Inspiration Card
Nature Based Solution

N27 BIOFILTER (AIR PURIFICATION)


Biofilter

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
			✔		

Description

Air biofilters are facilities to control and purify biological waste gas. They are developed to reduce and eliminate biogenic odours and represent a relatively simple technical installation. The application of biofilters is diverse, including for example agriculture, sewage treatment plants, biogas plants, and composting plants. Bacteria and microorganisms are located on a filter medium (breeding ground) that absorbs odours of the air stream.

Conditions for Implementation

- needs bacteria dependent conditions
- financial investment

Performance

Cooling Service	Transpiration	○○○
	Shading	○○○
	Evaporation	○○○
	Building (Insulation)	○○○
	Reflection (Albedo)	○○○
Surface Water Regulation	Water Conveyance	○○○
	Water Infiltration	○○○
	Water Retention	○○○
	Water Storage	○○○
	Water Reuse	○○○
Water Purification	Water Filtering	○○○
	Water Bio-remediation	○○○
Air Purification and Noise Reduction	Deposition	●●○
	Air Biofiltration	●●○
	Noise Reduction	○○○
Biodiversity	Habitat Provision	○○○
	Connectivity	○○○
Socio-Cultural Services	Beauty / Appearance	○○○
	Usability / Functionality	○○○
	Social Interaction	○○○
	Education	○○○
Provisioning Service	Food / Energy / Material	○○○
Climate Regulation	CO2 Sequestration	○○○

N22 BIOFILTER (WATER QUALITY)


Biofilter

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔				

Description

Biofilters are developed to collect and purify storm- and wastewater and represent a promising system for storm water treatment. Bacteria and microorganisms are located on a filter medium, which often consists of sand or granular activated carbon. The biofilm of bacteria degrades nutrients and contaminations in the wastewater that is piped through the filter material.

Conditions for Implementation

- flat terrain
- space needed
- financial investment

Performance

Cooling Service	Transpiration	○ ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	● ● ○
	Water Retention	● ○ ○
	Water Storage	● ● ○
	Water Reuse	● ○ ○
Water Purification	Water Filtering	● ● ○
	Water Bio-remediation	● ● ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	○ ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Constructed Wetlands & Built Structures for Water Management

N15 BIOSWALE



Bioswale, Eindhoven

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔			✔	

Description

A bioswale is a vegetated, linear and low sloped pit often established in urban areas near roads with the objective to reduce flood risk during or after heavy rain events. Bioswales absorb, store and convey surface water runoff and also remove pollutants and sediments, when the water trickles through the vegetation and soil layer. The choice of vegetation for bioswales is variable but deep-rooted native plants are common and preferred.

Conditions for Implementation

- collecting system required
- space needed
- multifunctional use if possible

Performance

Cooling Service	Transpiration	○ ○ ○
	Shading	○ ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	● ● ○
	Water Retention	● ○ ○
	Water Storage	● ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	● ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Urban Network Structures

N2 BOULEVARDS



Boulevards between streetcar tracks, Stuttgart

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Boulevards represent a possibility to establish several trees in cities amongst others to mitigate urban heat stress. Within boulevards, trees are commonly arranged along streets, bicycle paths and sidewalks. The treetops of opposite trees often form a nearly closed canopy. As a result, the street in die middle of two tree lines is protected, shaded and the air temperature is lowered.

Conditions for Implementation

- route characteristics
- soil material and depth
- enough space in the underground
- topography

Performance

Cooling Service	Transpiration	●●
	Shading	●●
	Evaporation	●
	Building (Insulation)	
	Reflection (Albedo)	●●
Surface Water Regulation	Water Conveyance	
	Water Infiltration	●
	Water Retention	●
	Water Storage	
	Water Reuse	
Water Purification	Water Filtering	
	Water Bio-remediation	
Air Purification and Noise Reduction	Deposition	●
	Air Biofiltration	●
	Noise Reduction	
Biodiversity	Habitat Provision	●
	Connectivity	●
Socio-Cultural Services	Beauty / Appearance	●●
	Usability / Functionality	●
	Social Interaction	●
	Education	
Provisioning Service	Food / Energy / Material	●
Climate Regulation	CO2 Sequestration	

N14 CONSTRUCTED WET ROOF



Constrcuted wet roof

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

The idea of constructed wet roofs is to connect green roofs and constructed wetlands for domestic wastewater treatment. Besides, constructed wet roofs retain storm water for a certain period of time, gradually releasing rainwater and reducing the overall runoff. The plants are irrigated with storm- and wastewater to ensure the surface layer remains moist. Furthermore, constructed wet roofs have positive impacts on the microclimate.

