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Centre for  
Sustainability  
University of Otago

CÍCLICA: non-profit co-operative consultancy offering strategies and tools to foster a sustainable and equitable built environment.

# How much does a nearly Zero-Energy Building (nZEB) housing stock cost?

A case study in multi-property apartment buildings in Barcelona



*Promou:*



*Amb el finançament de:*



# Spain

# Daily Times

\$3.00 (\$1.05 delivered, RD fees may apply)

SATURDAY & SUNDAY, January 7-8, 2017

## In the coming decades, massive energy-efficiency intervention in the existing housing stock is needed to achieve Paris Climate Agreement

90% of the current building stock is going to be standing in

2050

**YELLOW-EYED** penguin numbers in Otago have hit a 25-year low.

And while one prominent North Otago penguin advocate is calling for more to be done to save the species, a long-time Department of Conservation (Doc) penguin conservator declined to speculate on the vulnerable native bird's future.

The number of breeding pairs in Otago last year was 261, the lowest since a lack of ocean feed



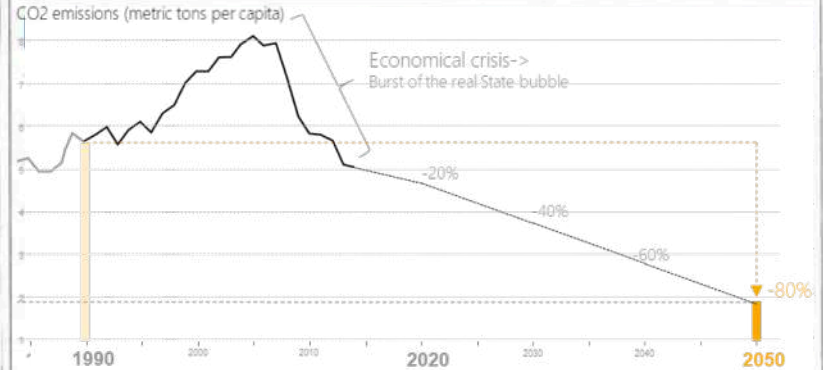
would be done.

there were fewer juvenile birds to come through as new breeders.

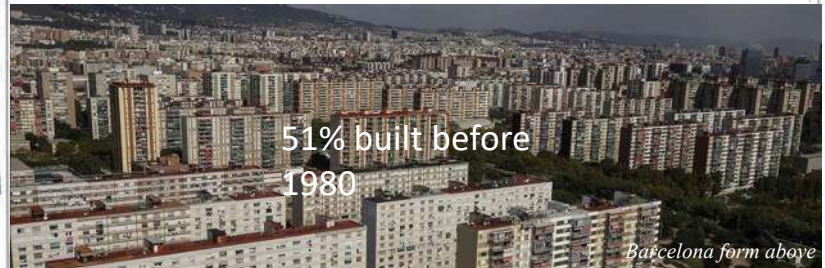
### How much will it cost?

—asked Carmen, a retired neighbour from a multiproperty apartment building from *any* Spanish city

outbreak of avian diphtheria for the second year in a row this season.



The world bank



51% built before 1980

Barcelona form above

# Building Renovation Passport, an instrument to boost deep renovation

a comprehensive and user-friendly instrument to support building owners with personalised instructions on their renovation options

