



Madrid+Natural

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Madrid

Key City Challenges



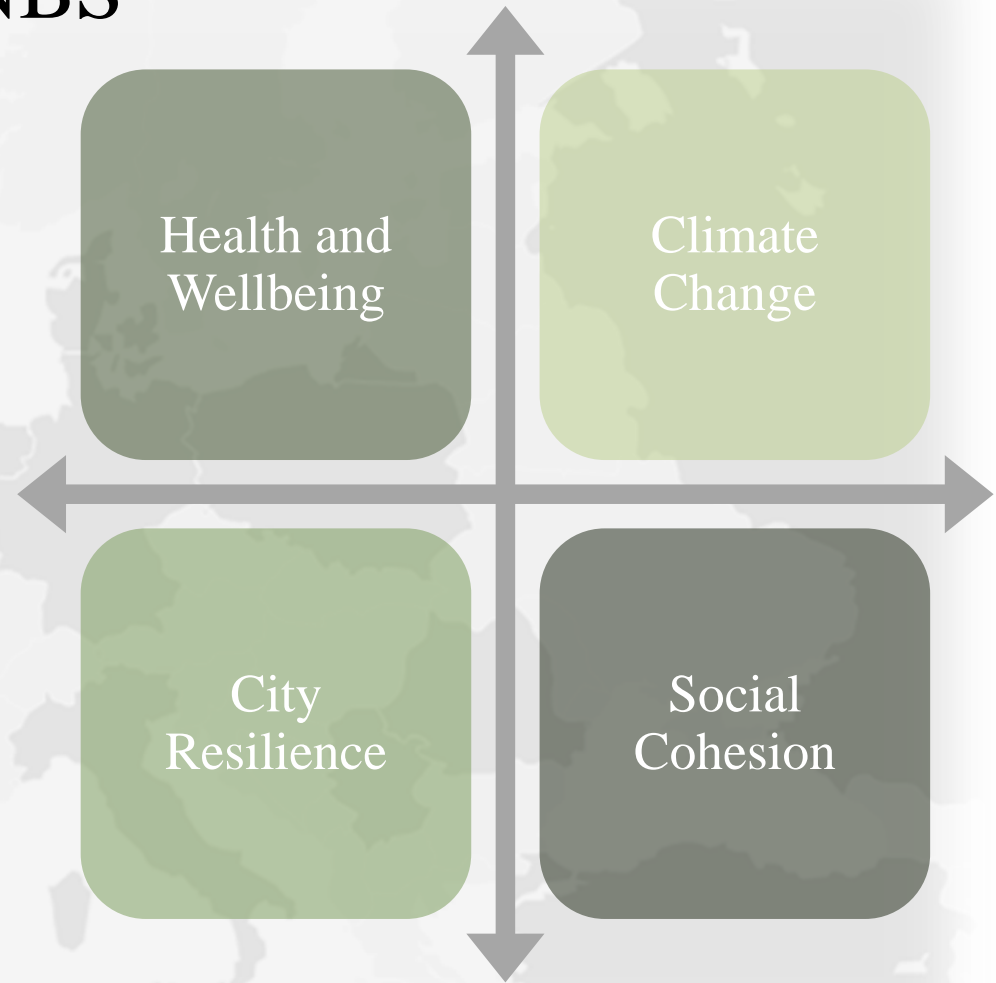
Nature Based Solutions in Cities-NBS

NBS improve livability, health and sense of wellbeing in urban areas

NBS helps to reduce Climate Change impacts: heat island effect, building energy consumption, flooding impact ...

