

# Feasibility study for the implementation of the SRI scheme for buildings in Greece

Submitted to the Ministry of Environment and Energy (YPEN)

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# Methodology



## **Extensive literature review and 8 stakeholder meetings**

- Ministry of the Environment and Energy (Greek acronym: YPEN)
- Technical Chamber of Greece (Greek acronym: TEE)
- National Technical University of Athens (NTUA)
- Greek chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- DIMAND Real Estate Development company
- Greek Passive House Institute (Greek acronym: EIPAK)
- the Association of Certified Energy Inspectors
- the Hellenic Property Federation (Greek acronym: POMIDA)

## SRI test phases: Different stages and approaches

Assessments conducted by technical partners, preliminary results obtained



**Denmark**

*Test phase completed*



**Austria**

*Test phases still ongoing*



**Czech Republic**

External assessors being recruited, longer process implemented



**France**



**Finland**

Conducted with the support of one or several LIFE projects



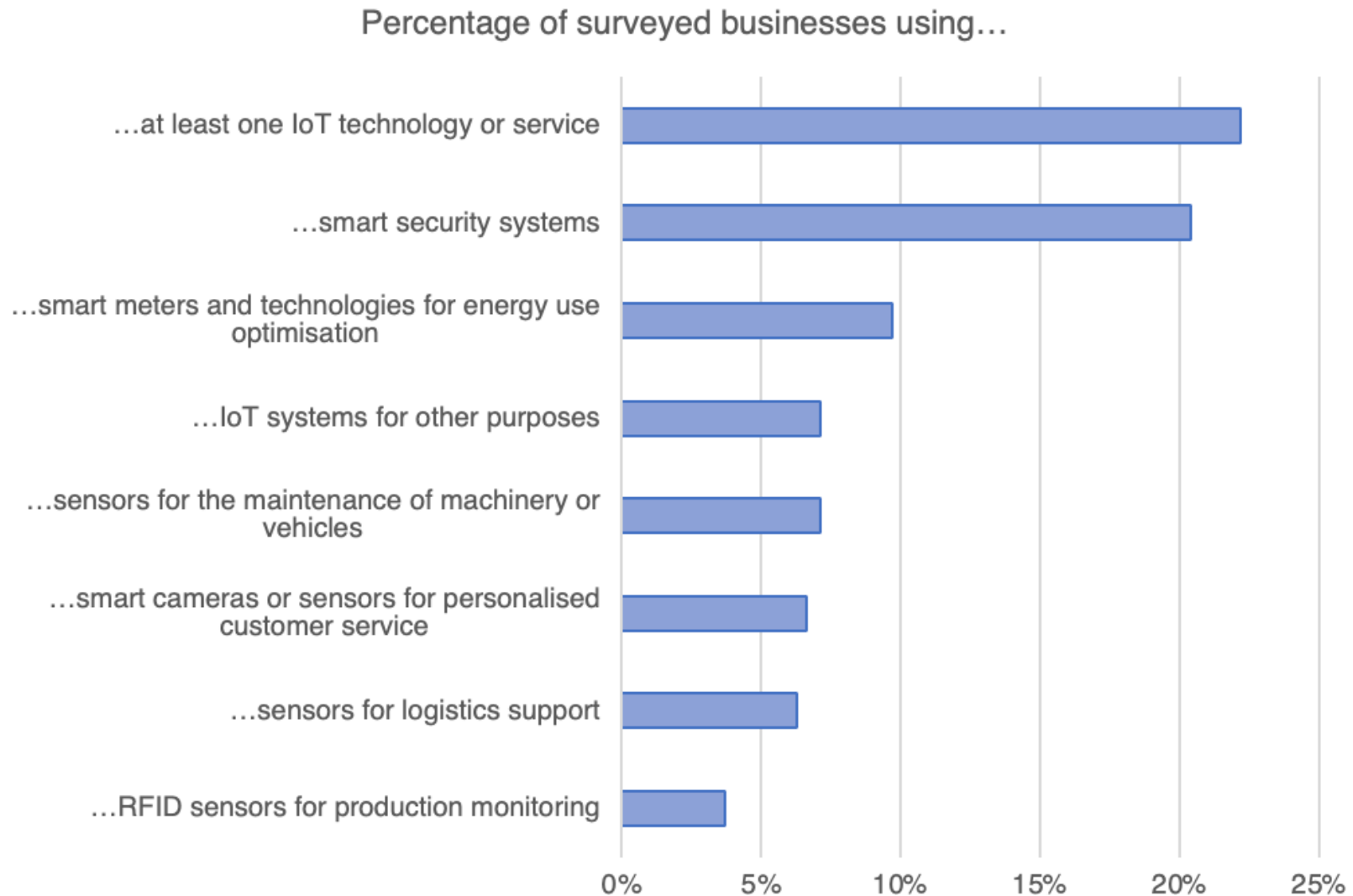
**Croatia**



**Spain**

*Test phase nearly to be launched*

# Diffusion of IoT technologies among Greek businesses



Diffusion of IoT technologies among 41,692 surveyed businesses with internet connection in Greece (adapted from ELSTAT, 2021)

# Design options

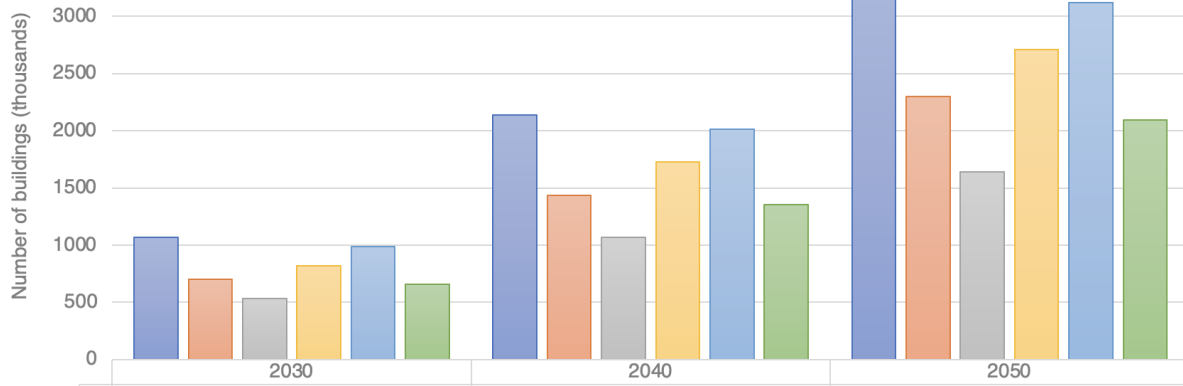


