



# HOUSEFUL

Innovative circular solutions and services  
for the housing sector



# CIRCULAR IDEAS FOR OUR BUILDINGS

At EU level, the housing sector is responsible for 9% of GDP. However, it also uses 50% of the extracted materials, 40% and 30% of available energy and water resources, produces 30% of total waste and emits 35% of green-house gasses. No doubt that new, radical actions are needed.

The European project HOUSEFUL has embraced this challenge by proposing an innovative paradigm shift towards a circular economy for the housing sector. The main goal is to develop and demonstrate an integrated systemic service (HOUSEFUL Service) composed of multiple circular solutions co-created by stakeholders in the current housing value chain. The HOUSEFUL Service will aim at the circular management and efficient use of water, waste, energy and material resources for all stages of European building's life-cycle.

HOUSEFUL approach will be demonstrated at a large scale in 4 demo-sites in Vienna (Austria) and nearby Barcelona (Spain), adapting the concept to different scenarios, including social housing buildings. The project's solutions will be evaluated from an environmental (Life Cycle Assessment), economic (Life Cycle Cost) and social (Social Assessment) point of view.



## How will a building equipped with HOUSEFUL's solutions improve?

**+95%**

Recovery of food waste at home level

**-60%**

Reduction of CO<sub>2</sub> emission

**+90%**

Recycling of rain-, grey- and blackwater  
for reclaimed water and biogas

**-50%**

Reduction of non-renewable primary  
energy consumption of buildings

**+90%**

Conversion yield for production  
of high-quality biogas as renewable  
heat and/or power at home level

**-30%**

Reduction of waste destined to landfills

# HOUSEFUL solutions

The project's solutions are grouped into five areas covering the key aspects of the housing sector.



## Holistic solutions

An innovative holistic model as an integrated service, replicable to other residential buildings.



## Materials solutions

A new, resource-efficient and circular approach in the use and disposal of construction materials.



## Water solutions

Nature-Based Solutions for the recycling and reuse of water in domestic environments.



## Energy solutions

Lower energy demand and increased share of renewable energies towards Nearly Zero Energy Buildings.



## Waste solutions

Implementation and incorporation of waste management into economically viable and sustainable solutions.



## SaaS Software as a Service



## Definition of a new method for the analysis of Building circularity



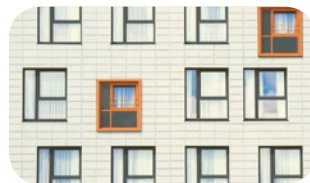
## Social engagement for co-creation



**Development of 4  
Material Passports based  
on advanced 3D model**



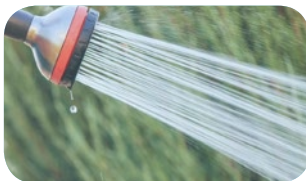
**Efficient treatment and  
reuse of rainwater and  
greywater**



**Improvement of energy  
efficiency by active and  
passive solutions**



**Searching local building  
material**



**Efficient treatment and  
reuse of un-segregated  
water**



**Guarantee the energy  
saving/production in  
buildings**



**Blackwater and  
bio-waste treatment for  
biogas production**



**High quality fertiliser/  
compost of local origin**



**Optimal management  
of waste at the end of  
building life cycle**



# HOUSEFUL



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