NBS increase overall resilience in the cities, increasing the capacity of the city to withstand impacts and stresses

NBS increase sense of belonging and increase social cohesion



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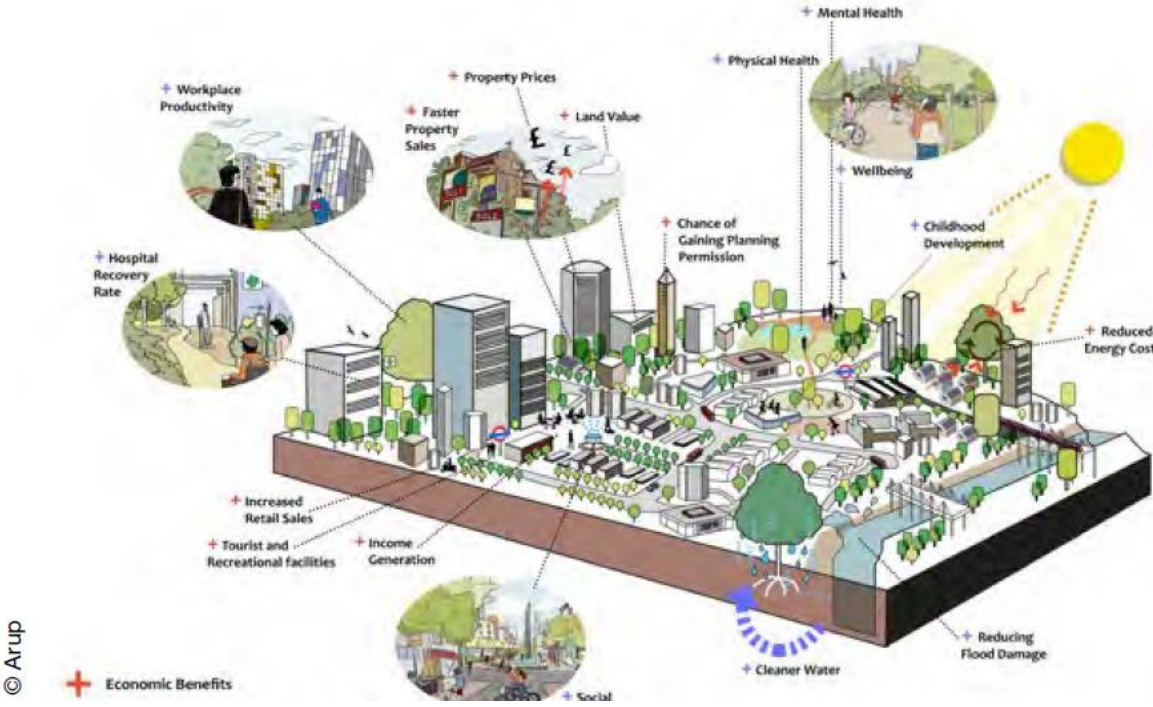
A NBS based vision for Madrid

Key aspects: Vision for a climate adapted and resilient city through the integration of nature based solutions to improve livability, social cohesion, health and wellbeing and energy efficiency in the City. The Vision proposed addressed 5 main environmental aspects of concern in the city: Heat waves, drought, flooding, air quality and biodiversity loss.



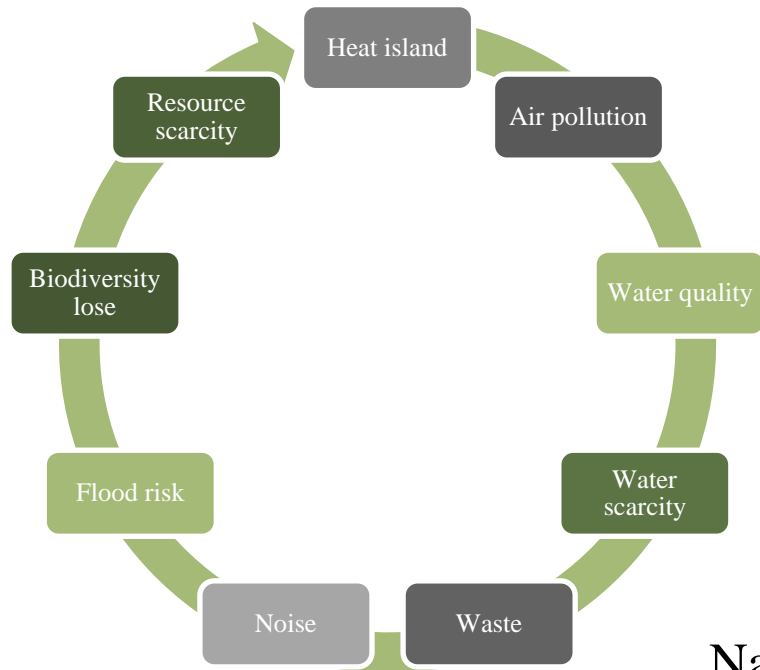
Cities Alive

Rethinking green infrastructure



Scope & methodology

- Identify critical environmental issues in Madrid
- Define the ecosystem service required
- Define the nature based solutions able to address each specific impact.



