TWh)	Measure	PE saving (TWh)
<b>Total technical measures</b>	<b>5.15</b>	14. Energy efficient glazing	0.67
3. Energy efficient appliances - Refrigeration	0.07	15. Heat pump	0.82
4. Draught proofing	0.17		
7. Roof insulation	0.71	<b>Total behavioural measures</b>	<b>0.80</b>
8. Energy efficient lighting with lighting control	1.11	1. Turn off lights for extra hours	0.10
9. Cavity wall insulation	0.12	2. Enable standby features on all PCs and monitors	0.08
10. More efficient air conditioning	0.51	5. Reducing room temperature	0.49
11. More efficient boiler with heating control	0.39	6. Reducing hot water use	0.13
12. Solid wall insulation	0.44		
13. Energy efficient appliances - Office equipment	0.19	<b>Total</b>	<b>5.95</b>

# Savings potential – Commercial sector - Packages

- All cost effective

Sector	Shallow	Medium	Deep
<b>Commercial and Public</b>	<ul style="list-style-type: none"> <li>• Cavity wall insulation</li> <li>• Draught proofing</li> <li>• Energy efficient lighting</li> <li>• Heating controls</li> </ul>	<ul style="list-style-type: none"> <li>• <b>All Shallow measures</b></li> <li>• Roof insulation</li> <li>• Energy efficient office equipment</li> <li>• Energy efficient refrigeration</li> <li>• More efficient boiler<sup>7</sup></li> </ul>	<ul style="list-style-type: none"> <li>• <b>All Medium measures</b></li> <li>• Solid wall insulation</li> <li>• More efficient air conditioning</li> <li>• Energy efficient glazing</li> <li>• Heat pump</li> <li>• Lighting controls</li> </ul>

Lifetime cost of savings (€/MWh)

