



Low Energy Apartment Futures (LEAF)

Project description

LEAF aims to improve the energy efficiency of apartment blocks by overcoming key barriers:

- The limitations of Energy Performance Certificates (EPCs) for multi-residential buildings in certain countries
- Difficulties associated with buildings under multiple ownership.

The project will test best practice approaches on 24 case study buildings across Europe (see Focus Feature). Lessons from these will be used to inform other projects, services and policies at a local, national and European level.

The project will create a set of support tools:

- **A technical toolkit:** based on EPCs, this will identify appropriate energy improvements for apartment blocks and provide users with supporting information
- **An engagement toolkit** providing information and guidance for a step-by-step refurbishment process.

These tools will be piloted on the case study buildings and evaluated in order that other organisations can use them in the future.

Project details

Coordinator: Changeworks, Scotland

Consortium: 7 partners from 7 countries

Duration: March 2013 – March 2016

Website: www.lowenergyapartments.eu

Background

With just under half of all Europeans living in apartments, addressing energy efficiency in these buildings is essential to meet climate change, energy efficiency and fuel poverty targets.

Energy Performance Certificates (EPCs) provide information on how energy ratings of properties can be improved. However, they have limitations for multi-occupancy homes: EPC software has limits; in some countries they do not address the building as a whole or incorporate communal areas; and historic buildings are exempt from EPCs in many EU countries.

Combined with issues such as planning applications, legal agreements, maintenance liabilities, engaging owners and lack of funding, this makes multi-occupancy housing challenging to retrofit. Whilst the contexts in different European countries varies (for example, apartment management arrangements), the key challenges and barriers are fundamentally the same.

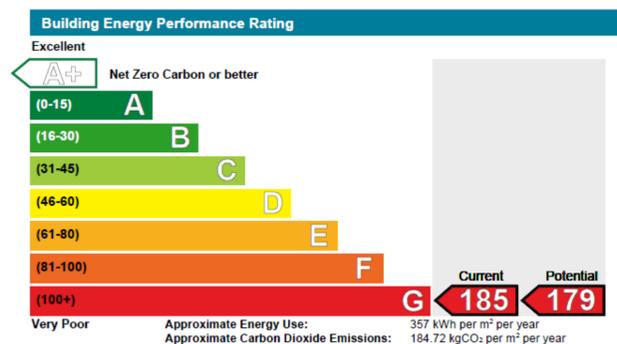
The aim of the LEAF project is to investigate how these issues can be resolved. LEAF is currently the only European project focused on addressing these particular challenges.

Key Project Objectives

- Demonstrate that EPCs can be utilised to produce practical, whole-building action plans which deliver >30% CO₂ savings for multi-occupancy housing
- Develop whole-building action plans to exhibit how additional CO₂ savings can be delivered for communal areas and common building systems (heating, lighting and renewables)
- Demonstrate how owners of individual dwellings within multi-occupancy buildings can collectively address, commission and secure finance for the delivery of whole-building action plans
- Remove barriers to the adoption of whole-building action plans to enable significant CO₂ savings. Demonstrate the compatibility of plans with policy objectives related to preserving historic urban buildings.



Technical Toolkit

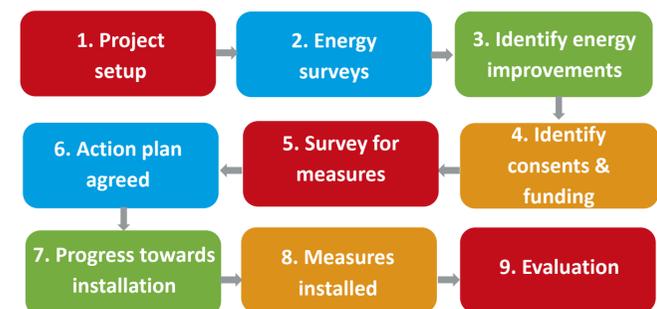


The technical toolkit contains guidance on:

- EPCs
- Energy improvement measures including indicative costs and savings, applicability and considerations
- Impact of household behaviour, lifestyle and occupancy patterns on likely savings
- Subsidies for installing measures
- Where possible, additional energy savings from communal areas such as stairwells, lifts and from communal lighting.

The recommended measures and energy savings for the whole building approach will be taken directly from the existing national EPCs. For the UK, a support tool has been developed which assimilates EPCs from individual apartments into a whole building EPC. This facility was not previously available in the UK.

