Cost-effective and high performance renovation of existing residential multi-family buildings in three European countries

BEEM-UP WWW.BEEM-UP.EU

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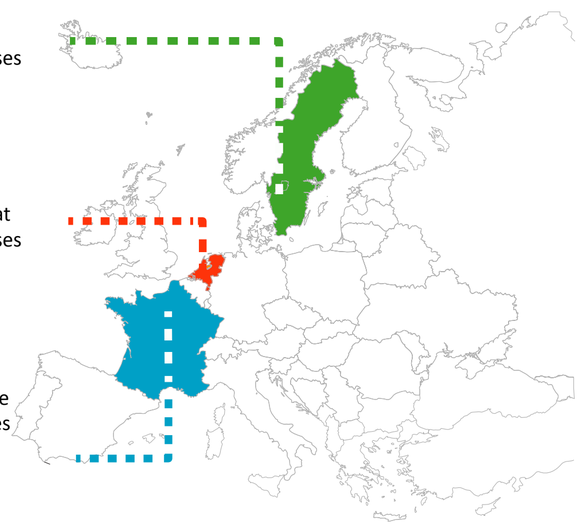
BUILDING ENERGY EFFICIENCY FOR MASSIVE MARKET UPTAKE

BEEM-UP demonstrates the economic, social and technical feasibility of retrofitting initiatives, drastically reducing the energy consumption in existing buildings.

ALINGSÅS Brogården
- 144 refurbished houses
- Built in the 1950s
- Owner: Alingsåshem

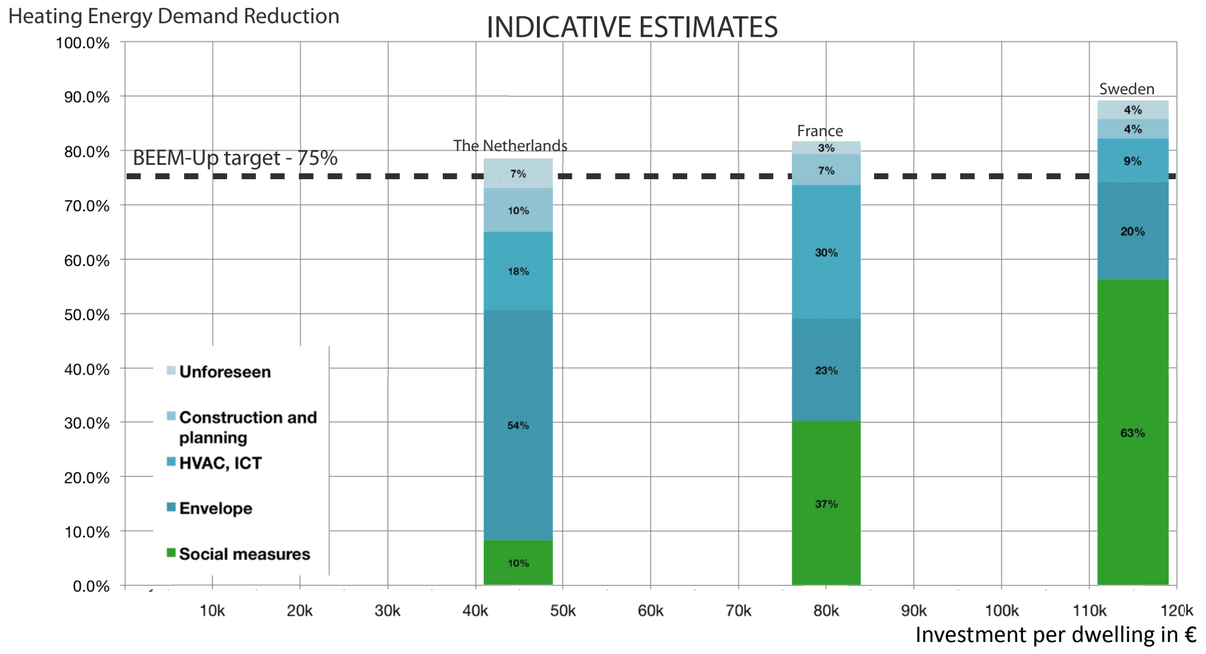
DELFT Van der Lelijstraat
- 108 refurbished houses
- Built in the 1970s
- Owner: Woonbron

PARIS Cotentin Falguière
- 87 refurbished houses
- Built in the 1950s
- Owner: ICF Novedis



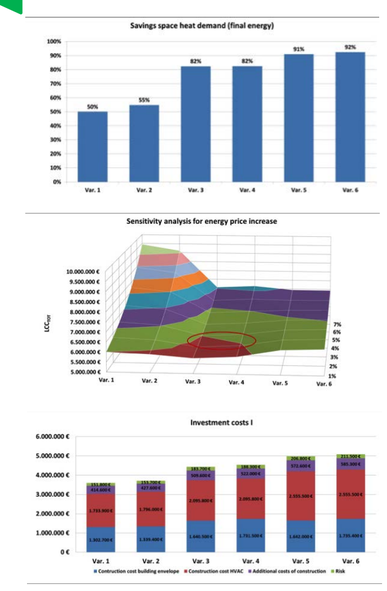
Deploying a four-dimensional approach of static (building envelop improvement), active (ICT systems), social (tenants involvement) and financial measures (innovative financing instruments), the consortium aims to identify cost-effective ´solution packages´ that go beyond 75% heating energy demand reduction.

