

Type: Green walls

Category: Green structures

Walls covered with vegetation



Description

Vertical parts of the urban environment, e.g. facades of buildings, covered with vegetation. Mostly, the green walls are whole facades or parts of the facade that are covered with plants. The plants can be rooted in the ground or be planted in boxes on different levels of the building. Depending on the type of plants railings are necessary as climbing support.

Spatial scale

Building level; City quarter/street

Problems addressed

- Heat/Extreme cold: Green facades improve primarily the microclimate of a building/close neighbourhood
- Heat/Drought: The plants take up CO₂ and fine dust from the air and improve air quality locally
- Heavy precipitation: Green walls contribute to decentralised water retention

Combination with other types of measures

- Green roofs
- Water retention
- Increase energy efficiency
- Urban texture

Implementation – functionality issues

Construction is possible directly attached to the building or as freestanding structure.

Plant types and water system need to be chosen with care and depend on the local situation.

Buildings need to be checked for stability.

Leafage, air cushion and evaporation downsize the heating-up of the house wall by intense solar radiation and, in case of indeciduous plants the loss of heat during winter. Deciduous plants allow gain of solar warmth in winter. Damage of the walls is not expected when the wall is intact and without cracks.

Leafage helps to protect walls, e.g. against deterioration due to solar radiation.

Further benefits

- Combination with energy strategies/mitigation measures: Improved insulation: Effects for mitigating depends on type of heating used.
- Increased CO₂ uptake lowering fine dust loads in the air
- Increase biodiversity - depending on the type of roof and plants used and the urban environment
- Improve liveability and attractiveness of urban surroundings: e.g. for work spaces.

Economic issues

Investment costs, maintenance and costs for watering; savings.

Acceptance

Often acceptance is low due to lacking knowledge: owners think that facades might be destroyed by plants; the inhabitants often approve the measure due to positive visual aspects. Stakeholder involvement is useful.

Possible obstacles

- Irrigation is needed during heat and drought periods: most effective plants with high vegetation mass need most water
- Plants need to be suitable for the location, e.g. high air pollution might cause damages to the plants
- The construction and plants might be sensitive to extreme events like storm
- Any additional vegetation mass might cause more maintenance for the cleaning of streets and the drainage system etc. (Might increase flooding because of blocked drainage pits)
- May conflict with mitigation systems (solar energy harvesting).

Find examples in Structural Fact Sheets



Green wall
Inner city
Nijmegen, NL



Infiltration
De Vloei
Wvi, Ieper, BE



Ambition
note
Wvi, Ieper, BE



Urban planning
Wvi, Ieper, BE