

Working with Stakeholders for Climate Adaptation

Practice-based guidance for participative climate adaptation solutions in urban areas

Section 4: Measures

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SPONGE 2020
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Leiden



Adaptation Measures

The Urban Green Blue Grids website is a hub of information on urban climate adaptation. Each of the SPONGE 2020 pilots links through to 'Measures', which are on the ground actions and interventions which can be used to make a city more climate resilient.

This section gives some examples of the adaptation measures on the site which have been used in the SPONGE 2020 pilots.

Hollow roads

Making a road concave increases its water capture and drainage capacity. Combined with a pavement (sidewalk) and a slightly raised floor level in the homes built alongside it, this can prevent flooding in the homes.

Rainwater tanks

Rainwater tanks are the simplest systems for homes, and the easiest to install. These capture and store rainwater so it can be used later, for example to irrigate gardens. Commonly used rainwater tanks are not overly large, meaning that they require an overflow if the roof surface to which they are connected is too large. These tanks can be fitted with a pump and if necessary an automatic top-up system. The limited retention capacity means that the yield is low. These tanks will quickly overflow during heavy rainfall.

Bioswales

A bioswale is a ditch with vegetation and a porous bottom. The top layer consists of enhanced soil with plants or grass. Below that layer is a layer of gravel, highly porous volcanic rock or baked clay pellets packed in geotextile. These materials have large empty spaces, allowing the rainwater to drain off.

In bioswale systems, the water running off from roofs and roads does not flow into the sewers but instead is led into the bioswale via above-ground gutters and/or ditches. Bioswales can be incorporated into the green infrastructure and can help enhance biodiversity and quality of life.

In addition, planting more specifically suited vegetation in bioswales can allow bioswales to play a greater part in enhancing the town or city's biodiversity.





Creating, maintaining & improving green areas and increasing surface permeability

Small areas of vegetation, for example green inner-city areas, do not have any effect on a town or city's climate, though they do affect its micro-climate. Small green zones are oases in the urbanised area, where the shade provided by trees and the fewer hot, paved surfaces mean that air and surface temperatures are lower. Many possibilities for introducing green areas into towns and cities on a small scale have not yet been utilised, for example between the rails of tramlines and in places of unused paved surfaces.

Infiltration boxes and infiltration drains/wells

Infiltration wells and infiltration boxes require no above-ground space and offer more storage capacity than above-ground infiltration installations, meaning that more rainwater can be buffered for short spaces of time and gradually released into the groundwater. Infiltration boxes and infiltration wells come in all sizes, for individual homes to facilities for entire city districts. Boxes can be used under roads, sports fields and parking garages, for example, making it possible to use a single area of land for two purposes.

Planting facade gardens

Removing a strip of pavement along the facade of a building allows the rainwater from the facade to infiltrate into the ground. Climbing plants friendly to birds and butterflies increase urban biodiversity. Plants in the ground need to be watered less than potted plants.

Climbing plants growing in a facade garden allow the covered part of the facade to remain cool in summer. If fruit-bearing plants, such as grapevines or redcurrants, are used, the fruit offers food for people and wildlife, for example, birds.

For more information and to learn about more adaptation measures, visit www.urbangreenbluegrids.com/measures