Options	Strengths	Weaknesses	Opportunities	Threats
<b>Linkage to EPC</b>	Rapid deployment, use existing EPC framework	Increased EPC assessment time, cost, and complexity	Rapid SRI-related regulatory adjustments, funding	Backlash among building owners
<b>Linkage to new buildings and major renovations</b>	Motivation for the construction sector	Few new buildings and major renovations	Collaboration between different industries	Higher prices for new buildings
<b>Market-based scheme (self-assessment, 3<sup>rd</sup> party inspections)</b>	Almost no regulatory costs, promotion to citizens through the tool	Lowest coverage compared to the other options	Market is engaged	Inspectors and building owners may not commit to this plan
<b>Subsidised market-based scheme</b>	Same as Option 4, increased engagement	Higher engagement as Option 4 (but still lower than EPC-linked)	Same as Option 4	Same as Option 4
<b>Linkage to BACS and TBS deployment</b>	Influences design and procurement of BACS	Additional regulatory cost imposed on BACS installation	Additional certification of the HVAC systems through SRI	Lack of adequate certified SRI assessors will slow down the BACS deployment as well
<b>Linkage to smart meter deployment</b>	Widespread deployment	Additional regulatory cost on smart meters' roll-out	Engage utilities in the SRI scheme	Resentment against smart meters will affect SRI as well