**Logbook:** a repository of information on aspects like energy consumption and production and financing opportunities



1. Logbook: Casa+ (ADENE – Agência para a Energia, Portugal)

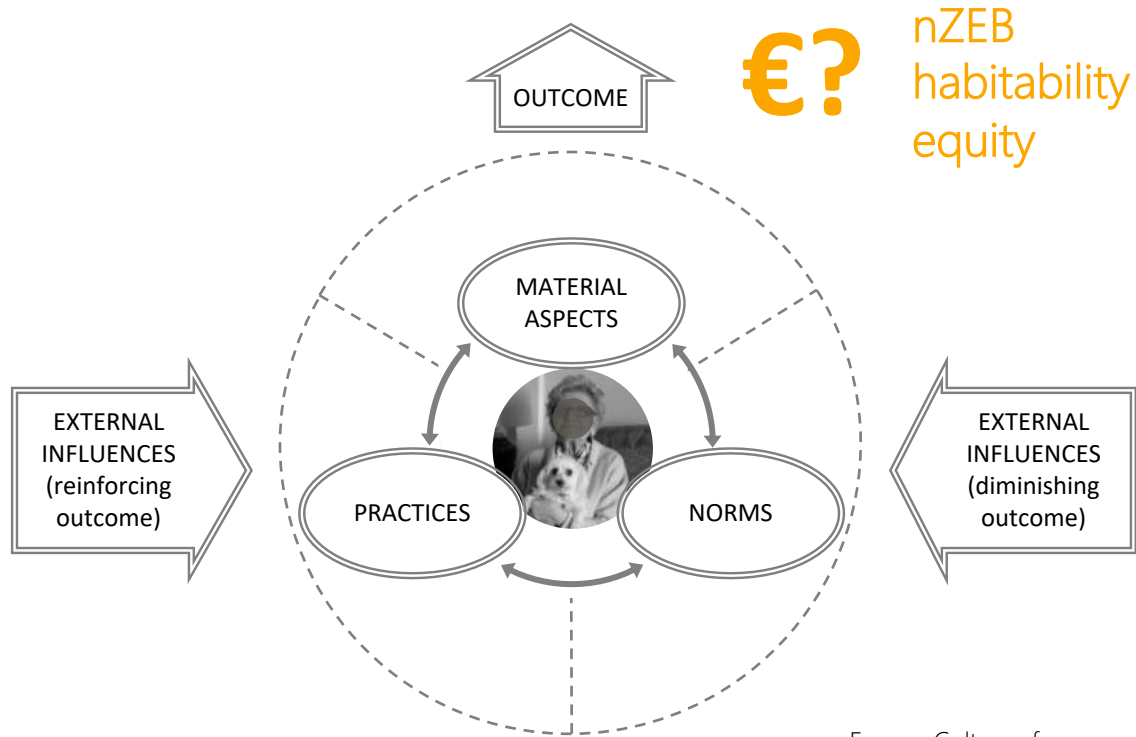


**Roadmap:** long-term step-by-step renovation roadmap, fulfilling specific quality criteria and indicators established in dialogue with building owners