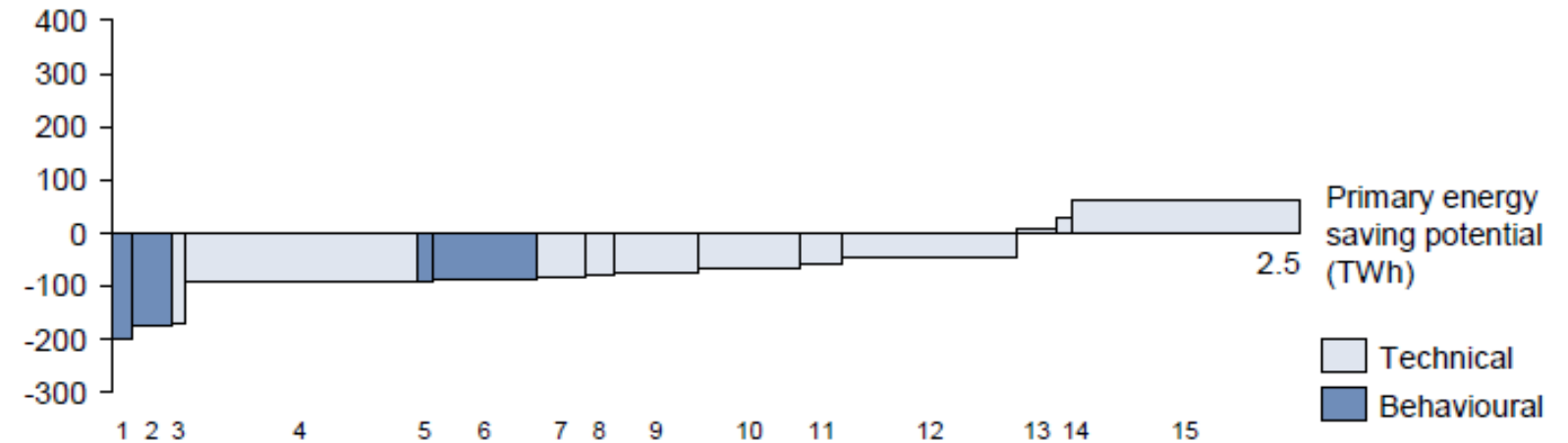


# Savings potential – Public sector

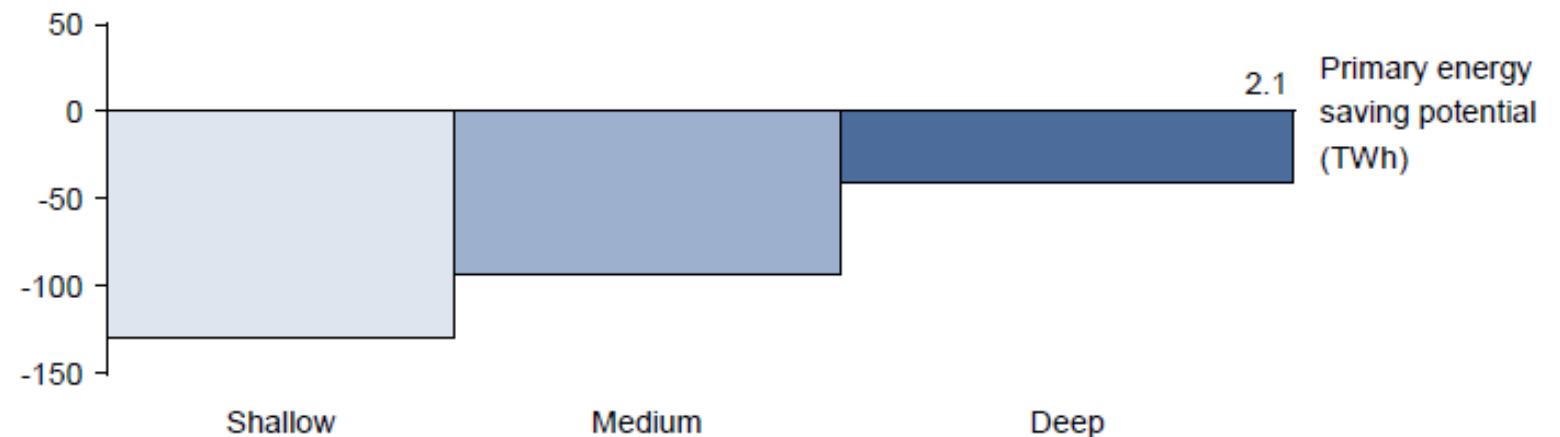
- Public sector – 35% savings available
- More oil and gas heating compared to commercial sector
- Packages all cost effective
- **But so what?!**  
**We still need to unlock it!**

Lifetime cost of savings (€/MWh)

Primary energy consumption in this sector in 2013: ≈ 7 TWh



Lifetime cost of savings (€/MWh)



# Barriers - A decision making framework approach

**Information campaigns, promoting  
services, audits**





# Awareness and engagement in energy efficiency in the commercial sector are currently low

Approximately two thirds of commercial consumers do not currently consider energy efficiency measures (technical or behavioural)

Only 3% said they need more info.. But...!

Cat D has other barriers! Time?  
Landlord/tenant?  
Finance?

- A.** Consumers who do not think they need to reduce energy use as **energy is not a top priority**
- B.** Consumers who think they have **already put in place all possible measures**
- C.** Consumers who think they can reduce energy use but they **need more information**
- D.** Consumers who **consider energy efficiency options.**



# Characteristics of companies that consider EE investment



Clancy, J.M. et al. *What are the factors that discourage companies in the Irish commercial sector from investigating energy saving options?* Energy and Buildings (146 (2017) 243–256)

## Companies are more likely to investigate a fabric upgrade that:

- own the building they operate from
  - make energy related decisions locally
  - have more than 10 employees
  - have had a recent renovation
  - accept longer paybacks, and
  - apply a case by case approach to budget decisions
- 
- Hotels and offices have a higher likelihood of investigating fabric options
  - Lack of knowledge of building floor area reduced the likelihood of investigation of both fabric upgrade and behavioural options