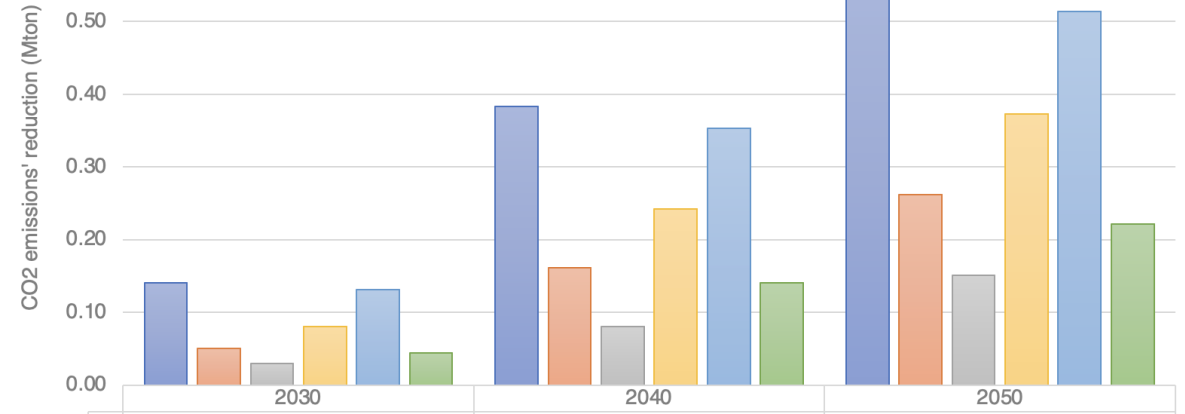
# Impacts of different design options



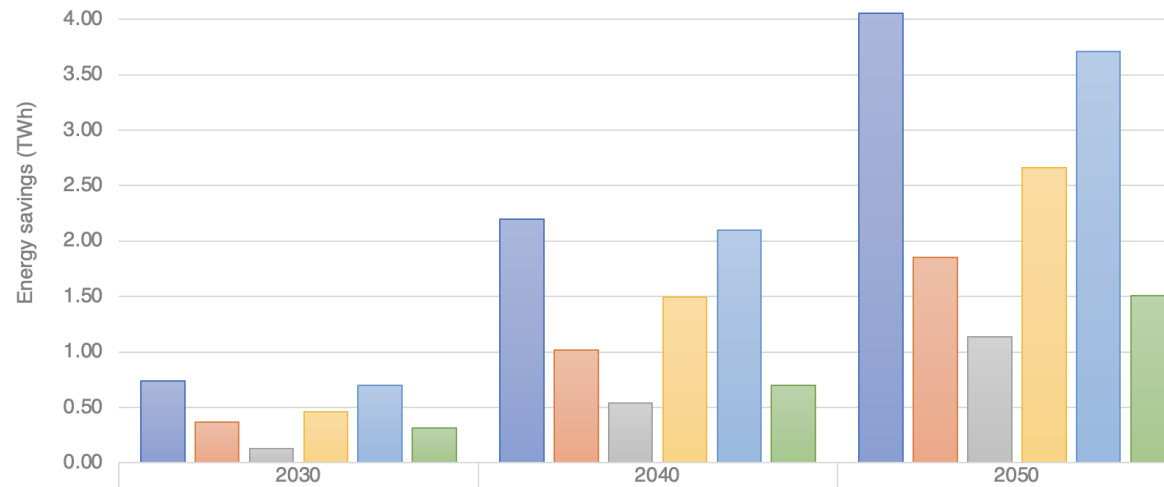
Buildings increasing smartness by one level



