



Living Lab Turin-Mirafiori-Sud, Italy



NBS 5



(c) L. Ribotta

Green roofs and walls

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New green roof at WOW



NBS New green roof at WOW

Implementing an extensive green roof on a currently abandoned public building. The green roof is conceived as a “natural lawn”. Sowing a mixture of seeds from stable meadows of northern Italy allows calibrating the use in plains and mountain areas up to 1000 - 1500 m of altitude. Many species can be used in the regions of central-southern Italy, allowing its use in most parts of the Italian peninsula.

The green roof technology supplied by Harpo Group, composed by layered materials with the following structure:

- anti-root waterproofing,
- water retention felt,
- drainage,
- storage and ventilation elements,
- filter sheet,
- 14 cm of a mineral-based substrate (volcanic lapillus, pumice), produced by Harpo specifically for green roofs

The seed mixture is composed of at least 20 species with a balanced ratio of grasses and groups of annual and perennial flowering plants (dicotyledons). This type of vegetation was conceived to create a pasture for the bee hives located nearby the building.

The roof features a sub-irrigation system underneath the substrate. The system is fed by a cistern placed in the nearby garden with a capacity of 11.000 liters of harvested rainwater connected to the downpipes of the building. It is then pumped to the roof.

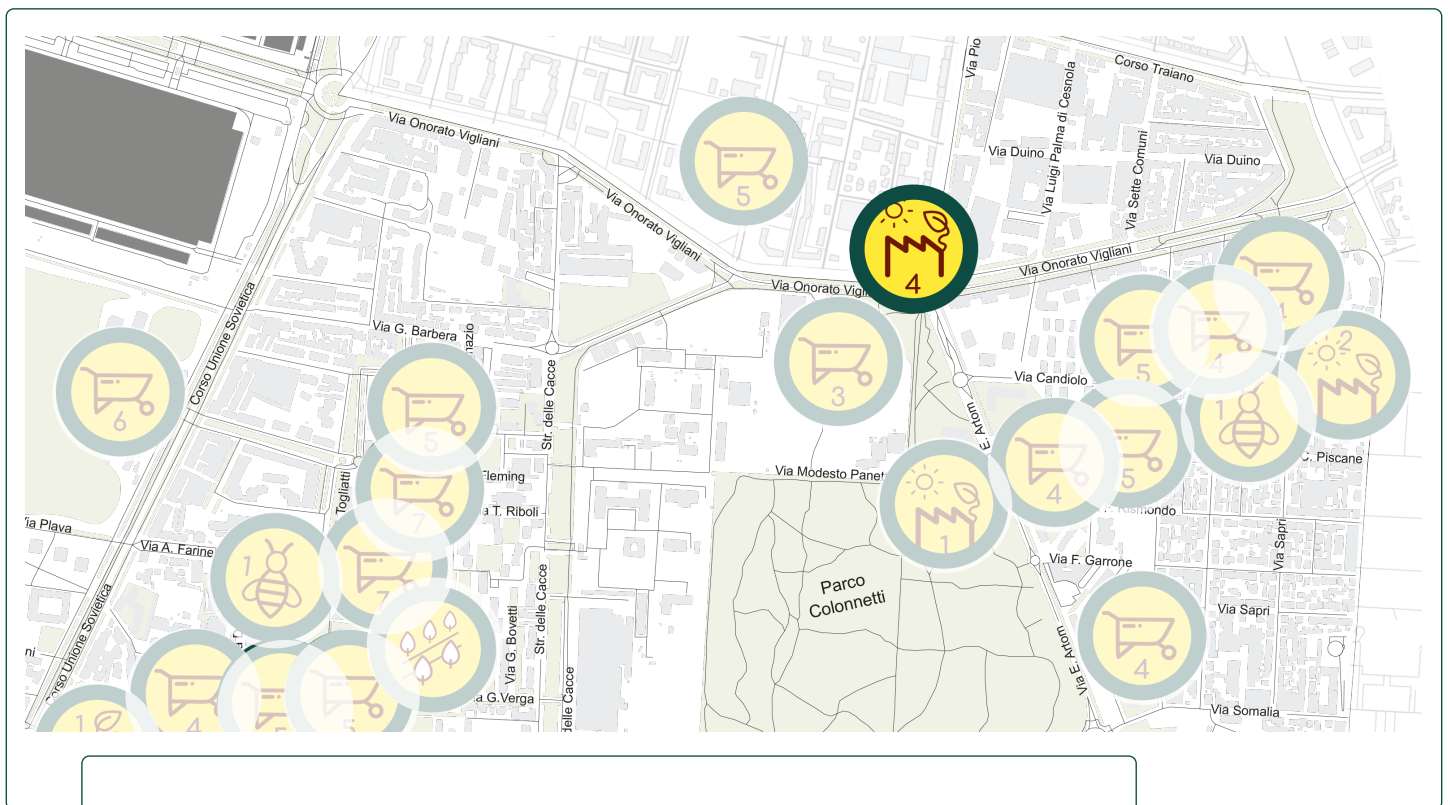
Aim & goals

The NBS represents a first step in proposing innovative uses of green infrastructure with experimental features. Incremental implementation aiming at extending the green roofing to other parts of the large roof. Key goals include testing technical solutions on the new green roof and to promote the usage of the abandoned building.