Engagement Toolkit



Designed to complement the technical toolkit, the engagement toolkit provides information and guidance required to carry out retrofits in apartment blocks. This guides building managers through a step-by-step process, providing relevant support and advice. This toolkit contains sections on:

- Communicating with other owners and residents
- Best practice on decision making
- Obtaining planning permission and other consents
- Obtaining legal agreements required for communal measures
- Promoting advice on energy efficient behaviour
- Signposting for further information
- Contacts for local and national organisations.

The technical and engagement toolkits are available as Europe-wide versions. Country specific versions will be created in the coming months.

Key statistics

Population 43

43% of Europeans live in flats
Source: Eurostat, European Union (2011). This refers to the 27 EU member states.

Energy use in the home makes up 25% of energy-related greenhouse gas emissions in Europe.
Source: European Environment Agency (EEA) (2011)

9.8% of households in Europe cannot afford to heat their home adequately.
Source: EU Fuel Poverty Network (2013). This refers to the 27 EU member states.



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Acknowledgements





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FOCUS FEATURE

Case Studies

Edinburgh, UK

William Street



Year of construction: c. 1824/5

Construction type: Solid stone, single glazed windows

Number of dwellings: Seven dwellings and three non-domestic properties (shops and an office); there are four storeys including the basement

Tenure type: A mix of owner-occupiers and privately rented properties

Protected status: Located within the Edinburgh New Town conservation area and is a 'B' listed building

Changeworks is working with Edinburgh World Heritage, who carried out a renovation project of the property around five years ago, including improvements to the roof, chimney and windows. Critical to the renovation project was protecting heritage aspects and the character of the building. This will be an important consideration for any energy efficiency works, especially since the property is 'B' listed and located within a conservation area. There are a number of potential measures as the property has solid walls and single-glazed windows. A further challenge has been working with multiple private owners and landlords.



Recommendations from EPCs:

- Draught proofing
- Solid wall insulation
- Low energy light bulbs
- Replace boiler
- Heating controls
- Replace glazing

Upgrade from EPC ratings of 'D' and 'C' to all 'C' ratings.

Visby, Sweden

Kommendantsbacken

Year of construction: 1885

Construction type: Mainly rendered timber frame construction with some brick built sections and concrete foundations

Number of dwellings: Seven dwellings; four storey building with one floor in the basement and one built into the roof

Tenure type: Shared ownership with housing cooperative

Protected status: Part of the World Heritage site in Visby



The motivation to participate in the LEAF project came from the board of members who wanted help to assess the energy efficiency of the building. Whilst the building is not listed strict regulations apply to all buildings within the old town World Heritage site. Permits from the municipal office are needed for most measures that might change or alter the buildings use or external characteristics. The focus therefore needs to be set on indoor or technical refurbishment.

There is an added complication in that the main building is connected to the district heating network, while the two smaller buildings run and finance their own heating system.



In order to narrow down the various alternatives, the case study is now being assessed in terms of its technical condition and fuel systems using the EPC to get a comprehensive view of the situation and its potential. The residents will also contribute with opinions on their own experience of indoor comfort and utility bills.

Initial Lessons

Engaging residents and owners

- Very time intensive
- Challenges:
 - High turnover of tenants and owners selling properties
 - Finding contact details of private landlords
 - Communicating between various parties in privately rented properties
 - Lack of interest from some owners, even when offering a free EPC and energy efficiency advice
 - Reliant on social relationships between owners
 - Lack of awareness of energy efficiency
 - Non-domestic buildings can add further challenge.
- Successes:
 - Communicating via a trusted, impartial and known organisation
 - Communicating via a formal management arrangement (for example, property managers that exist in many European countries)
 - Attending regular resident meetings

Technical measures in historic buildings

- Can be limited due to:
 - Planning restrictions (in conservation areas, listed buildings, world heritage sites)
 - Lack of trusted method to improve energy rating
 - Residents concern over disruption of install
 - Lack of finance
 - Unlikely to be able to make significant improvements to EPC ratings; constrained by planning restrictions, the building structure and the technology available.
- Communal EPC for whole block enables collective approach to be taken engaging all residents.

Finance

- Critical to success but availability ranges across Europe
- Uncertainty in funding programmes (for example, Energy Companies Obligation – ECO) makes planning more difficult.



Project partners

