

## Retrofit case studies

More in-depth information about many of the case studies below can be found on:

<http://www.proficient-project.eu/Downloads/Executive%20SummaryD7.5StofofCSOretrofitting.pdf>

Table 1: driving forces behind case studies

Project	Project drivers
<b>Zelená úsporám, CZ</b>	Home owners association contracted consultant
<b>Raab-Sol, HU</b>	Corporation collaborated with ESCO. Municipality financially involved, good communication with residents
<b>Zagreb project, HU</b>	Housing association contracted consultancy. Government and, municipality funding. Consultancy leading. Good communication with tenants.
<b>Energy leap, NL</b>	Government program
<b>MMM, NL</b>	Government, housing corporations, construction and installation sector and energy companies collaboration initiative
<b>Kies-groen-licht, NL</b>	SME initiative
<b>E.nu, NL</b>	SME initiative
<b>ZEB, NO</b>	Research centre for Zero Emission Buildings
<b>Hook Norton, UK</b>	Local community association to promote energy saving through competitive financial construction, backed by government funded revolving fund
<b>Low Carbon Living Ladock , UK</b>	Government program, community led initiative
<b>PETRA, UK</b>	Tenants initiative, local government funding
<b>Edward Woods Estate, UK</b>	Local government project, good communication with residents
<b>Myhrerenga Borettslag, NO</b>	Tenants initiative, housing association and government funded
<b>Volmarijnstraat, NL</b>	Tenants initiative, housing association provided process, technical and financial support/backing
<b>Wilhelmina Warehouse, NL</b>	Municipality initiative, supported by end-users association and professional process consultant

### Zelená úsporám, Košiče, Czech Republic

In the Košiče district of Prague, a block containing 23 apartment dwellings has been renovated to improve the energy performance. Apartments are owned by private persons associated in SVJ (Association of dwelling owners). One of the members is a housing cooperative (Housing cooperative of underground builders). This cooperative used to be 100% owner and still owns couple of apartments. The housing cooperative acts as an appointed owner and at the same time is responsible for management of housing stock to SVJ.

### **Raab-Sol, Győr, Hungary**

The Raab-Sol project consists of 63 buildings, containing 1683 apartments, located in three different districts of Győr. Depending on the district, 10-11 storey or 4-5 storey buildings are common; dwellings are between 50-70 m<sup>2</sup> floor area. All of the buildings belong to the same housing association called XXX. Lakásfenntartó Szövetkezet (30. Housing Management Association). The 63 buildings have a separated cost accounting and a representative. They are responsible for arranging common matters and for decisions in financial issues.

The housing association owns the building structure and envelope, the interior is owned by the individual home owners. Services (heating, hot water, electricity) are provided by the housing association.

### **Zagreb project, Budapest, Hungary**

The project covered 4 blockhouses in the 10<sup>th</sup> district of Budapest, with 768 flats in total. The buildings originate from 1976, and each building forms its own housing association. The housing association (HA) owns the main structures of the buildings (except the windows) and the common building services (except radiators) and equipment. Flat owners own the indoor space of their unit, separation walls, windows and inside equipment.

### **Sustainable refurbishment project in Livorno, Italy**

In the Shangai District in Livorno, Italy, two separate housing blocks have been retrofitted by demolishing and re-constructing part of an existing residential district. As the retrofitting process consisted of demolishing and re-constructing, this project is described as a new-construction in D7.4 State-of-the-art of CSO energy-efficient new districts.

### **Energy leap ('Energiesprong'), The Netherlands**

Energy leap is a program commissioned by the Dutch government, with a duration from 2010 to 2014. Energy jump aims to motivate all parties in the building industry to take an innovative approach towards energy consumption. This should lead to large scale deployment of renewable energy technology and a major reduction in the consumption of fossil fuels.

### **More with Less (MMM or 'Meer met Minder'), The Netherlands**

MMM is the national approach towards energy saving in existing homes and other buildings in The Netherlands. The MMM approach is a joint initiative from the government, housing corporations, the construction and installation sectors and energy companies.

