

TARTU PAMPLONA GENK



Residential Living Lab Genk

Open calls

Jan-Feb 2023



oPEN Lab

TARTU
PAMPLONA
GENK

LEADING THE TRANSITION
TO POSITIVE ENERGY
NEIGHBOURHOODS



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 101037080.

The sole responsibility for the content of this presentation lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the CINEA nor the European Commission are responsible for any use that may be made of the information contained therein.

AGENDA

1. Roundtable
2. Introduction on oPEN Lab concept
3. Specification of Living Lab Genk
4. Identified gaps
5. Type of testing
6. Q&A

Roundtable

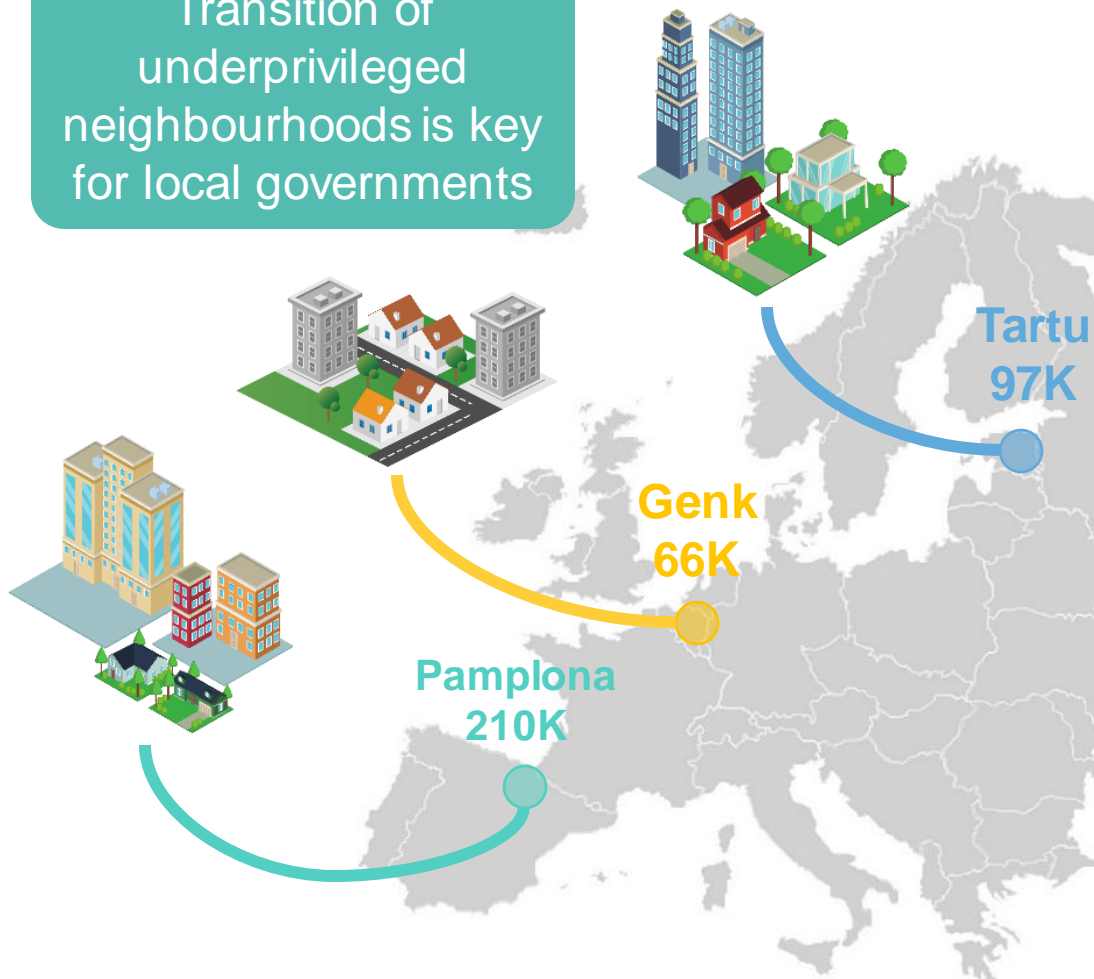
- Which organisation do you represent?
- What type of innovations (close to market products or services) are you working on?

