



Info-package 2
District retrofitting



Energy



Introduction

TEPEBASI

The REMOURBAN project in Tepebaşı is aiming to achieve a sustainable district through deep retrofitting and renewable energy generation technologies. To reach this objective in 17 buildings of Yasam Koyu district, a series of interventions were designed such as façade and roof insulation, windows replacement with low-E glazing, lighting replacement with efficient LED system, installation of mechanical ventilation with heat recovery, installation of fan-coil heating/cooling system, room thermostats, windows and door magnetic sensors for smart decisions to optimize the control of heating and cooling and building integrated photovoltaic panels for renewable electricity generation.

In complement with building retrofitting, conventional gas boilers and A/C units will be replaced by a district heating/cooling system, using renewable sources. The system will consist of biomass pellet boiler, air sourced heat pump with heat recovery and solar thermal collectors for District Hot Water (DHW) to produce energy demand of the Yasam Koyu district.

By implementing building retrofitting interventions, district energy consumption will be reduced up to 60%.

This info pack covers only building deep retrofitting interventions.



VALLADOLID

With the aim of achieving a Near Zero Energy District in Valladolid, a series of interventions have been designed focusing on improving the sustainability of the 19 residential buildings of the FASA neighbourhood, increasing its energy efficiency and reducing the CO₂ emissions of its buildings. To achieve this objective, façades and roofs will be insulated, the illumination of the common areas will be updated to LED and a photovoltaic field will be integrated in the façade of the tallest building of the neighbourhood, a tower of 14 floors.

A parallel intervention in the existing district heating and District Hot Water (DHW) facilities will be carried out. The interventions consist of renovating the distribution network to reduce heat losses and integrate biomass to replace gas and heating oil consumption.

Both interventions, district retrofitting and district heating network renovation, will achieve a heating consumption reduction up to 45%.

Although the two interventions are covered by REMOURBAN, in this info pack only district retrofitting will be addressed.



Description

Figure



Goals

TEPEBASI

- Reduce heating and cooling demand by 70%
- Improve thermal comfort
- Improve air quality by providing more fresh air.
- Reduce electricity consumption of lighting up to 60%.
- Integrate smart management systems in the buildings
- Reduce heat losses (namely through windows)
- Engage users with the interventions
- Integrate PV panels for on-side renewable electricity generation.
- Decrease energy bills
- Reduce CO₂ emissions drastically

VALLADOLID

- Reduce heating demand by 40%
- Improve thermal comfort specially during the nights and mornings when heating system is off.
- Reduce electrical consumption of common areas lightning up to 80%
- Improve aesthetic appearance of the buildings thanks to the façade insulation and the finishing.
- Increase market value of the dwellings
- Engage owners/tenants with the interventions
- Integrate PV panels in the façade of the tower to achieve on-site generation of renewable energies.

Progress

TEPEBASI

Deep retrofitting in Yasam Koyu have started in May 2017, 12 buildings were finished by the end of 2017. District heating system will also be finalized by this date to supply energy for retrofitted buildings. Remaining 5 buildings will be retrofitted by June 30th, 2018.



VALLADOLID

Works started in July 2017 in the tower with scaffolds assembly and façade insulation. At the end of December 2017 the interventions in the tower and other two buildings were finished. Remaining 15 buildings will be finished before June 30th, 2018.





Lessons learnt

	TEPEBASI	VALLADOLID
01	As the demo site is under public ownership, the first and foremost lesson pertains to public procurement. It has been found that, in the absence of an explicit mandate for local governments in their procurement work, substantiating social and environmental benefits, efforts remain ineffective and inefficient.	Individual ownership of the different apartments, the typical ownership typology in Spain, is a big non-technical barrier to carry out this kind of deep interventions. Majority of the owners may approve these interventions building by building. It implies a huge communication effort from REMOURBAN partners to them.
02	The absence of a coherent institutional framework in public procurement has appeared as the second most important factor in sustaining the drive towards sustainable urban policies in Turkey.	Due to the high average age of residents of the neighbourhood, social networks are not the most effective communication way to reach all interested owners, so in this case neighbours were informed about the project through written communications and face to face meetings to transmit simple and clear messages.
03	Most legislative effort in Turkey in the field of energy efficiency (EE) and renewable energy (RE) in the built environment has been essentially completed on the primary directives level. Concerning the adaptation to renewable energies, long and arduous legislative processes and frequent changes have discouraged distributed generation.	A good financial scheme has to be presented to the owners especially if the average income rate is low, like in this case. For that reason, public grants may reduce the investment of the owners, and energy savings may balance the payment of the loans that cover owner's investment.
04	Two significant gaps have been encountered in smart urban districts in Turkey. The first one is the finance gap which has to some extent been addressed by multinational co-financing flowing into Turkey in the past 10 years. The sustainability of these schemes can be questioned but they have provided a significant push for EE and RE investments in the country. Despite progress though, impact remains limited.	Technical aspects should be clearly explained to the neighbours, but are not as important as the economic ones.
05	Another significant gap is the information gap. This relates to the market and technology information gaps that provides for long term economic decision making on the part of the users and owners. Local government has been found to be an important actor in bridging this information gap.	





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