Conditions for Implementation

- Waterproofing surface/roof
- sufficient roof load-bearing capacity
- slope gradient to water outlets
- emergency overflows

Performance

Cooling Service	Transpiration	●●
	Shading	●
	Evaporation	●
	Building (Insulation)	●●
	Reflection (Albedo)	●
Surface Water Regulation	Water Conveyance	●
	Water Infiltration	
	Water Retention	●
	Water Storage	●
	Water Reuse	●
Water Purification	Water Filtering	●
	Water Bio-remediation	●
Air Purification and Noise Reduction	Deposition	●
	Air Biofiltration	
	Noise Reduction	
Biodiversity	Habitat Provision	●
	Connectivity	
Socio-Cultural Services	Beauty / Appearance	●
	Usability / Functionality	●
	Social Interaction	
	Education	
Provisioning Service	Food / Energy / Material	
Climate Regulation	CO2 Sequestration	●

N20 CONSTRUCTED WETLANDS



Urban Constructed wetland

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Constructed wetlands represent artificial wetlands with the main objective to harvest, treat and store stormwater runoff in urban areas. Processes of natural wetlands are adapted to constructed wetlands focusing on water purification and storage. The established vegetation, the soil and microbiological activity play an important role for the filter performance of constructed wetlands.

Conditions for Implementation

- suitable locations
- near source of wastewater
- compact soils
- topography

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	● ● ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	● ○ ○
	Water Reuse	● ● ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	● ● ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ● ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ● ○
	Education	● ○ ○
Provisioning Service	Food / Energy / Material	● ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Natural and Semi-Natural Water Bodies

N23 DAYLIGHTING



Small stream after Daylighting

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔			✔	

Description

Daylighting describes the opening of buried watercourses, rivers or drainage systems by removing the soil layers above. Thereby the river gets more space for eventual expansion which can mitigate floodings. Furthermore, daylighting has positive effects on the environment and aesthetic of the surrounding.

Conditions for Implementation

- restriction/limited possibilities in highly dense and build-up areas because of high cost for shifting of infrastructure/removing of infrastructure
- enough space to deculvert the watercourse
- certain channel width
- need to assimilate knowledge about soil types under/surrounding the channel to guarantee the performance of the daylighting measure

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	● ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ○ ○
	Education	● ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

N12 EXTENSIVE GREEN ROOF



Extensive green roof Oversum- Winterberg

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	✔

Description

Extensive green roofs contain a thin layer of substrate and plants on top. The basic, light weight systems, characterized by minimum maintenance and management after establishment of the system. Appropriate plants for extensive green roofs are low growing, rapidly spreading like succulents such as sedums, herbs, wildflowers, grasses or mosses. They are able to survive with minimum nutrient uptakes and without additional nutrient supply.

Conditions for Implementation

- solid, stable buildings (static requirements)
- flat or relatively flat roofs
- Waterproofing surface/roof

Performance

Cooling Service	Transpiration	○ ○ ○
	Shading	● ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	● ○ ○
	Reflection (Albedo)	● ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	○ ○ ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	● ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

N5 GREEN CORRIDORS


Green Corridor along a cycle path

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Areas of derelict infrastructure, e.g. railway lines, that are transformed into linear parks play an important role in urban green infrastructure networks and help to re-nature cities. Also regeneration along waterways and rivers often results in linear interconnecting parks.

Conditions for Implementation

- existing structures with enough surrounding space

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	● ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	● ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	● ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ● ○
	Air Biofiltration	● ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ● ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ● ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	● ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Green Walls

N6 GREEN FACADES


Vertical Garden Patrick Blanc, Paris

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Planted walls with controlled cultivation are called green facades. Facade greenings are divided in two types. The facade-bound greening which is a part of the facade or uses the facade for fixing panels and containers to it, as well as ground based facade greening using climbing plants.