Scope & methodology

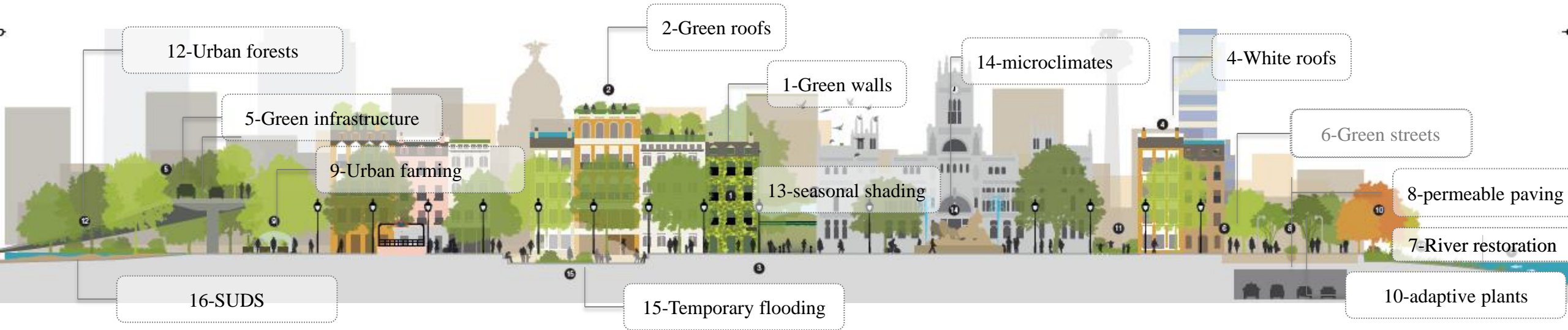
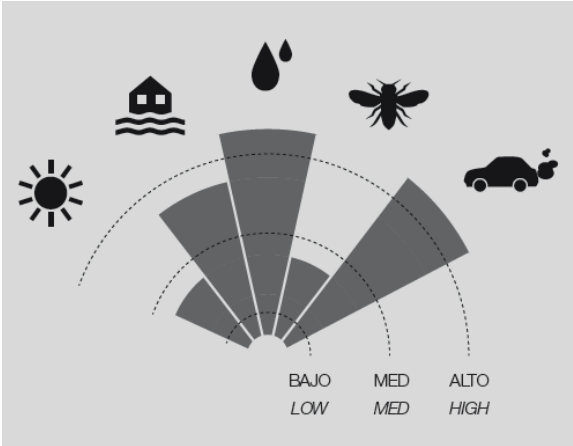
Key Madrid issues



ECOSYSTEM SERVICES					
"urban environmental issues"	ECOSYSTEM SERVICE REQUIRED		PROVIDERS		Environmental Indicator
	Effect	Strategy	NATURAL	BUILT	
Heat Island	Air Cooling	Evapotranspiration Reduction of longwave sun radiation (high albedo)/shading?	Green roofs (& walls/façades?)/Tree canopies?/Blue infrastructure?	High albedo roof coverage	Cooling potential (w/m2 reduction)?
Air Pollution	Air cleansing	Pollutants capture	vegetation (Urban forest?)/Green roofs, walls & façades?	Photocatalytic concrete	% particles captures /sqmt ?
Water Quality*	Water cleansing	Water filtration	roots/soil/phytodepuration/bioswales	stormceptor type systems/gravel systems	% TSS/TP removed from water?
Water Scarcity*	Water reuse	water storage	ponds/wetlands/ living machine	artificial ponds/ water roofs	Potable water use reduction?
Waste Management	Waste reduction	Waste reuse	Natural Composting	Recycled materials	m3 /tns waste reduction?
Noise	Noise atenuation	Noise absorption	Trees/Green walls & façades	Posours materials	dBA reduction?
Flood risk	Stormwater Mgmt	Water drainage	greenstreets/bioswales/green roofs	Blue roofs/Permeable paving	water absorbed?
Biodiversity	Biodiversity conservation	Increase permeability to wildlife	Green roofs, walls & façades Wetlands/landbridges		?!
Resource scarcity?	Food production	Urban agriculture	urban orchards/vertical farms		food production (kg x sqm)?

