



NBS 5

Green roofs on collective housing unit, on Grigore Alexandrescu street

FC Cluj-Napoca

Type of NBS intervention

NBS 5 Creation of an extensive green roof of approx. 400 sqm on a 4-storey collective housing unit in Mănăştur neighbourhood.

Description of the planned NBS interventions

Green roof with vegetation adapted to the Transylvania vegetation area at an altitude of 150-300m, containing bulbous plants, succulent and perennial plants.

The roof will feature paths and a small-scale relaxation area.

Access is realized with a hatch ladder given limited space on the last floor to realize a fixed staircase.

Scenarios

Do-it-all (best-case)

The creation of the extensive green roof on the housing block will have relevant impact for residents. The last-floor apartments will have reduced energy bills for cooling during summer. The roof is open for all residents for leisure and socializing activities. The intervention gains popularity within the neighbourhood, and more housing associations will implement similar interventions.

Considering that several blocks are part of the rehabilitation programme (mainly for energy efficiency), residents urge the municipality to include green roofs in the project documentation. This movement will translate into local policy for the rehabilitation of housing stock, with green roofs included in the infrastructure works (intervention is subsidized by the public authorities).

Do something meaningful

The green roof is realized on the housing block with financial support from the municipality and co-financed by the housing association.

Vision

Image source: European Federation of Green Roofs, Dusty Geddes



Current situation. The bitumen dark roof can reach 80 degrees C in summer. Source: Codruț Papina

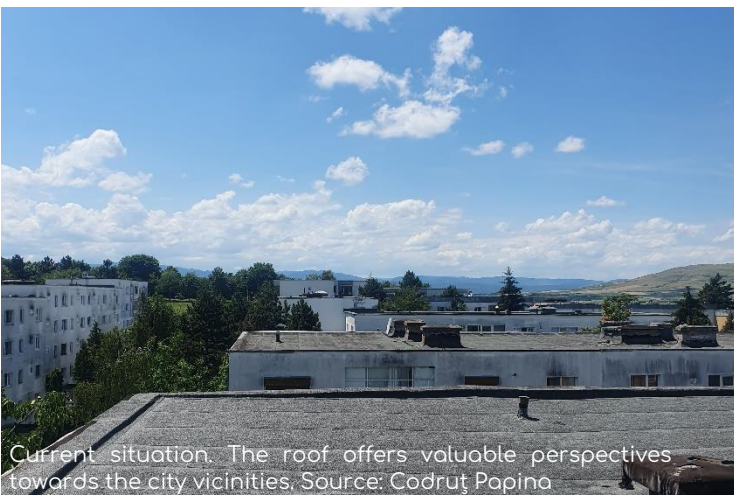


Study area

The site is in the Mânăştur neighbourhood, on Grigore Alexandrescu street in the periphery of the city. The intervention site is represented by one housing block. The association's president was part of the co-creation process and confirmed that residents are open to installing a green roof coinciding with renovating the entire building.

The neighbourhood is subject to CJ3.4 proposal – NBS 3 in collective housing neighbourhoods. Although built in the 1970s, the neighbourhood offers quality housing and public space, featuring many green spaces. The modular development of the area allows for smooth NBS replication – most buildings have the same structural built, using the same materials.

The block on Grigore Alexandrescu street offers panoramic views despite being 4-storey high. Landscaping of the roof will connect residents with the natural macro-landscape.



Current situation. The roof offers valuable perspectives towards the city vicinities. Source: Codruţ Popino

Local planning frameworks

There is no specific legislation or urban planning regulation for green roofs at local level. The reference document to be used for planning and designing green roofs in Cluj-Napoca (and anywhere in Romania) is the Guide for design and execution of green roofs to new and existing buildings, approved by the Ministry of Development, Public Works and Administration in 2013.

The guide offers a complete overview of all technical design elements, from the layering structure depending on the roof's architecture, to the vegetation recommended for different geographical and climate conditions. It can be accessed [here!](#)

The first step towards awareness and information about this aspect was made within the proGReg project through the workshop organised in Cluj in June-July 2022.

Specific challenges

Only small-scale green roof initiatives and focused discussions with local actors have taken place, but the topic is of high interest to various stakeholders: NGOs, local communities – housing associations, designers, real-estate developers, and administration. At the local level, the mainstreaming of green roofs is hindered by a lack of awareness and requests from the market. Technical expertise, landscape designers, construction companies and providers of materials are all operating in the Cluj area. The main challenge is to demonstrate locally the benefits of the solution through several pilots. Outdated collective housing represent great opportunity for adopting the solution.

Partners

Beneficiaries: Housing association, Municipality

Additional Investors / "Shareholders": Potential sponsors: Green roof builders Association, Construction companies, Construction materials providers

Users: Residents of the block.

Operational objectives

- Create 400 sqm extensive green roof for improving microclimate conditions, comfort of residents and allow for occasional leisure activities.

Targets:

- Extensive green roof with approximately 20-30 cm height, including insulation, hydro isolation, capillarity layers and the soil.
- 40% succulent plants - around 160 sqm
- 20% bulbous plants - around 80 sqm
- 30% perennial plants - around 120 sqm
- 10% pathways - around 40 sqm

Design requirements

Accessibility: somewhat difficult as space for proper staircase is restricted, only accessible by a hatch foldable staircase.

Safety: Install railing (metal).

Aesthetics: It is recommended to create organic patterns out of the recommended plants.



Source: Acoperisul Verde – Civic initiative in Bucharest

Landscaping: Create an extensive green roof with vegetation well adapted to direct light during all day, and that do not require intense watering. For shading, light wooden structures are allowed.

Recommended plants:
Succulent plants:



Famila Crassulaceae: Sedum acre, Sedum rupestre, Sedum sexangulare, Sedum spurium.

Bulbous plants:



Muscari comosum, Muscaru azureum, Allium schoenoprasum, Iris.

Perennial plants:



Thymus pulcherrimus, Dianthus carthusianorum.

Sustainability/Maintenance: Green Roofs Guide approved at national level recommends two phases of maintenance:

(i) maintenance after plantation - up to 2 years, in which the soil must remain humid in order to ensure plant adaptation, especially relevant for extensive green roofs where mulch or seedlings have been realized.

(ii) life-cycle maintenance - once a year inspection of the roof and plants condition. Extensive green roofs require less maintenance than intensive roofs.

Infrastructure works: The guidelines of the Green Roofs Guide must be respected: plant layer - filtering layer - draining layer - barrier against roots - waterproofing - hydrothermal insulation.