

Type: Green roofs

Category: Green structures

Roofs of buildings covered with vegetation



Description

Roofs covered with soil and plants. Systems range from extensive green roofs, intended to be self-sustaining, minimise maintenance, to intensive green roofs with higher soil layer for including shrubs and trees.

Spatial scale

Building level; Network of buildings; City quarter/street (especially business area); A network of buildings (at least 30.000m² - Kuypers, University of Wageningen) may influence the urban heat island effect.

Problems addressed

- Heat/Extreme cold: Thermal insulation layer cools in the summer and keeps the warmth in the winter
- Heavy precipitation: Increased decentralised water retention
- Heat/Drought: Network of green roofs in a city quarter improves air quality and microclimate

Combination with other types of measures

- Water retention
- Increase energy efficiency
- Urban texture

Implementation – functionality issues

Structural restrictions of existing roofs have to be observed: light-weight extensive green roofs or (more costly) structural reinforcement might be needed for intensive green roofs.

New buildings can be planned and constructed adequately from the beginning including ventilation etc.

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
- Improved liveability and attractiveness of urban surroundings: e.g. for work spaces
- Green roofs have a longer lifetime than conventional roofs.

Economic issues

A basic green roof costs 30-50 Euro/m² (2007).

Saving costs if there are charges for rain water discharge:

About 50 % of the rain water precipitation might be held back - depending on the plant layer and the season (summer-winter) (Praxisratgeber Regenwasser Emschergenossenschaft).

Saving costs due to the longer lifetime.

Acceptance

If funding is available, acceptance is higher than if private owners or investors have to pay fully.

Possible obstacles

- Lack of resources
- Resistance of administration
- Lack of knowledge and lack of acceptance
- Structural preconditions and existing slope
- Monument conservation
- Combination with renewable energy measures (solar panels) can be difficult.

Find examples in Structural Fact Sheets



Green roof
De Tweeling
Nijmegen, NL



Green and brown roofs
Hastings, UK



Green roofs
Town Hall
Nijmegen, NL



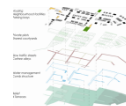
Green roofs
Latenstein
Tiel, NL



Infiltration
De Vloei
Wvi, Ieper, BE



Ambition
note
Wvi, Ieper, BE



Urban
planning
Wvi, Ieper, BE