

## Type: Green open spaces

### Category: Green structures

Parts of cities not built upon, covered with vegetation



#### Description

Parts of cities not built upon, e.g. courtyards, parks, alongside water bodies or streets, which are at least partly covered with vegetation. They can be of different sizes.

#### Spatial scale

Building level; City quarter/street; City; Region - depending on size and location of the green space.

#### Problems addressed

- Heat: Cooling effect: In daytime by shading and evapotranspiration for surrounding area; in night time by accumulation of cold air and ventilation. Green open spaces can lower heating up and decrease heat island effects.
- Heavy precipitation: Increased water retention

#### Combination with other types of measures

- Water retention
- Urban setting; Urban textures

#### Implementation – functionality issues

- Development is subject to available spaces
- Time is needed for the plants to grow and to achieve full effectiveness.
- Effectiveness of existing green open spaces can be enhanced choosing appropriate plants/design (e.g. meadows with bushes or loose tree population).
- Cooling effects appear with a minimum park size of 2.5 hectare; the effect reaches approx. as far as the diameter of the park. Smaller green areas can contribute to reducing heat islands if linked closely and arranged in an appropriate pattern.
- Ventilation paths shouldn't be blocked.

#### Further benefits

- Increased CO<sub>2</sub> 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 local recreation
- Shading might prevent damage of materials, e.g. roads

#### Economic issues

Planting and maintenance costs (e.g. including vegetation mass and tree maintenance)

#### Acceptance

The acceptance of green open spaces might be decreased when citizens are afraid of noise and littering or when conflicting with other urban uses. The involvement of all stakeholders is crucial.

#### Possible obstacles

- Extreme weather/storm events: danger of falling branches (maintenance needed); damages to the plants.
- Droughts: during dry periods, irrigation might be needed.
- Conflicts with other usage of space, e.g. parking lots.
- Closed roof of leaves might block air exchange and can lead to an accumulation of air pollutants.
- Leaves may block gullies and can lead to local flooding.
- Risk of costly damages for underground infrastructure because of roots grows.
- Use not intended (noise, littering) can lead to problems with the neighbourhood.

#### Find examples in Structural Fact Sheets



Green public courtyards  
Nijmegen, NL



Cool Nature Park  
Tiel, NL



Business park Boytal  
EG, Bottrop, DE



Infiltration De Vloei  
Wvi, Ieper, BE



Water Vision Nijmegen, NL



Slowed run-off  
Wvi, Ieper, BE



Adapted infrastructure  
Rouen, FR



Water study De Vloei  
Wvi, Ieper, BE



Green-blue corridor  
LV, Kamen, DE



Water square Vogelbuurt  
Tiel, NL



Strategy underground  
Nijmegen, NL



Ambition note  
Wvi, Ieper, BE



Climate dike  
Tiel, NL



Urban planning  
Wvi, Ieper, BE