### **Choose Green Light (KGL or 'Kies Groen Licht'), The Netherlands**

KGL develops, installs and maintains integral solutions for sustainable energy and energy saving for the existing building stock. KGL consists of a collaboration between seven SMEs, containing technical consultancy, software development, installation companies, energy consultancy and financial services.

### **'E.nu', The Netherlands**

Housing stock in the Netherlands needs to become more energy efficient. That is at least the ambition of many stakeholders that are partner of the e.nu program, like municipality, housing association, end-users and contractors. Ambitions are often lost over the execution of plans, in actually organizing and financing the project.

### **ZEB, Trondheim, Norway**

ZEB is the Research Centre on Zero Emission Buildings, established in 2009 in Trondheim, Norway. The vision of the ZEB is to concur by research development in the abatement of the greenhouse gas emissions caused by buildings. The main objective is to develop products and solutions for existing and new buildings that will be carbon-neutral with regard to their production process, use, and demolition.

### **Hook Norton, Oxfordshire, United Kingdom**

Hook Norton is a Co-operative and Community Benefit Society, set up by Low Carbon Hook Norton members to help the community reduce its energy consumption, carbon emissions and save money, with a range of community-based schemes and individual household projects based on interest-free loans.

### **Low Carbon Living Ladock Cornwall, United Kingdom**

The Low Carbon Living project is working to make the rural Mid-Cornwall villages of Ladock and Grampound Road a test bed for achieving sustainable living on a community-wide scale.

### **Parkhill Estate Residents Association (PETRA), Essex, United Kingdom**

PETRA (Parkhill Estate Tenants and Residents Association) is a tenant management organisation that aims to create a more sustainable future for the residents of its social housing estate in Hornchurch. PETRA manages the estate on a day to day basis on behalf of its residents and comes under the London Borough of Havering. PETRA took over the local housing management services from the Havering Council in 2003. The estate contains three tower blocks.

### **Edward Woods Estate, London, United Kingdom**

Edward Woods is a large estate in the Shepherd's Bush Green ward in the north of the London Borough of Hammersmith and Fulham. The estate contains three high-rise blocks, where a landmark regeneration scheme has been underway since 2009. The scheme has multiple regeneration objectives, the major one of which is to improve the energy efficiency of the buildings.

### **Myhrerenga Borettslag, Oslo, Norway**

Seven separate apartment buildings located in Oslo were renovated between 2009 and 2011. The Myhrerenga housing cooperative consists in 7 similar blocks located 15 km North-East of Oslo, in Skedsmokorset, owned by the USBL Cooperative Building and Housing Association. The buildings were erected between 1968 and 1970 and consist of 24 apartments in each block, divided in 3 floors and a basement. There are 6 one-bedroom flats of 54 m<sup>2</sup> each situated at the ends of each building, and 18 68

m<sup>2</sup> two-bedrooms flats situated in the central part of each building. Whole complex consists of 168 dwelling units. The buildings needed to be renovated because of the poor condition of the materials in the facades, the little insulation in the floors, and the poor air quality in the apartments. As a result, the measured yearly energy use of each building was on average 290 kWh/m<sup>2</sup>.

#### **Volmarijnstraat, Rotterdam, the Netherlands**

Initiative for renovating the row-houses in the Volmarijnstraat in Rotterdam was coming from the inhabitants themselves, that disagreed with the municipal plan to demolish the houses for reasons of bad foundation work. The existing inhabitants wanted to prevent the loss of social structure of the street, and decided to start up the association of inhabitants called Marinus (2000).

Houses have been stripped to the bare structure of separating walls, floors and roof. These shells were offered for sale back to the inhabitants. Inhabitants were allowed to customize their houses completely. During the retrofitting process, the inhabitants and association were supported by the housing association Woonbron / Maasoevers. In the end, 17 houses were realised and delivered in 2007.

#### **Wilhelmina Warehouse, Amsterdam, the Netherlands**

Squatters occupying this old warehouse building for a long time already. This group started an association with the objective to keep the building for its unique value to its environment. The municipality of Amsterdam, owning the property, approves the plan to keep the building, with the argumentation that it would be important to support the local creative and start-up economy.