Conditions for Implementation

- requirment of the used plants
- not suitable in very dry/hot/cold areas
- risk of fire
- potential need of supporting frameworks

Performance

Cooling Service	Transpiration	●●
	Shading	
	Evaporation	
	Building (Insulation)	●●
	Reflection (Albedo)	
Surface Water Regulation	Water Conveyance	
	Water Infiltration	
	Water Retention	
	Water Storage	
	Water Reuse	
Water Purification	Water Filtering	
	Water Bio-remediation	
Air Purification and Noise Reduction	Deposition	●
	Air Biofiltration	●
	Noise Reduction	
Biodiversity	Habitat Provision	●
	Connectivity	●
Socio-Cultural Services	Beauty / Appearance	●●
	Usability / Functionality	●
	Social Interaction	
	Education	
Provisioning Service	Food / Energy / Material	
Climate Regulation	CO2 Sequestration	●

N8 GREEN NOISE BARRIER



Noise barrier as free standing living wall

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Noise barrier as free standing living walls are constructions of baskets or different elements covered/filled with soil substrate with the function to reduce noise emissions e.g. along highly frequented roads.

Conditions for Implementation

- loadable underground
- limited design options
- little risk of fire at constant irrigation

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	● ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	● ● ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	○ ○ ○
	Water Retention	○ ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ○ ○
	Air Biofiltration	● ○ ○
	Noise Reduction	● ● ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

N3 GROUP OF TREES



Arboretum - A group of adult trees creates a microclimatic environment that mitigates heat stress on hot summer days

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Group of trees mimicking the shape of a forest in an urban setting. They may be an option for the design of shaded squares and places or as a contrasting element in densely built up areas or for court yard design.

Conditions for Implementation

- different species for biodiversity
- soil material and depth
- enough space in the underground

Performance

Cooling Service	Transpiration	● ● ○
	Shading	● ● ○
	Evaporation	● ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	● ● ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ● ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ○ ○
	Air Biofiltration	● ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ● ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

N16 INFILTRATION BASIN



Infiltration basin

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔			✔	

Description

Infiltration basins are flat areas planted with grass and normally dry. After a heavy rain the water fills up the basin and soaks into the ground.

Conditions for Implementation

- available space
- local soil conditions (infiltration capacity)
- can be combined with other usage
- Highly specific rainwater intensities

Performance

Cooling Service	Transpiration	○ ○ ○
	Shading	○ ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ● ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

N11 INTENSIVE GREEN ROOF



Intensive green roof

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	✔

Description

Intensive green roofs are overcast by a thick amount of substrate which enables the growth of larger plants up to regular trees. These roofs are often accessible for public or recreation. To enable human activities on green roofs and the integration of larger plants, trees and architectural elements, suitable rooftops need to be relatively flat.

Conditions for Implementation

- solid, stable buildings (static requirements)
- flat or relatively flat roofs
- irrigation system in dry periods
- Waterproofing surface/roof

Performance

Cooling Service	Transpiration	●●○
	Shading	●○○
	Evaporation	●○○
	Building (Insulation)	●●○
	Reflection (Albedo)	●○○
Surface Water Regulation	Water Conveyance	●●○
	Water Infiltration	○○○
	Water Retention	●●○
	Water Storage	●○○
	Water Reuse	○○○
Water Purification	Water Filtering	●○○
	Water Bio-remediation	○○○
Air Purification and Noise Reduction	Deposition	●○○
	Air Biofiltration	○○○
	Noise Reduction	○○○
Biodiversity	Habitat Provision	●○○
	Connectivity	●○○
Socio-Cultural Services	Beauty / Appearance	●●○
	Usability / Functionality	●○○
	Social Interaction	●○○
	Education	○○○
Provisioning Service	Food / Energy / Material	○○○
Climate Regulation	CO2 Sequestration	●○○

Inspiration Card
Nature Based Solution

Coastal Areas

N29 LIVING BREAKWATER / SHORELINE



Example of a living breakwater

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔	✔		✔	

Description

Living breakwaters and shorelines are erosion control techniques that combine natural habitats with natural or engineered means of lowering waves energy in order to reduce the damages dealt by storm urge and costal erosion. Often standard breakwaters and shorelines are made of artificial materials such as stones and concrete. Living breakwaters and shorelines, on the other hand, are made from natural materials so that, beside their primary goal, they also can be used as artificial habitats in or