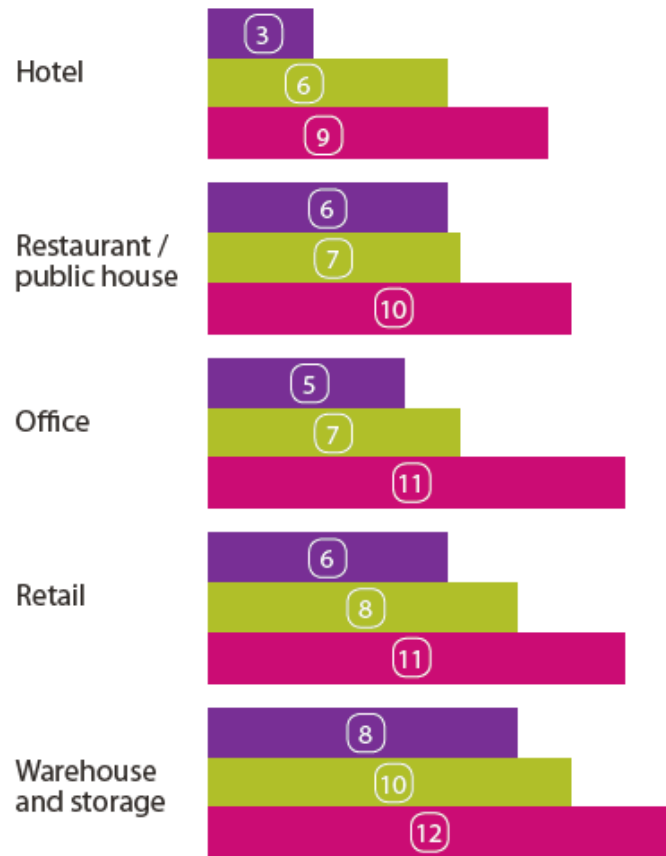
# Decision frequency for building retrofit – the market for finance

Deep retrofit measures considered less than once every 10 years in the majority of commercial buildings.

< one third of commercial buildings (<30k) are likely to make a decision regarding a deep building retrofit between now and 2020

Will it be a positive one?

Small company decision-making frequency (yrs)



Large company decision-making frequency (yrs)



Shallow Medium Deep

# Budget limits

Companies 'exempt from budget limit', 'with limited budget' and 'with no budget' (fraction of total)



# Uptake based on costs and savings

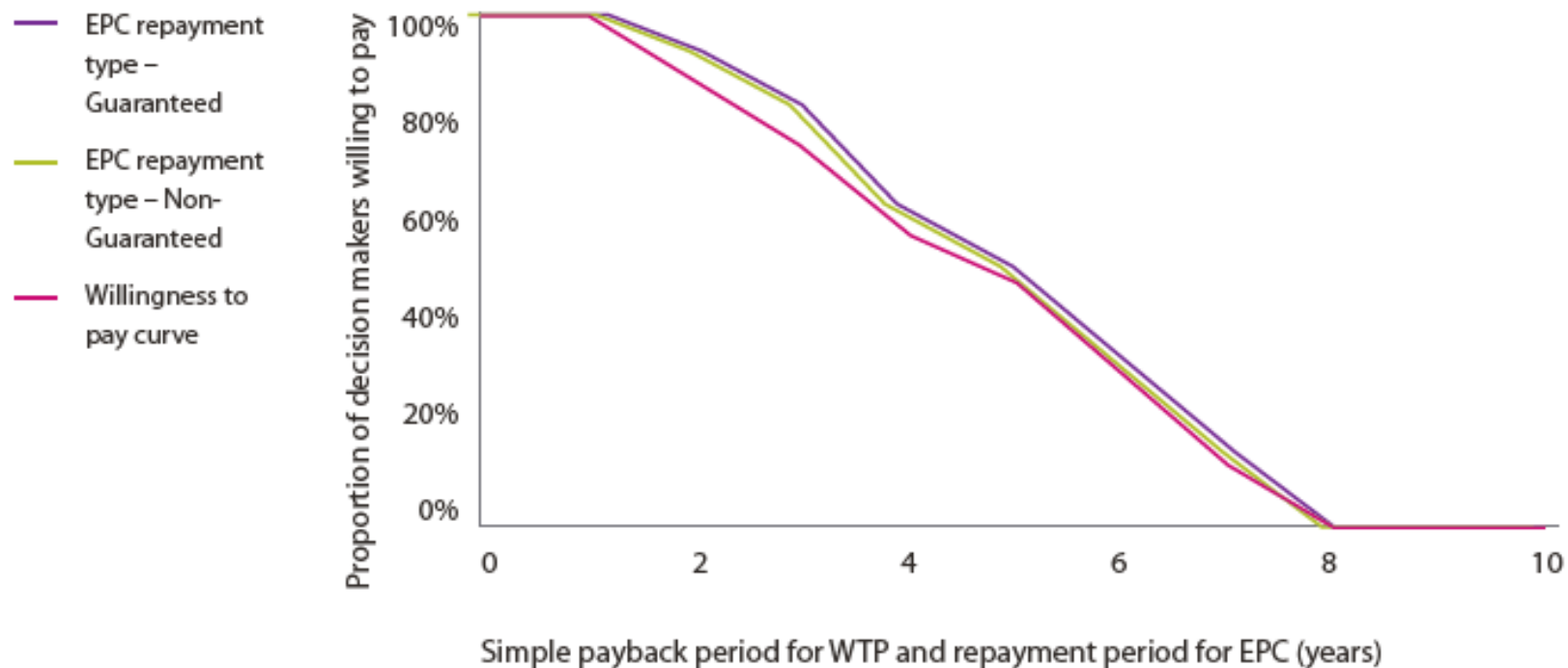
Investing in efficiency vs. investing in the business