oPEN Lab Concept

- Existing neighbourhood to PEN
- Co-creation quadruple helix
- Living Lab concept

Revitalisation of urban areas towards Positive Energy Neighbourhoods (PEN)

Transition of underprivileged neighbourhoods is key for local governments



75%

of Europeans live in urban areas

700

out of 800 European cities are small to medium-sized

1. POSITIVE ENERGY NEIGHBOURHOODS
within existing urban contexts

2. LIVING LAB
innovation processes in real-life test environment

3. OPEN INNOVATION
to enable commercially viable solution packages

3 Living Labs, 3 different settings



**Tartu (EE): renovation of 3
Soviet-era apartment buildings
to PEN**



**Genk (BE): single family
housing district, neighbouring
to a sandbox area**



**Pamplona (ES): blending large
tertiary building with social
housing**

Contribution to the objectives of the European Renovation Wave



Packaging solutions, combining technical and social innovations and business models, ready for replication



Identification of viable innovative financing solutions for PEN models



Support the development of sustainable investments achieving cities' sustainability targets



Mapping how innovative technologies and participatory processes can best contribute to the implementation of the Renovation Wave

oPEN Living Lab Genk

LOCAL CONTEXT





1 POSITIVE ENERGY
NEIGHBOURHOOD



 **27+6**
SOCIAL
HOUSING

8 
privately owned
GARDEN CITY HOMES



41
HOUSEHOLDS

16+ INNOVATIVE
TECHNOLOGIES



14
LOCAL
PARTNERS

8 INDUSTRIAL
PARTNERS 

 **3** RESEARCH
INSTITUTES

3 PUBLIC
SECTOR 



oPEN Living Lab Genk



TECHNOLOGIES AND INNOVATIONS

1. Prefabricated insulated envelope for building stock
2. Test & compare solution packages, aiming for energy surplus; plug and play
 1. Different kinds of HP
 2. Maximized PV
 3. Ventilation
 4. Distribution system
 5. Thermal and electrical storage
3. Neighbourhood level
 1. (Electrical) storage
 2. Link to local services, EV charging...



Meet our (technical) playground!



TECHNOLOGY BOXES

-  INDIVIDUAL
-  MICROGRID



RENEWABLE ENERGY

-  PV
-  BIPV

STORAGE



-  THERMAL
-  ELECTRIC

VENTILATION




-  EXTRACT with DEMAND CONTROL
-  BALANCED with HEAT RECOVERY

HEAT PUMPS

-  AIR-WATER
-  GEOTHERMAL

-  SOLAR THERMAL
-  HYBRID (PVT)

EMISSION SYSTEM

-  EXISTING RADIATORS
-  LOW-TEMP RADIATORS
-  SURFACE HEATING

OTHER

-  DC GRID

oPEN Living Lab Genk

PLANNING

1. Public tenders have been published 24/01/2023
Building envelope: <https://cloud.3p.eu/Downloads/1/156/18B/2023>
Technical installations: <https://cloud.3p.eu/Downloads/1/864/4G/2022>
2. Negotiation phase
3. Awarding the contracts: before summer '23
4. Start of execution design: summer '23
5. On site works: asap 😊

oPEN Living Lab Genk

PARTNERS INVOLVED

citizen

industry



governance/public

academia

- [illegible]



oPEN Living Lab Genk

IDENTIFIED GAPS

1. BIM from scan to as-built
2. Educational Neighbourhood infrastructure
3. DC heat pump
4. Wildcard

oPEN Living Lab Genk

TYPE OF TESTING

- Boundary conditions:
 - Residential context: permanent habitation
 - Socio-economic context: compensating for suboptimal performance
 - Interaction with inhabitants: get them on board with a win-win

oPEN Living Lab Genk

Q&A



oPEN Living Lab Genk

FOLLOW UP

Don't hesitate to reach out!

Pieter Bosmans

+32 14 33 50 68

pieter.bosmans@vito.be

SUBSCRIBE TO OUR NEWSLETTER



VISIT OUR WEBSITE