Conditions for Implementation

- Existing types of habitats in the neighborhood
- site's slope, orientation, bathymetry, prevailing currents, waves, and fetch
- Extent of erosion problem
- Other hard shoreline stabilization structures adjacent or nearby

Performance

Cooling Service	Transpiration	●●○
	Shading	○○○
	Evaporation	●●○
	Building (Insulation)	○○○
	Reflection (Albedo)	○○○
Surface Water Regulation	Water Conveyance	○○○
	Water Infiltration	○○○
	Water Retention	○○○
	Water Storage	○○○
	Water Reuse	○○○
Water Purification	Water Filtering	●●○
	Water Bio-remediation	○○○
Air Purification and Noise Reduction	Deposition	○○○
	Air Biofiltration	○○○
	Noise Reduction	○○○
Biodiversity	Habitat Provision	●●○
	Connectivity	●●○
Socio-Cultural Services	Beauty / Appearance	●●○
	Usability / Functionality	●○○
	Social Interaction	○○○
	Education	○○○
Provisioning Service	Food / Energy / Material	○○○
Climate Regulation	CO2 Sequestration	○○○

Inspiration Card
Nature Based Solution

Systems for Erosion Control

N24 LIVING FASCINE



Fascines as shoreline stabilisation in Templin, Germany

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔			✔	

Description

Fascines are used for stabilization of riversides or hills. By using bundles of living wood, sometimes mixed with dead wood, fascines can be used as living space for plants and animals. In terms of stabilization, living fascines are superior in comparison to “dead” fascines, as roots can give additional protection.

Conditions for Implementation

- timing for construction
- planting needed
- low water flow

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

N9 LIVING PLANT CONSTRUCTIONS


Plane-Tree-Cube, Nagold

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Living plant constructions are inspired by this approach and aims at using living trees with all their biological services also for construction purposes in order to create living architecture.

Conditions for Implementation

- may need building permissions
- static consideration

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	● ● ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	● ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	○ ○ ○
	Water Retention	○ ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	● ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	● ● ○
	Social Interaction	● ○ ○
	Education	● ● ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

Inspiration Card
Nature Based Solution

Green Walls

N7 LIVING WALL



Constructing a living wall, Ludwigsburg

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Verticalization of green spaces can increase vegetated surfaces with many ecological services in urban environments. Free standing living walls serve as adaptation measures for the urban heat island effect. They create space with high amenity value and potentially high biodiversity and reduce noise emissions. They are suitable to reuse runoff water and evapotranspirate highly. With extensive vegetation they sustain also longer periods of drought.

Conditions for Implementation

- loadable underground
- little risk of fire at constant irrigation
- can be used as noise barrier

Performance

Cooling Service	Transpiration	●●
	Shading	●●
	Evaporation	●
	Building (Insulation)	
	Reflection (Albedo)	●●
Surface Water Regulation	Water Conveyance	
	Water Infiltration	
	Water Retention	
	Water Storage	
	Water Reuse	
Water Purification	Water Filtering	
	Water Bio-remediation	
Air Purification and Noise Reduction	Deposition	●
	Air Biofiltration	●
	Noise Reduction	
Biodiversity	Habitat Provision	●●
	Connectivity	●
Socio-Cultural Services	Beauty / Appearance	●●
	Usability / Functionality	●
	Social Interaction	●
	Education	
Provisioning Service	Food / Energy / Material	
Climate Regulation	CO2 Sequestration	●

N10 MOBILE VERTICAL GREENING


Mobile Green Living Room

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔				✔	

Description

Mobile Vertical Greenings consist of living wall modules that are fixed to a hook lift container platform.The vegetation cover is very diverse in order to illustrate the high potential of living walls to increase amenity value and stimulate biodiversity. It can be used as a mobile demonstration for green infrastructure, as a test feature, a temporary green installation or as an open green office for information.