CO<sub>2</sub> emissions reductions



Energy savings



# Recommended design options

Primary design option

Selected elements from option



Options	Strengths	Weaknesses	Opportunities	Threats
<b>Linkage to EPC</b>	Rapid deployment, use existing EPC framework	Increased EPC assessment time, cost, and complexity	Rapid SRI-related regulatory adjustments, funding	Backlash among building owners
Linkage to new buildings and major renovations (included in EPCs)	Motivation for the construction sector	Few new buildings and major renovations	Collaboration between different industries	Higher prices for new buildings
Market-based scheme (self-assessment, 3 <sup>rd</sup> party inspections)	Almost no regulatory costs, promotion to citizens through the tool	Lowest coverage compared to the other options	Market is engaged	Inspectors and building owners may not commit to this plan
Subsidised market-based scheme	Same as Option 4, increased engagement	Higher engagement as Option 4 (but still lower than EPC-linked)	Same as Option 4	Same as Option 4
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# Testing phase



<b>Countries</b>	<b>Nr. of buildings</b>	<b>Nr. of assessors trained</b>
Austria	17 (currently)	Not mentioned
Czech Republic	11 (currently)	Not mentioned
Croatia	8 in 2023, 450 by the end of 2025	225 by the end of 2025
Denmark	25-30 (target)	Not mentioned
France	30 (target)	12
Finland	100-150 (target)	30-50

## Recommended actions

- Coordinate with the four LIFE projects
- Announce start of Greek testing to EC (e.g., 2024-2025)
- Potentially participate in the ELECTRA project
- Prepare training material and seminars (TEE)
- Stakeholder engagement activities with market actors
- Evaluate test phase; inform EC

# Building typologies and geographical regions



## Tertiary or Residential?

- Hotels, office buildings, and industries are the most relevant...
- ...but SRI will have biggest impact on residential.

## Multi-Family Houses (MFH) or Single-Family Houses (SFH)?

- SFH have the highest primary consumption...
- ...but most large cities feature MFH.

## Geographical regions / climate zones?

- Almost half of the building stock are in zone B...
- ...but energy consumption is much higher in zone C and D.

## Recommendations

- Make SRI mandatory only for the buildings suggested by the EU (non-residential with large HVAC systems by 2026)
- Allow all typologies and regions to participate (as an add-on to EPCs)
- Use the testing phase to examine all categories

# Cost of inspections



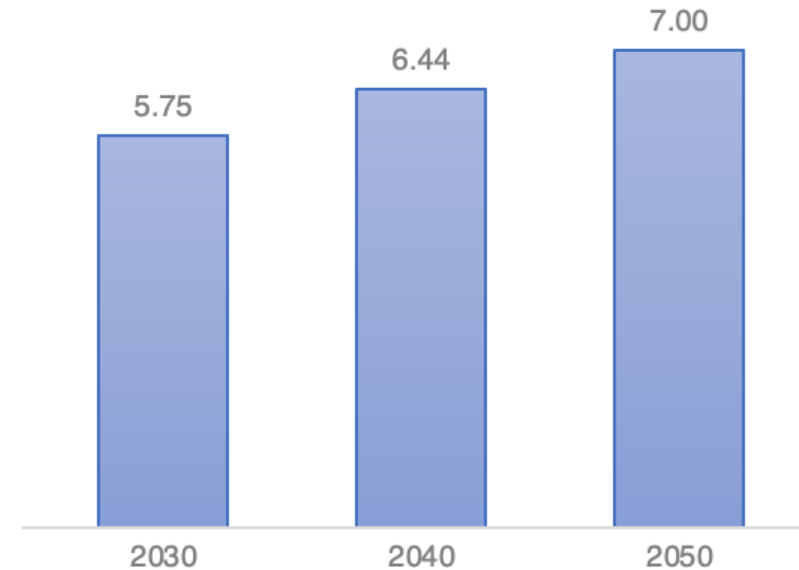
## Who can pay for SRI inspections?