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“The Madrid+Natural Project shares a visión of an urban network of Nature Based Solutions where small scale interventions connect with the large green spaces and natural elements in Madrid. A well developed system of green and blue infrastructure interconnecting open spaces, parks, nature areas, buildings with green roofs and facades jointly contributing to the Climate Change resilience of the city.”



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Oslo, Norway

'Bee Highway'



Various, Europe

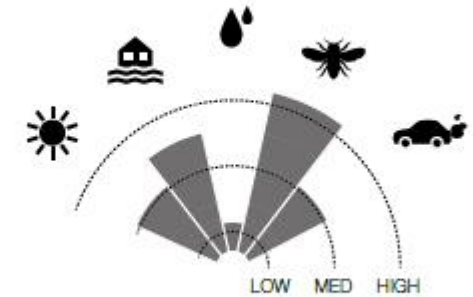
The Biosolar Roof Project



sustainable roofs

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Roof space is underutilised in many cities; combining green roofs and solar technology can create vital synergies in dense urban areas. Roof vegetation can increase the efficiency of PV panels by reducing ambient temperatures. Sustainable roofs support water management, improve insulation and air quality, provide cooling, and create habitat for biodiversity. Sustainable roofs also provide heat and power to urban structures, bridging the gap between energy generation and consumption.



Avenida Niceto Alcalá Zamora



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Melbourne, Australia

Greening Melbourne's Laneways



Hamburg, Germany

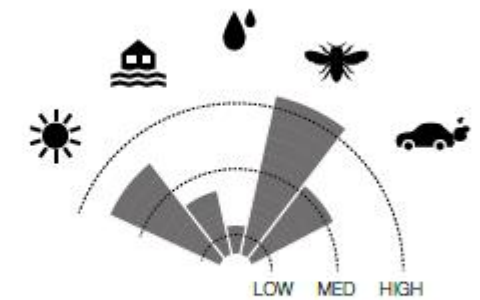
Hamburg Green Power Strategic Plan



street greening

6

Increasing tree cover and green space is a key element of green networks, and can have positive effects on the economic and social quality of neighbourhoods. Trees provide shade and filter road pollution. Tree-lined streets can encourage people to seek alternative modes of transport and pursue healthier lifestyles. Street greening can lead to an increased sense of community belonging. Cities, for example, could incentivise community-led maintenance of planting in exchange for providing greenery.