Conditions for Implementation

- no fixed location
- use of onboard water tank for irrigation system
- needs space of loading and unloading
- needs flat surface

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	● ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	○ ○ ○
	Water Retention	○ ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	● ● ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	● ● ○
	Social Interaction	● ○ ○
	Education	● ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

N18 PERMEABLE PAVING SYSTEM



Permeable pavement, Eindhoven

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔		

Description

Permeable paving systems are known as surfaces that are able to absorb storm water and thus, minimize the surface water runoff. Different systems of permeable pavement surfaces exist. They are commonly installed on car parks, residential streets or sidewalks. On the one hand porous asphalt and permeable concrete improve infiltration providing a homogeneous surface. Other solutions increase the share of substrate / vegetation cover for better infiltration (e.g. vegetated grid paves) or they provide macropores for garvity driven percolation like permeable stone carpets.

Conditions for Implementation

- Implementation on new or existing building sites
- Prior analysis of the soil is necessary
- Compatibility with all kind of street usage should be considered

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	● ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	○ ○ ○
	Connectivity	○ ○ ○
Socio-Cultural Services	Beauty / Appearance	○ ○ ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Systems for Erosion Control

N26 PLANTED EMBANKMENT MAT



Planted embankment mat

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔			✔	

Description

Planted embankment mats are a combination of mats and a vegetation/seeding layer. These mats are used to recultivate riversides and to prevent erosion. The construction is simple and fast. A combination with fascines is possible.

Conditions for Implementation

- timing for construction
- planting needed
- low water flow

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	● ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

Inspiration Card
Nature Based Solution

Constructed Wetlands & Built Structures for Water Management

N19 RAIN GARDEN


Small scale Raingarden, Minneapolis USA

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔			✔	

Description

A rain garden is a kind of garden that primarily serves as area for water control on a small-scale, especially in urban areas. Rain gardens are established in artificial surroundings and catch water runoff from roofs, roads and other sealed surfaces. Storm water runoff is drained into rain gardens, where it is stored for a certain period, and infiltrates either into the ground soil or flows into the sewage system.

Conditions for Implementation

- space needed
- caring and maintenance
- adapted plant species

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	● ○ ○
	Water Reuse	● ● ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	● ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Parks & Gardens

N4 RESIDENTIAL PARK


Innocentia Park, Hamburg

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Residential Parks are part of the Green Infrastructure (GI) of cities and serve the residential areas as the nearest main entry point for nature based recreation. Larger spatial elements of GI are district parks that often deliver more functions and combine various uses (e.g. sport fields). Smaller green spaces are often playgrounds or connecting green strips of land.

Conditions for Implementation

- Connectivity to the surroundings
- suitable size
- proportion of trees in relation to area

Performance

Cooling Service	Transpiration	● ● ○
	Shading	● ● ○
	Evaporation	● ● ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	● ● ○
Surface Water Regulation	Water Conveyance	● ● ○
	Water Infiltration	● ● ○
	Water Retention	● ● ○
	Water Storage	● ● ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	● ● ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ● ○
	Air Biofiltration	● ● ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ● ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ● ○
	Social Interaction	● ● ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	● ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

Inspiration Card
Nature Based Solution

Coastal Areas

N30 RESTORING MANGROVES, BEACHES AND DUNES



Example of a Mangrove

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔	✔		✔	

Description

Mangroves, beaches and dunes are natural buffer systems reducing negative effects of storms, highwater and so on. By this fact, restoring or preserving mangroves, beaches or dunes does not only provide the opportunity to create new habitats for species living in this environment, they also help to restore the resilience of the ecological system to face flooding and erosion. In this way, beaches can be seen as natural waterfront parks, dunes as natural levees and mangroves as natural breakwaters.

Conditions for Implementation

- Regulations and plans for rehabilitation and maintenance

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ● ○
	Water Infiltration	○ ○ ○
	Water Retention	● ● ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ● ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ● ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Coastal Areas

N32 RESTORING OFFSHORE HABITAT



Example of offshore habitat restoration

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
		✔		✔	

Description

Most seagrass species form large “beds” of root and rhizome system which provide habitat for thousands of marine species and fix soil which leads into reduced erosion. Also, seagrass leads to slowed down water currents and reduced wave energy which reduces the impact of waves on the shoreline. Reefs represent natural breakwaters which leads to lower coastal erosion by reducing wave energy.