2. Roadmap: Individueller Sanierungs Fahrplan (Ministeri d' Economia i Energia d'Alemanya, BMWi)

## Theoretical approach

# Buildings don't use energy: people do (Kathryn B.Janda, 2011)

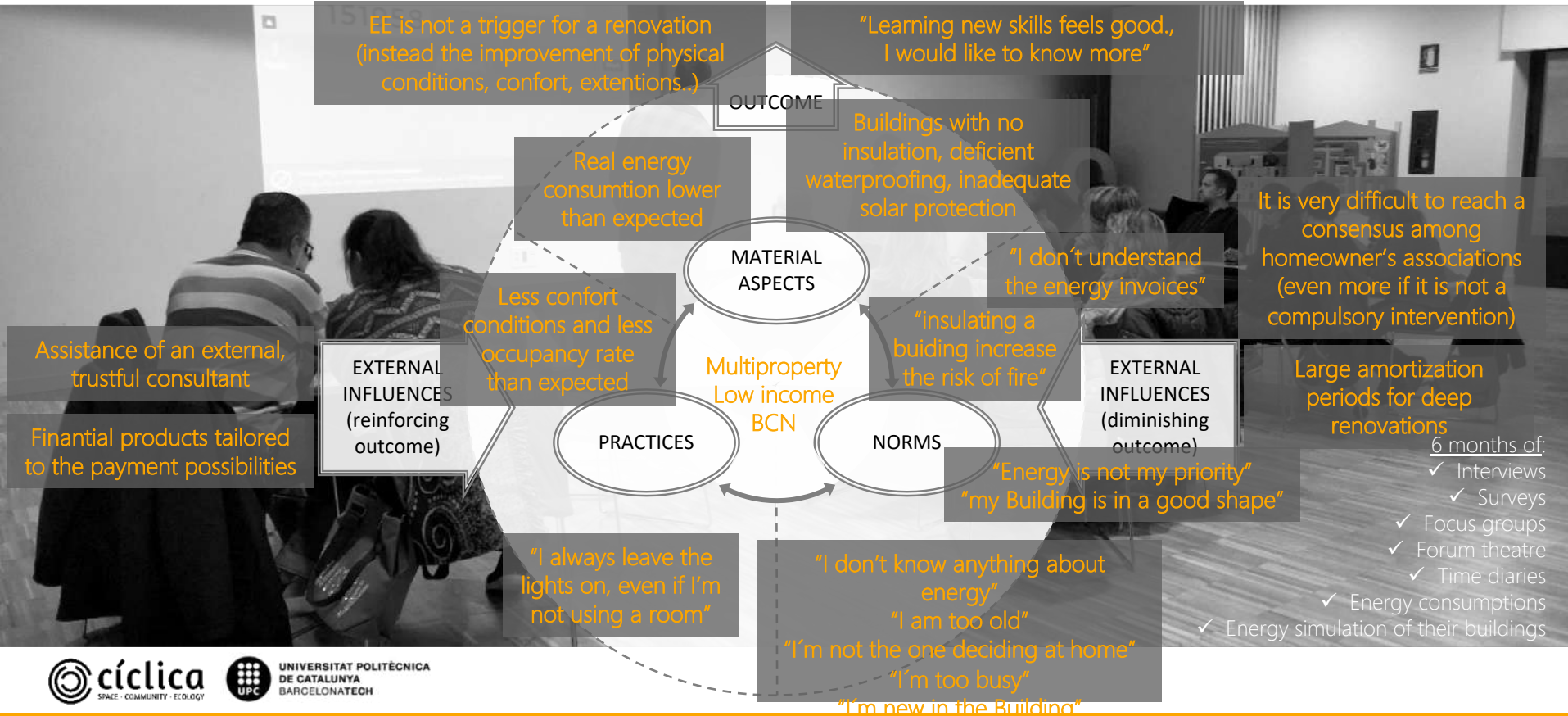


Energy Cultures framework  
*(Janet Stephenson et al, 2010)*



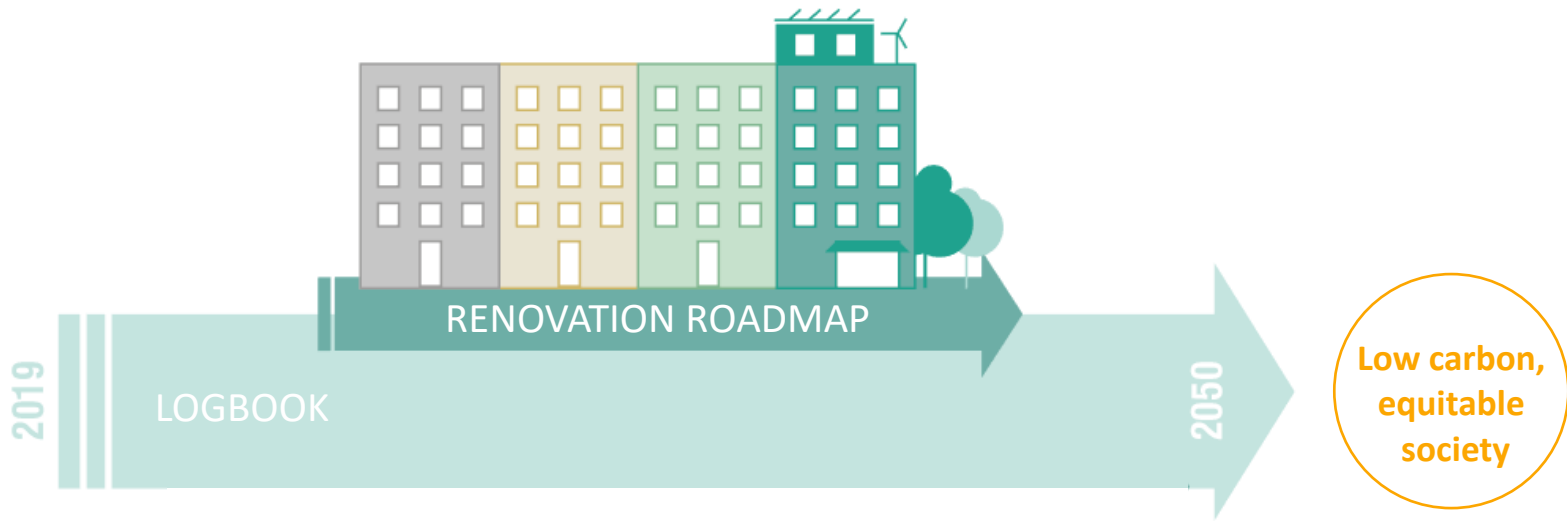
# Urban Innovative Actions EU funded project

13 homeowners from  
11 multiproperty apartment buildings in a  
vulnerable neighbourhood in the  
metropolitan area of Barcelona



contribution

# Homeowners assistance programme



# Kia ora



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