e.g. €1000 p/a on bill savings straight to bottom line

vs

5% margin on €20,000 worth of sales

Consumer requirements for simple payback and EPC repayment period



# How to make energy efficiency a priority?

Q12. Number of organisations by reason for not having investigated fabric improvement

Number of respondents:

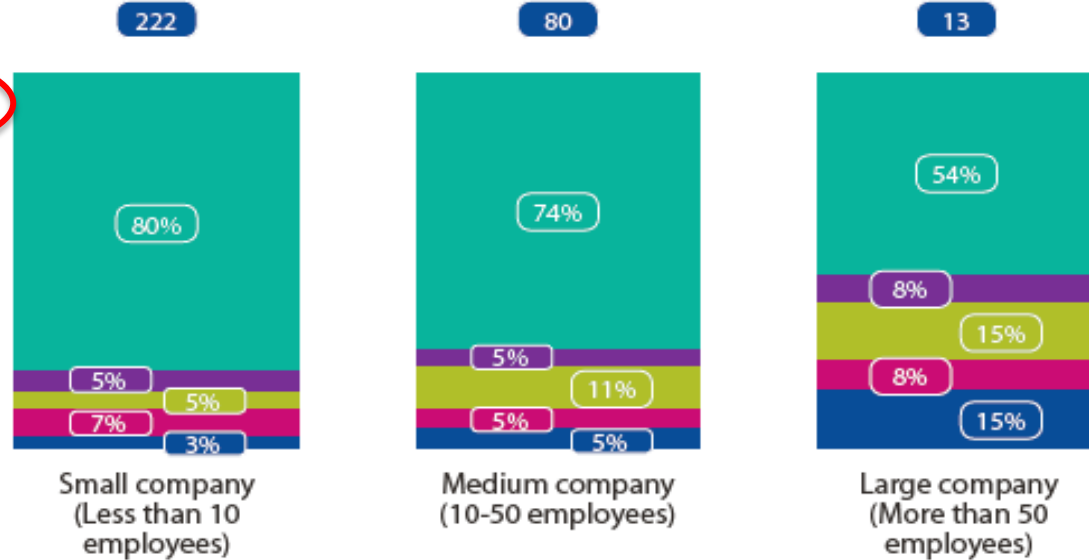
A. We do not think we need to reduce our energy use as energy is not a top priority

B. We do not think there are any ways to reduce our energy use through improving the building fabric

C. We think there may be ways to reduce our energy use through improving the building fabric, but we need more information

D. We think there may be ways to reduce our energy use through improving the building fabric, but fabric improvements are not our responsibility

E. We know there are ways to reduce our energy use through improving the building fabric and are planning to investigate them soon



## How can policy design help?

- Finance offerings - clear and accessible
- Mindful of the payback periods required, cohort specific
- Recognise existence of other (crucial) “demand side” barriers (time, know how, expertise, info, Sherpa?)

**Finance so important..  
and..**

**Making energy efficiency a  
priority for business might  
be our biggest challenge**