Conditions for Implementation

- Technical and plant physiological restrictions

Performance

Cooling Service	Transpiration	○ ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	○ ○ ○
	Water Retention	○ ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ● ○
	Connectivity	● ● ○
Socio-Cultural Services	Beauty / Appearance	○ ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Systems for Erosion Control

N25 REVETMENT WITH CUTTINGS



Revetment under construction



Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔			✔	

Description

By covering eroded riversides with cuttings, riversides can be stabilized against further erosion and allow long-term stabilization by allowing plants to recultivate naturally. It is a simple method, which can be done with local material.

Conditions for Implementation

- timing for construction
- planting needed
- low water flow

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	● ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	● ○ ○
	Water Reuse	● ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	● ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

Inspiration Card
Nature Based Solution

Coastal Areas

N31 SETBACK LEVEES AND FORELAND DEVELOPMENT



Example of a setback levee

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔	✔		✔	

Description

Setback levees are earthen embankments that are located at a distance from a river channel in such a way to allow the river to meander in a more natural manner and occupy some or all of its natural floodplain during high water events.
Setback levees also maintain a more natural river and stream dynamics, promoting a more ecologically healthy and dynamic river system. (http://nrcsolutions.org/setback-levees/)

Conditions for Implementation

- Availability of sufficient land

Performance

Cooling Service	Transpiration	○○○
	Shading	○○○
	Evaporation	○○○
	Building (Insulation)	○○○
	Reflection (Albedo)	○○○
Surface Water Regulation	Water Conveyance	●●○
	Water Infiltration	○○○
	Water Retention	○○○
	Water Storage	○○○
	Water Reuse	○○○
Water Purification	Water Filtering	○○○
	Water Bio-remediation	○○○
Air Purification and Noise Reduction	Deposition	○○○
	Air Biofiltration	○○○
	Noise Reduction	○○○
Biodiversity	Habitat Provision	●●○
	Connectivity	●●○
Socio-Cultural Services	Beauty / Appearance	●●○
	Usability / Functionality	●○○
	Social Interaction	○○○
	Education	○○○
Provisioning Service	Food / Energy / Material	○○○
Climate Regulation	CO2 Sequestration	○○○

Inspiration Card
Nature Based Solution

Urban Network Structures

N1 SINGLE TREE LINES



Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	

Description

Single line trees are arranged on one side along streets, bicycle paths and sidewalks. Trees have multiple effects on the local micro-climate conditions. They absorb particular matter, provide shade and are cooling the air. The effect of street trees in general depend on different factors such as tree size, canopy coverage, planting density, tree species, tree health, location, availability of root water or leaf area index.

Conditions for Implementation

- different species for biodiversity
- route characteristics
- soil material and depth
- enough space in the underground

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	● ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	● ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ○ ○
	Water Retention	● ○ ○
	Water Storage	○ ○ ○
	Water Reuse	○ ○ ○
Water Purification	Water Filtering	○ ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ○ ○
	Air Biofiltration	● ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	● ● ○
	Usability / Functionality	● ○ ○
	Social Interaction	● ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

N13 SMART ROOF



Smart roof, Amsterdam

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	✔

Description

Smart roofs are a special type of extensive green roofs. They are like extensive green roofs with an extension of conventional green roofs by an additional drainage system under the vegetation layer. The drainage layer retains storm water, which gets reused for watering in dry periods through capillary fibre cylinders' water. 100% of the storm water can be reused for irrigation.

Conditions for Implementation

- waterproofing surface
- sufficient roof load-bearing capacity

Performance

Cooling Service	Transpiration	● ○ ○
	Shading	● ○ ○
	Evaporation	● ○ ○
	Building (Insulation)	● ● ○
	Reflection (Albedo)	● ○ ○
Surface Water Regulation	Water Conveyance	● ● ○
	Water Infiltration	○ ○ ○
	Water Retention	● ● ○
	Water Storage	● ● ○
	Water Reuse	● ○ ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	● ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	○ ○ ○
	Connectivity	○ ○ ○
Socio-Cultural Services	Beauty / Appearance	● ○ ○
	Usability / Functionality	○ ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	● ○ ○

N17 UNDERGROUND WATER STORAGE



Zollhallen Plaza, Freiburg

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
	✔				

Description

Underground systems below public open spaces (sport fields) composed of modular elements to retain flash floods and to store water for irrigation purposes nearby. Depending on the Geology of an area underground storage capacity retains and stores water after flash floods