- The building owners
- The government
- The inspectors
- 3<sup>rd</sup> parties like product suppliers
- Combination

## Examples of financial possibilities

- European Regional Development Fund (through Eksikonomo Programme)
- Cohesion Fund
- InvestEU

Estimated total costs of SRI assessments in Greece (million €)



## Estimated extra inspection time for SRI:

- 50 minutes for Method A
- Up to 1 day for Method B

**EU projects on SRI**  
4 LIFE projects on SRI support, including tools and test assessments for numerous Greek buildings (to finish by mid 2025)

2023

2024

2025

2026

2027

2028

**Compulsory BACS**  
BACS become compulsory for non-residential buildings with large HVAC systems

**EC evaluates the national test phases**  
Early in 2026, the Commission publishes an evaluation report of the test phases of all participating Member States along with their feedback

**EPBD update**  
SRI becomes compulsory for non-residential buildings with large HVAC systems in the EU (conditional to the positive evaluation of the test phases)

# Inspection software

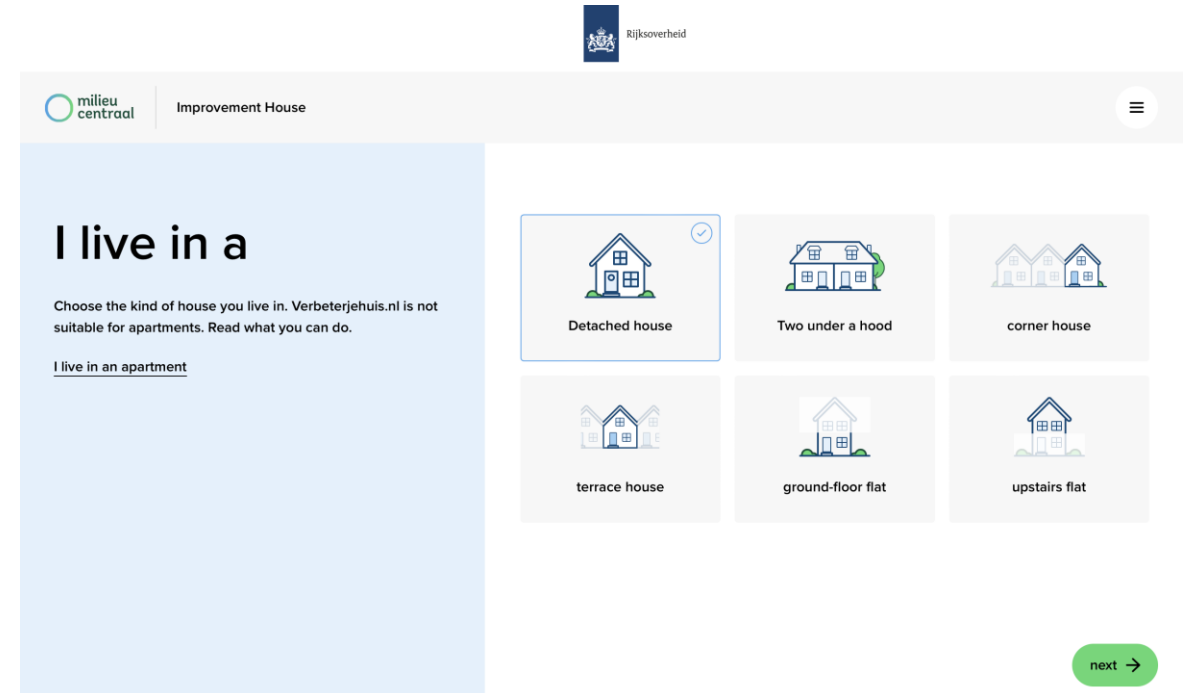


## Required functionalities

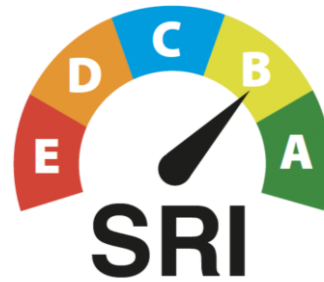
- Used for both self and certified assessments
- Should be online
- Inspection system
- Recommendations system
- Login system and user management
- SRI inspection database

