A global benchmark

Building Refurbishment Initiatives and Business Models

Lucienne Krosse, Manuel Calvo Diaz, Mikel Lasa, 26th April 2021
The Naturgy Foundation is a non-profit institution created in 1992 by Naturgy to educate and raise awareness in society of improvements in energy efficiency and technological innovation in the energy sector. It also develops social action programmes, in particular by supporting initiatives aimed at alleviating energy vulnerability.

Aware of the great challenge the fight against climate change is, the great commitments of Europe and the relevance of residential energy consumption regarding these goals, we decided to support a survey about business models on building refurbishment to help better understanding on the key factors to make it happen on an appropriate scale.
Reducing risk and time-to-market for energy innovations

- Ensure security and safety of supply
- Reduce costs in the energy value chain
- Reduce CO₂ emissions
- Improve European competitiveness
- Remove barriers to innovation
- Encourage sustainable growth
- Create jobs
Why energy renovation of buildings is important?

The bigger picture

• Buildings account for ca. 40% of EU’s energy consumption, ca. 36% of CO2 emissions
• EU relative old building stock, 40% built before 1960s and 90% before 1990s
• Ca. 75% of today’s building stock is energy inefficient
• EU’s construction sector is largest industrial employer (total direct workforce 18 million people) and it contributes ca 9% to the Gross Domestic Product of the European Union
• About 80-90% of our time we spend indoors

Commission’s post-COVID 19 recovery plan identified doubling the rate of renovation as a specific aim to kick-start the European recovery.

“A renovation Wave for Europe – Greening our buildings, creating jobs, improving lives”

Source: https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en
Building renovation rates, today

Renovation rates of residential buildings in Europe

- To realise climate goals, acceleration of refurbishment of existing buildings is imperative.
- Average renovation rate is below 1% despite numerous subsidies and incentive schemes

Source: ZEBRA2020 tool
Barriers from a building owner perspective

**Technological**
- Uncertainty of performance and performance gap
- Lack of technological, product and system developments

**Knowledge-informative**
- Difficulties of proving non-energy benefits of renovation
- Low awareness (genuine disconnect climate change and energy efficiency property)
- Reliable information and support

**Market Inefficiencies**
- Split incentives and conflicting interests
- Duration, hassle and complexity of energy efficiency renovation projects

**Financial**
- High upfront costs
- Lack of access to capital
- Uncaptured value (energy efficiency improvements do not always translate into increased rent or property valuation)
- Low confidence in energy bill savings
Fragmented market - General value chain construction and renovation

Raw Materials → Product Manufacturer → Design & Engineering → Construction → Operation & Maintenance

Traditional Actors:
- Mining
- Manufacturer
- Building owner
- Contractor
- Renovation
- Architect
- Architect
- Engineer
- Engineer
- Project financier
- Facility manager

Additional New Actors:
- Manufacturer coming from other sectors
- Energy experts
- Aggregators
- IEQ experts
- Aggregators
- Utility companies
- Building occupant
- Building owner
Barriers from value chain actors perspective

**Knowledge-informative**
- Lack of skilled personnel and training
- Low quality auditing

**EE renovation market structure**
- Fragmented value chain: difficulties in coordination and communication
- Insufficient resources and competences to tender for public procurements
- Reluctant leaseholders, not willing to contribute to change, thereby limiting economy of scale
- Gaining permission: collective agreement amongst groups of apartment owners
- Supply chain constraints: limitations in scale, costs and routine
- Bureaucracy: financing models for energy efficiency renovation projects have long lead times for approval

**Regulatory**
- Lack of continuity in regulations
- Limited consistent grant schemes and governmental programs
Classification of business models – three basic models

Main barrier addressed

- Complexity and hassle
- Performance guarantee
- Reducing lead times

One Stop Shop

- Single point of contact
- Offering all services related to renovation, taking care of the complete process

Innovative Financing Schemes

- Often initiated by public government
- Financial institutions offering new financial products for boosting Energy Efficiency

New Revenue Streams

- Tax reduction schemes, feed-in tariffs, financial incentives based on Energy Efficiency performance
- Additional value of a sustainability assessment scheme or certificate
### Examples of successful business models

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<thead>
<tr>
<th>company</th>
<th>founding year</th>
<th>country of origin</th>
<th>type of business model</th>
<th>market segment</th>
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A multi-family buildings example - EOS Energy

Business Model

Customer Journey

Scope

https://eosenergy.es/
A Non-residential buildings example - Carbon Lighthouse

Business Model

- Real estate strategic advisory board
- Capital markets & institutional investors
- Insurance companies
- Homeowner, host of equipment
- Tenant / Occupant

Customer Journey

1: Initial contact
Through the strategic advisory board consisting of large real estate businesses, contact with property owners is initiated.

2: Intake and finance for quote
Engineers conduct an initial intake of the building and place sensors which are connected with the cloud platform. Subsequently, a solution, finance plan and quote can be produced, which includes a quantified savings guarantee.

3: Implementation
The optimization project is implemented, energy efficient equipment is installed.

4: Continuation
During the service contract of 10 years, the customer pays a monthly fee while frequent contact with remote engineers and the facility manager on site is conducted. Optimizations are identified and conducted on time, enabling a guarantee of energy savings.

Scope

https://www.carbonlighthouse.com/
Main conclusions and observations

- Common barriers addressed include complexity and hassle through the One-Stop-Shop approach. Gaining considerable traction.
- Important aspects such as **guaranteed performance and quality** are in many cases secured through **creation of networks of trained and qualified professionals** exclusively executing renovation works.
- Often **collaboration with public authorities, utilities or associations** for lead generation (identifying and approaching potential customers) and use of supporting digital platforms.
- Important success factor is gaining sufficient market traction and getting economies of scale. All offer to some extend **standardised solutions**.
- For upscaling innovative financing schemes such as PACE and Sustainable Australia Fund, often an **adoption of local regulatory framework** is required.
- Interesting feature of several American based business models is the implementation of a **portfolio approach to tap into favourable large scale project financing**. Single building renovation projects are aggregated into one large project portfolio that is financed and further de-risked by an insurance of the energy savings performance (lower cost of capital).