Conditions for Implementation

- space for underground storage
- financial investment
- difficult to build for already existing spaces

Performance

Cooling Service	Transpiration	○ ○ ○
	Shading	○ ○ ○
	Evaporation	○ ○ ○
	Building (Insulation)	○ ○ ○
	Reflection (Albedo)	○ ○ ○
Surface Water Regulation	Water Conveyance	○ ○ ○
	Water Infiltration	● ● ○
	Water Retention	● ○ ○
	Water Storage	● ○ ○
	Water Reuse	● ● ○
Water Purification	Water Filtering	● ○ ○
	Water Bio-remediation	○ ○ ○
Air Purification and Noise Reduction	Deposition	○ ○ ○
	Air Biofiltration	○ ○ ○
	Noise Reduction	○ ○ ○
Biodiversity	Habitat Provision	● ○ ○
	Connectivity	● ○ ○
Socio-Cultural Services	Beauty / Appearance	○ ○ ○
	Usability / Functionality	● ○ ○
	Social Interaction	○ ○ ○
	Education	○ ○ ○
Provisioning Service	Food / Energy / Material	○ ○ ○
Climate Regulation	CO2 Sequestration	○ ○ ○

Inspiration Card
Nature Based Solution

Parks & Gardens

N35 URBAN GARDENS



Urban Gardening in Bremen, Germany

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔	✔		✔	✔	✔

Description

Urban gardening is a common way to establish garden space for citizens. There a different concepts of urban gardening, but mostly they are semi-private with a possibility to rent individual beds, or used by an association. The gardens are often built in raised beds, which makes it possible to establish them everywhere, most likely in courtyards or public spaces, and makes them easy to move if needed. They are sources for locally produced food and promote social interaction.

Conditions for Implementation

- space needed
- caring community
- initiative
- organisation

Performance

Cooling Service	Transpiration	●●○
	Shading	○○○
	Evaporation	●●○
	Building (Insulation)	○○○
	Reflection (Albedo)	○○○
Surface Water Regulation	Water Conveyance	○○○
	Water Infiltration	●○○
	Water Retention	●○○
	Water Storage	●○○
	Water Reuse	○○○
Water Purification	Water Filtering	●○○
	Water Bio-remediation	○○○
Air Purification and Noise Reduction	Deposition	○○○
	Air Biofiltration	●●○
	Noise Reduction	○○○
Biodiversity	Habitat Provision	●○○
	Connectivity	○○○
Socio-Cultural Services	Beauty / Appearance	●●○
	Usability / Functionality	●●○
	Social Interaction	●●○
	Education	○○○
Provisioning Service	Food / Energy / Material	●●○
Climate Regulation	CO2 Sequestration	○○○

Inspiration Card
Nature Based Solution

Coastal Areas

N28 WATERFRONT PARK



Example of a waterfront park

Challenges

Climate Mitigation & Adaptation	Water Resilience	Coastal Resilience	Outdoor Comfort	Greening the City	Self-Sufficiency
✔		✔	✔	✔	

Description

Waterfront parks are terrains which getting intentionally flooded by floodwater in order to reduce the impact of the flood downstream. Damages caused by floodwater depend form the floodwater peak. The peak can be lowered by installing floodwater parks which capture and store floodwater.
By this way, damages occurring during a flood can be minimalized along the downstream shoreline while the water causes no damage to the waterfront park.

Conditions for Implementation

- Available space
- Accessibility
- Information and evacuation plans

Performance

Cooling Service	Transpiration	●●
	Shading	○○
	Evaporation	●●
	Building (Insulation)	○○
	Reflection (Albedo)	○○
Surface Water Regulation	Water Conveyance	●●
	Water Infiltration	●●
	Water Retention	●●
	Water Storage	●●
	Water Reuse	○○
Water Purification	Water Filtering	●●
	Water Bio-remediation	○○
Air Purification and Noise Reduction	Deposition	○○
	Air Biofiltration	○○
	Noise Reduction	○○
Biodiversity	Habitat Provision	●●
	Connectivity	●●
Socio-Cultural Services	Beauty / Appearance	●●
	Usability / Functionality	●●
	Social Interaction	●●
	Education	○○
Provisioning Service	Food / Energy / Material	○○
Climate Regulation	CO2 Sequestration	○○