## Potential options

- Combine it with TEE KENAK
- Adopt an existing software (at least 8 under development)
- Develop a new software (initial cost: ~15,000 euros; hosting and maintenance: ~1,500 per year)



# Thank you



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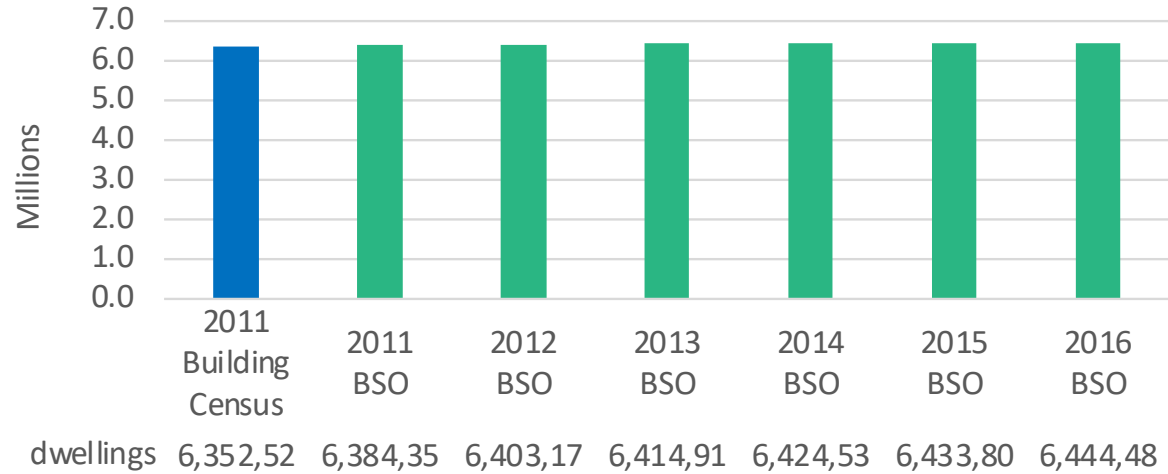


