



**Abracadabra's Mission to
reduce land consumption
and make renovation to
nZEB affordable through
high quality urban
densification**

Final Results

February 2019

Background

Tackling climate change and cutting greenhouse gas emissions has become one of EU's top priorities.

The EU has set itself the target of reducing greenhouse gas emissions by 80-95% by 2050 compared to 1990 levels. Private households, representing 29% of the European energy consumption (2014), are responsible for roughly 20% of all the greenhouse emissions in Europe (2015).

The ABRACADABRA Strategy

ABRACADABRA is a three-year project, launched in 2016, funded on the principle that a substantial growth in the quality and quantity of renovation of the existing building stock can have a major impact in accelerating the revolution towards nearly Zero Energy.

The EU Funded Project demonstrated to key stakeholders and investors the attractiveness and finance-ability of a renovation strategy based on high quality volumetric additions (AddOns) and renewable energy resources (AdoRES) to achieve nearly zero energy.

Adding usable space through building extensions increases the real estate value of an existing property and is a way to finance the renovation of the whole building, making it more affordable to building owners. The idea behind it all is that volumetric additions, e.g. rooftop extensions, aside or façade additions, as well as an entirely new building, could be sold or rented out and thus reduce the initial investment allocated for the renovation.

Another critical point addressed by the ABRACADABRA project is the urban sprawl. Through adding residential space to existing buildings, i.e. conducting an urban densification, it is possible to reduce the urban sprawl, limit land consumption and protect our green spaces around cities.

The Goals

- Demonstrate to stakeholders and investors the attractiveness of the ABRA strategy
- Contribute to the implementation of a punctual densification policy
- Reduce urban sprawl
- Provoke a legislative and market change accelerating the market-up-take of nearly Zero Energy in existing buildings.

Technical

- Lack of skilled construction workers
- High costs of technologies
- Limitations due to cultural heritage preservations
- Need for demonstration buildings
- Segmented/Regional approaches

Regulatory

- Restrictive regulations on building and land use
- Planning obligations
- Fragmented contexts
- Complex and lengthy bureaucratic procedures
- Procurement rules and specifications

The challenges

The core challenges that emerged in the participant countries (Belgium, Bulgaria, Germany, Greece, Italy, Latvia, Netherlands, Norway, Romania, Spain and United Kingdom) through stakeholder events, can be grouped in four ABRA thematic areas:

Financial

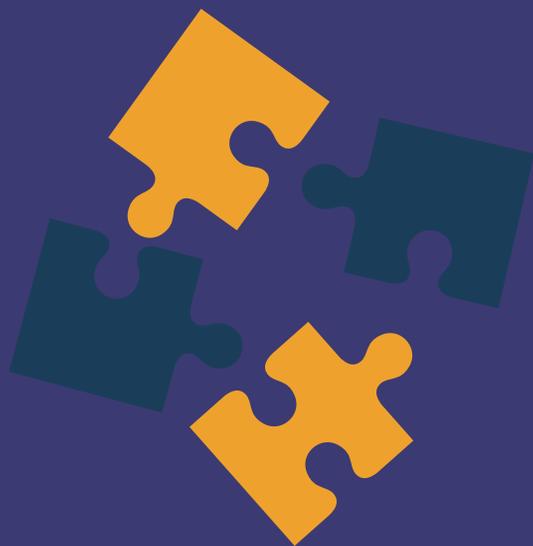
- Lack of confidence of key investors
- Difficult access to bank financing
- Maintenance costs of new technologies
- Difficulty of accessing schemes without governmental support or EU funds

Social

- Disturbance of occupants' relocation
- Cost/Benefit trade-off
- Complex decision
- Engagement of property owners
- Low awareness about energy efficiency and non-energy benefits of renovation

Technical toolkit

The Technical Toolkit consists of two main parts. The first part of this toolkit includes an integrated and simplified energy model (SEM) for energy-economic analysis for non-experts and experts alike. The SEM is specially designed for quick input of data and calculations. It also offers the possibility to insert data regarding extensions of a building without having to re-insert data on the existing building, which is an advantage compared to other similar softwares. In this way, various extension scenarios can easily be assessed.



How can Abracadabra help you

The project team has developed three toolkits (technical, financial, regulatory) in order to provide a commonly agreed, tested and standardised procedure to support all stakeholders and eventually increase the EU renovation rate of the existing building stock. The toolkits are freely accessible to everyone on the project's website.

Financial toolkit

The Financial Toolkit includes an integrated and simplified cost-assessment analysis that allows potential investors to estimate the Return on Investment (ROI) and payback period for the different energy efficiency measures, a calculation of the Net Present Value (NPV), as well as the new added value of the building after the deep renovation with AdoRES. By applying this toolkit to future projects, it is possible to achieve a sustainable and cost-efficient business model for tenants, developers and owners, and avoiding over-estimation of proposed add-ons.

Regulatory toolkit

This toolkit focus on regulatory challenges and opportunities for boosting energy retrofitting of buildings. It aims at supporting Public Administrations in charge of territorial and building , as well as property owners to understand which regulations to consider.

Regulatory

- Facilitating the incorporation of regional regulations on urban densification to local scale to support volumetric addition.
- Supporting Local Governments' retrofitting actions as an example and stimulus for private construction of higher quality.
- Conducting a co-productive decision-making with the active tenants for a successful project.
- Promoting a wider application of energy performance rent regulation towards nZEBs with substantial own production.
- Providing legal advice on the general legal situation at national or at local level concerning energy efficiency in buildings, add-ons, and renewables.
- Providing information on potential regulatory hurdles on regional and local level.
- Identifying and proposing solutions to national and local policy-makers to overcome regulatory barriers without compromising existing rights.
- Advising on how to address and solve co-ownership concerns.
- Providing information on how to overcome the split incentive dilemma in rental property by highlighting owners' benefits such as the increase of estate value.

Financial

- Providing information on public funding opportunities available at every level.
- Promoting the developments of financial solutions for coupling energy efficiency renovation and building add-ons among private banks and public funding authorities.
- Promoting tax rebates for nZEBs.

Stakeholders Policy

Recommendations

During various international workshops held in different EU Member States, the stakeholders and attendees have voted a series of Policy Recommendations:



@Abracadabra.ProjectH2020



@abracadabra_eu



Abracadabra



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement number 696126. The European Union is not liable for any use that may be made of the information contained in this document, which is merely representing the authors' view.

- Promoting the flexibility of loans and grants to cover the whole range of interventions needed.
- Raising awareness of the private financial possibilities and implications.
- Advising on project aggregation possibilities and available funding for such projects.

Technical

- Empowering Local Governments' leadership in retrofitting as owner of social housing and other buildings.
- Mainstreaming building extensions in the social housing sector for the development of new rental units.
- Promoting the ABRA technical toolkit at local level to incentivise urban densification and energy renovation.
- Promoting the involvement of community members that can act as promoters of the effective implementation of interventions.
- Favoring the increase of height of buildings and flexible architectural prescriptions via building codes and urban planning.
- Showcasing the different technical solutions of AdoREs and Assistant buildings.
- Creating an "all inclusive" approach based on a chain of skills needed for the 360 re-development activities.
- Integrated solutions for building extensions should be provided by construction companies.
- Informing on customisability of renovation action/ AdoREs solutions and resulting energy savings.
- Raising tenants' awareness of the possible solutions to save energy.