Area of implementation

A section of the roof a public building located in via Onorato Vigliani 102, previously known as VOV102, now named WOW. The building was originally a factory and is owned by the City of Turin. It housed the National Agricultural Mechanical Centre since 1951, and was then managed by a social cooperative. Being abandoned a few years now it is waiting for future uses.

Public access to the roof is not possible.



GPS coordinates: 45.017254, 7.644881

Target groups (beneficiaries)

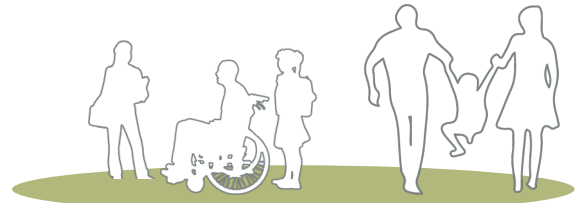
Core beneficiaries are families and elderly people living near the NBS area, benefitting from the general interest in renovating the building and opening it to the public in the future.

Key target groups include:

- Local residents to spend time in the newly refurbished area.
- Disadvantaged people living in Mirafiori district
- Local network of Coldiretti farmers managing a local food market within the WOW area
- Customers of the farmers market can now enjoy the friendly green area and also see the

innovative green roof and get inspired.

- WOW area is also frequented by local NGOs, students and teachers of surrounding schools



Stakeholder constellations

Main responsible partner

Orti Alti

- coordination of the implementation of the NBS, structural works and final testing of the implemented roof.
- design and production of all the technical drawings required to obtain the permit to transform the roof
- coordination of the worksite for the construction and the planting phase
- temporary maintenance (maintenance until the end of the project)

ProGReg partners involved

City of Turin – responsible (owner of the building):

- owner of the building
- administrative permissions
- co-maintenance

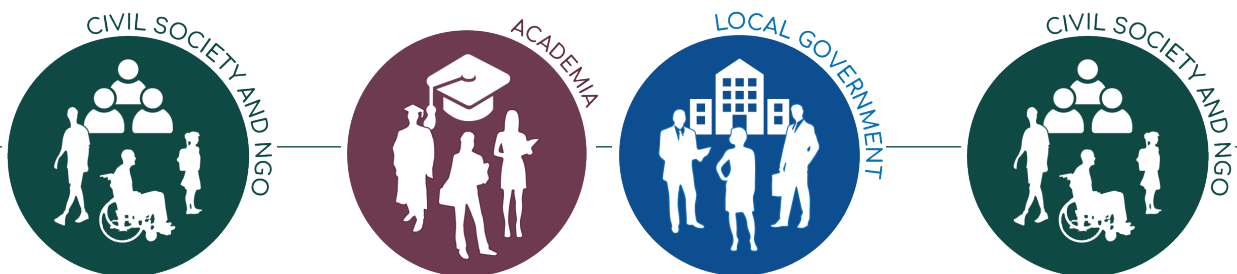
University of Turin:

- air quality monitoring

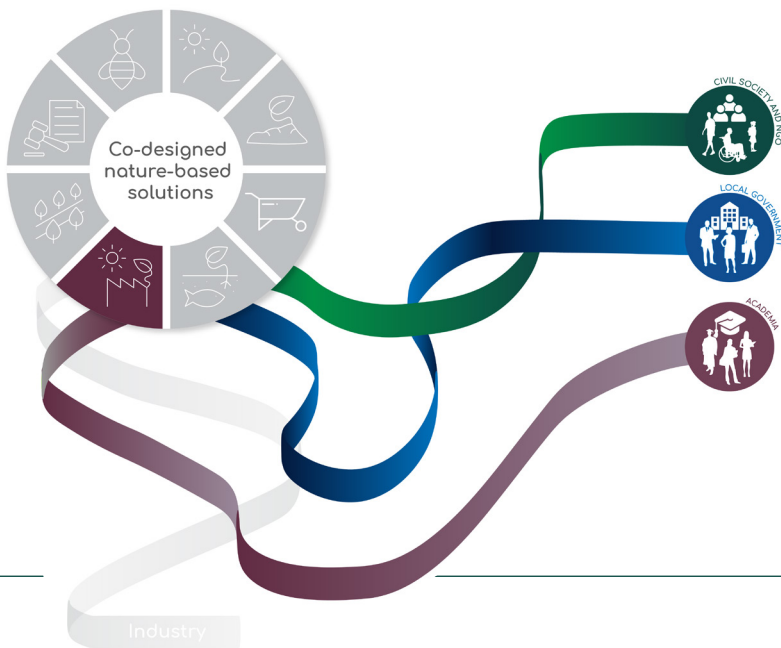
Other stakeholders involved

Associazione Parco del Nobile (local NGO of beekeepers)

- maintenance of the green roof



Co-design activities, stakeholder engagement, and pre-implementation activities



The green roof at the WOW building is the result of mainly citizen-driven engagement, involving a number of civil society associations with the support of botanists from the University of Turin. The municipality of the City of Turin played a secondary role in the implementation of this NBS.