# Appendix

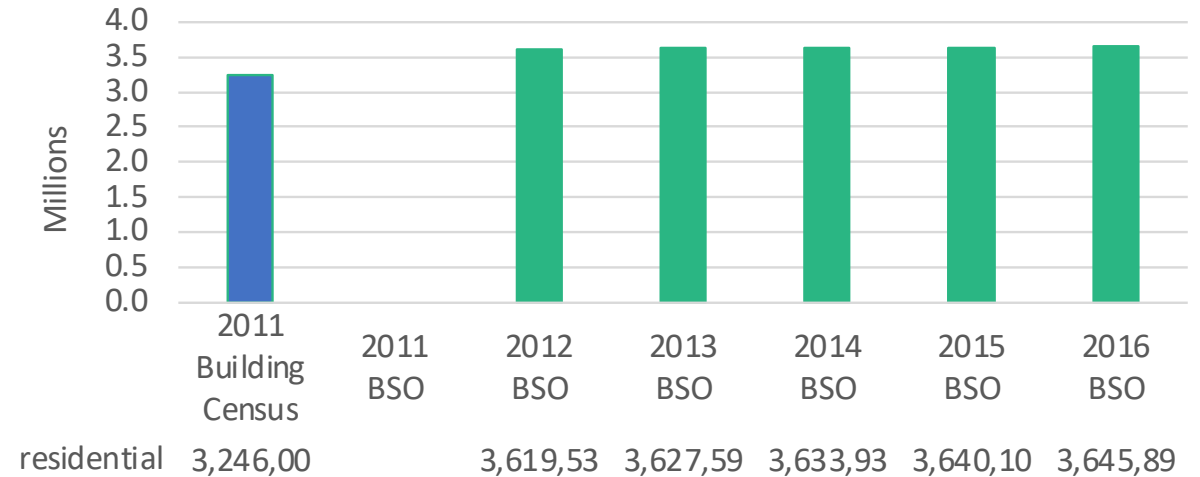
# Residential and tertiary buildings



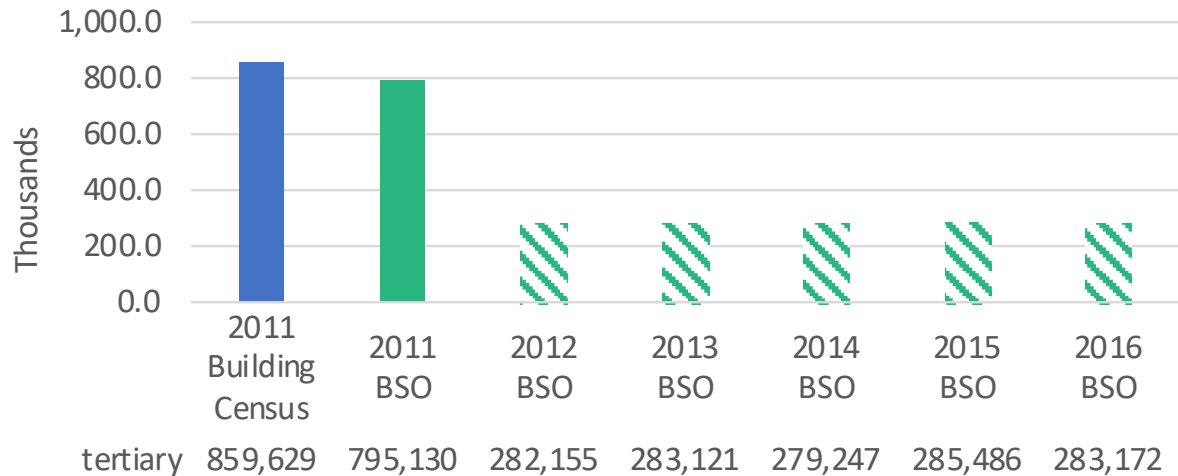
### Dwellings



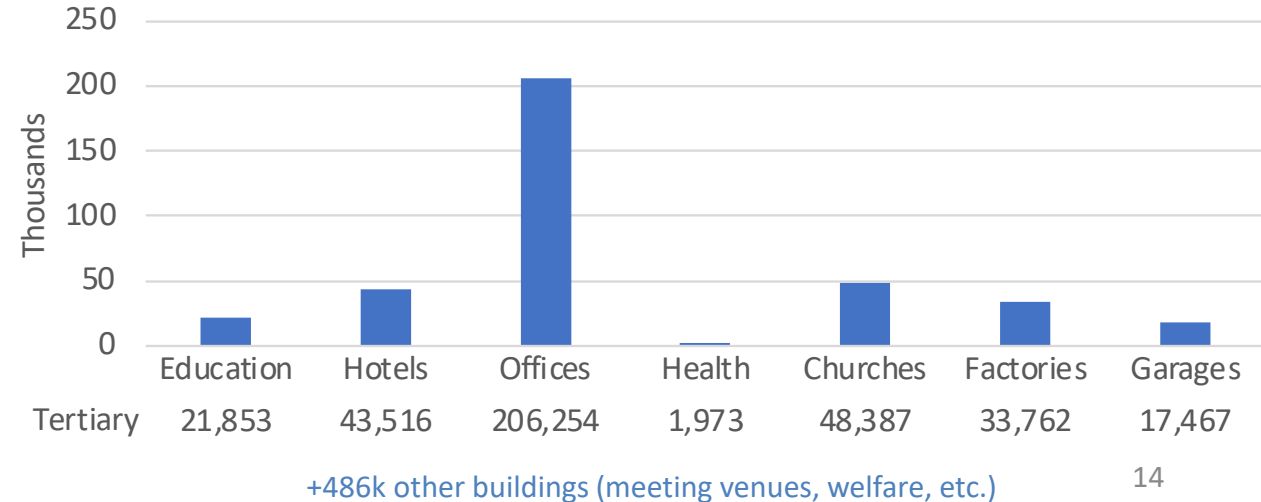
### Residential buildings



### Tertiary



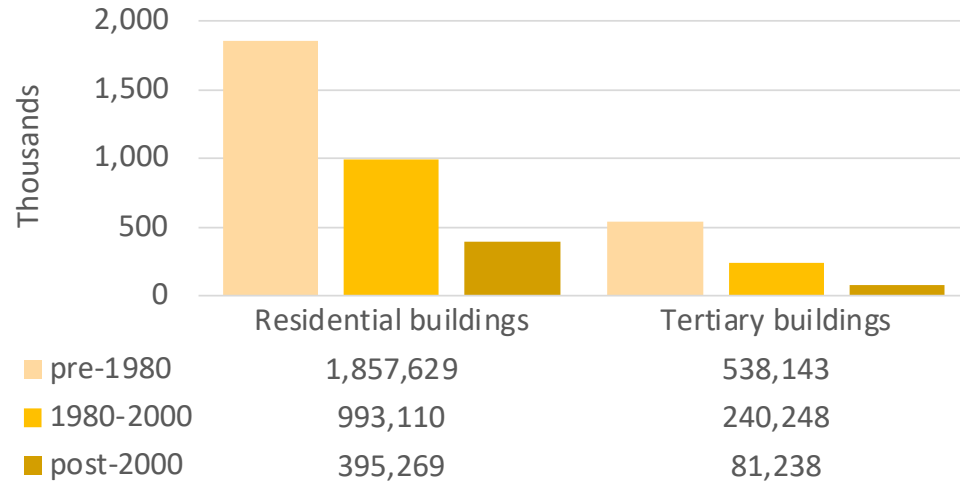