Avenida del Mediterráneo



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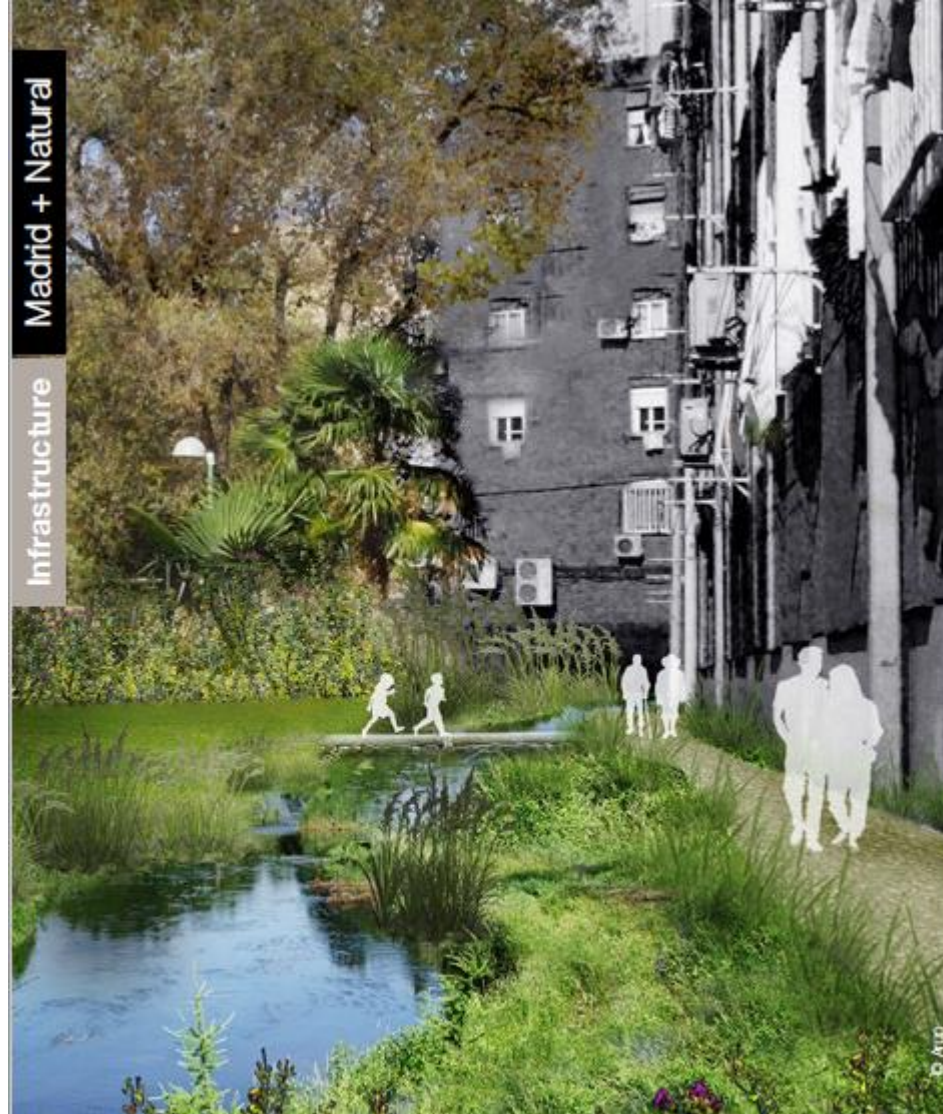
Singapore

Kallang River Renaturalisation



Seoul, South Korea

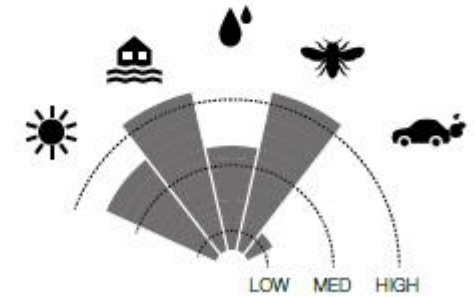
Cheonggyecheon Stream Restoration



river stream restoration

7

Over time, many cities have seen their water streams channelled and diverted from their natural courses and buried inside impermeable concrete beds to accommodate new developments and infrastructure. Re-meandering rivers and reducing their canalisation can facilitate the creation of a more balanced floodplain and the reestablishment of natural reed beds. This kind of habitat confers multiple benefits, including improved flood protection, increased biodiversity and wastewater management.



📍 Calle Nuestra Señora del Villar (La Elipa)



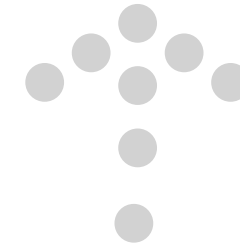
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Making it a reality

1- Workshop: Integrated team

2-Definition of actuation scales:

- Building
- Neighborhood
- City



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City:Manzanares river
restoration

Neighborhood: Usera
revitalization with NBS
systems



Building: Green roofs
implementation in municipal
buildings

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Thank you