PRELIMINARY RESULTS OF THE ENERGY DEMAND REDUCTION



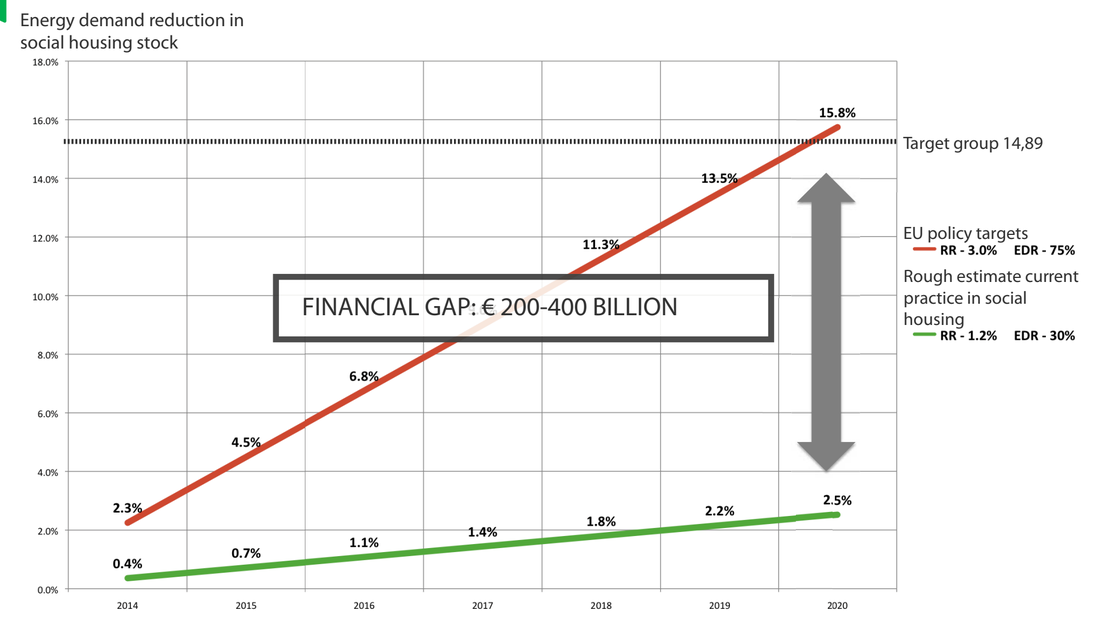
According to our estimates we went beyond the project target achieving 87% in Sweden 84% in France and 78% in the Netherlands. Investment costs vary significantly between 40.000 € till 115.000 € per dwelling. Within refurbishment projects a substantial part of the investment is spent on social measures (kitchen, gardens, wallpaper etc.).

MULTIPLE VARIANTS OF TECHNICAL MEASURES WERE ANALYSED



Six different technology packages have been analysed for each pilot site in order to chose the most optimal scenarios for refurbishment. Life Cycle Cost analysis has been performed. The most cost-effective technology packages have been implemented in the pilot sites.

EC 2020 target -20 ENERGY EFFICIENCY, 5% ACHIEVED, 15% TO GO



Social housing plays an important role in achieving EU targets. Financial support from governments seem to be necessarily for a large scale uptake of retrofit. In order to engage governments in financial support of retrofitting, detailed information about the current market status is needed.

One of the main goals of the BEEM-UP project is to compare the refurbishment approaches of the different countries, and to provide an exchange regarding related problems and solutions. For this purpose an ecological as well as life cycle cost assessment has been carried out for all three sites. For each site six refurbishment scenarios have been defined through intensive consultations with the building owners and other stakeholders, for instance tenants or tenant representatives. **Preliminary results indicate that it is economically and technologically feasible to achieve 75 per cent reductions in energy consumption for the existing building stock.** However, these preliminary findings point to institutional and social impediments that may not lead to massive market uptake in the social housing real estate community. **Social housing institutions face distinct regulations and economic constraints, which can inhibit their uptake of energy retrofit policies.** On the one hand, national and EU wide policies nudge building owners towards basic energy-efficiency measures. On the other hand, institutional factors historically embedded into the social housing framework like rent controls and governmental rent subsidies inhibit a more equitable distribution of refurbishment costs between tenants and building owners. **Moreover, discounted third-party capital is limited and subsidies at the national and local levels cannot support the level of refurbishments needed across the housing stock.**