### Tertiary disaggregation (2011 Census)



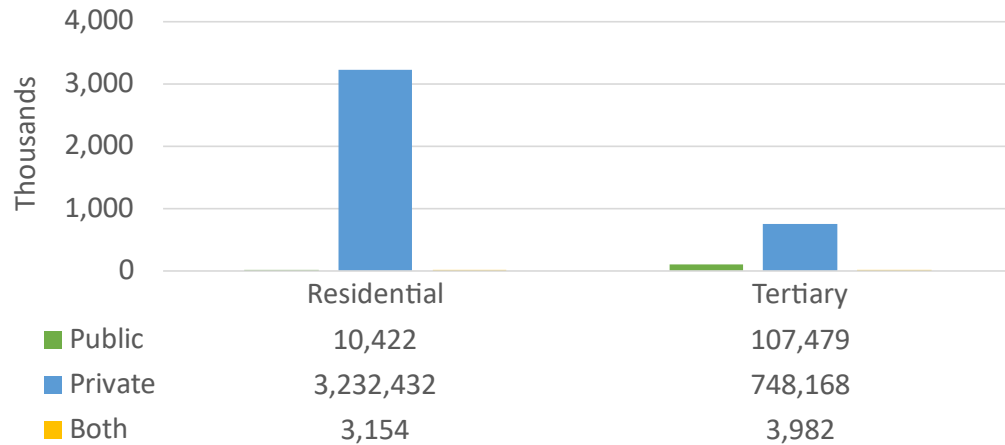
# Building stock characteristics



### Building age (2011 Census)



### Ownership (2011 Census)



### EPCs (2011 Census)