Planning and preparatory activities (administrative and technical procedures)

The initial project started with the idea of creating a roof top garden to be managed by a citizens' association. After evaluating and excluding other buildings, the feasibility study led to the roof of the building located in via Onorato Vigliani 102 (WOW). Structural loadbearing studies limited the construction of the roof garden to a specific portion of the building's flat roof. Consequently, planning focused on an area of 140 sqm to create an extensive, low maintenance green roof with a flowering lawn, serving as a pasture for bees. Alternative types of extensive green roof vegetation were also considered including:

- sedum (requires less maintenance but is less attractive for pollinating insects);
- lippia nodiflora (low maintenance, quite attractive for pollinating insects);
- meadow florin plant (higher maintenance but higher biodiversity and attraction of pollinating insects).

Given the willingness of the beekeepers to mow the flowering meadow, it was decided to opt for the flowering meadow.

The roof has been provided with a lifeline. The roof is accessed through an aerial platform, restricting access only to specialized personnel.

Irrigation is secured by harvesting rainwater.

Implementation budget

Total implementation budget and proGReg funds:

53.500 €



Co-design and engagement activities

Fondazione Mirafiori, Coldiretti and an informal network of beekeepers were engaged in the co-implementation process of the pollinator-friendly garden.

The Covid-19 pandemic hampered the engagement process, but activities restarted after restrictions ended by organising the maintenance and accompanying activities with citizens.

During the co-design process, the Heritage Management Department of the City of Turin decided to provide its offices for managing the construction site.

Botanists from the University of Turin (UNITO) have lend their expertise in selecting suitable vegetable species to plant on the green roof to create a mellifluous garden attracting pollinators.

Key achievements and implementation results

The decision of the City Council to develop the site and collaborating with Fondazione Mirafiori in the co-design and management process represents a major achievement. The process has also led to opening a tender for the future renovation and reuse of the building.

Since 2018, bees and butterflies have been surveyed in pollinator transects in Piedmont Park by combining several NBS..

Synergies with other proGReg activities



Direct connection with NBS 8 Pollinator Friendly Garden - same location and also managed by OrtiAlti.

- Enabled joint co-design processes for the two NBS to create pollinator transects around Piedmont Park
- Serves as a showcase for potential future use of the area.
- Contributes to assessing the specific impact of NBS, making it the first Italian butterfly monitoring scheme using urban transects.

Links with other external projects or activities

- European project (CWC- EU program Interreg):
- the reuse of rainwater for a green roof was source of inspiration for the watering system of the roof.



Critical implementation issues and barriers encountered

Citizens are not allowed to use the internal stairs to the roof by the Heritage Management Department of the City of Turin due to safety issues since the building is not supervised and only used occasionally. The cost of external stairs would outstrip the green roof cost.

The City is planning to transfer the use of the building to a new entity.

Key barriers are connected to the city's difficulty to find a new and long-term use for the building, having repercussions on the management of the green roof (maintenance requires an annual mowing).

Another critical issue represents the engagement of the City's Green Maintenance offices for maintaining the site.

Communication activities



- documenting and disseminating different phases of the construction through OrtiAlti's social media channels.
- local press interview with OrtiAlti
- several articles about the green roof and the pollinator friendly garden between February and March 2020 (before Covid-19 lockdown)

Maintenance & Sustainability beyond proGReg

Associazione Parco del Nobile together with OrtiAlti, will be responsible for maintenance out of their human and financial resources. The sustainability of the NBS beyond proGReg is closely linked to the future use of the building and the entire area.

The City of Turin is determined to find a strong new stakeholder for managing the building and the surrounding green area. It is envisaged to use the area to build a new Science Center for disseminating proGReg NBS and other green solutions for citizens and scholars. This may stimulate new collaborations between the Science Center and other local stakeholders by means of a collaboration pact (Fondazione Mirafiori, Parco del Nobile, informal beekeepers, etc.).



NBS benefits and co-benefits for the Living Lab Turin

The intervention has stimulated new perspectives of the future reuse of the WOW building.

To date, private sector players have expressed interest in renovating and using the building in accordance with the new “green vision” of the City of Turin.

NBS 5 benefits and co-benefits



Fact Sheet



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The logo for ORTI ALTI, featuring the text "ORTI ALTI" in a bold, black, sans-serif font, with "FARM YOUR ROOFTOP. ENJOY SHARING!" in a smaller font below it.

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