



Laura Wendling

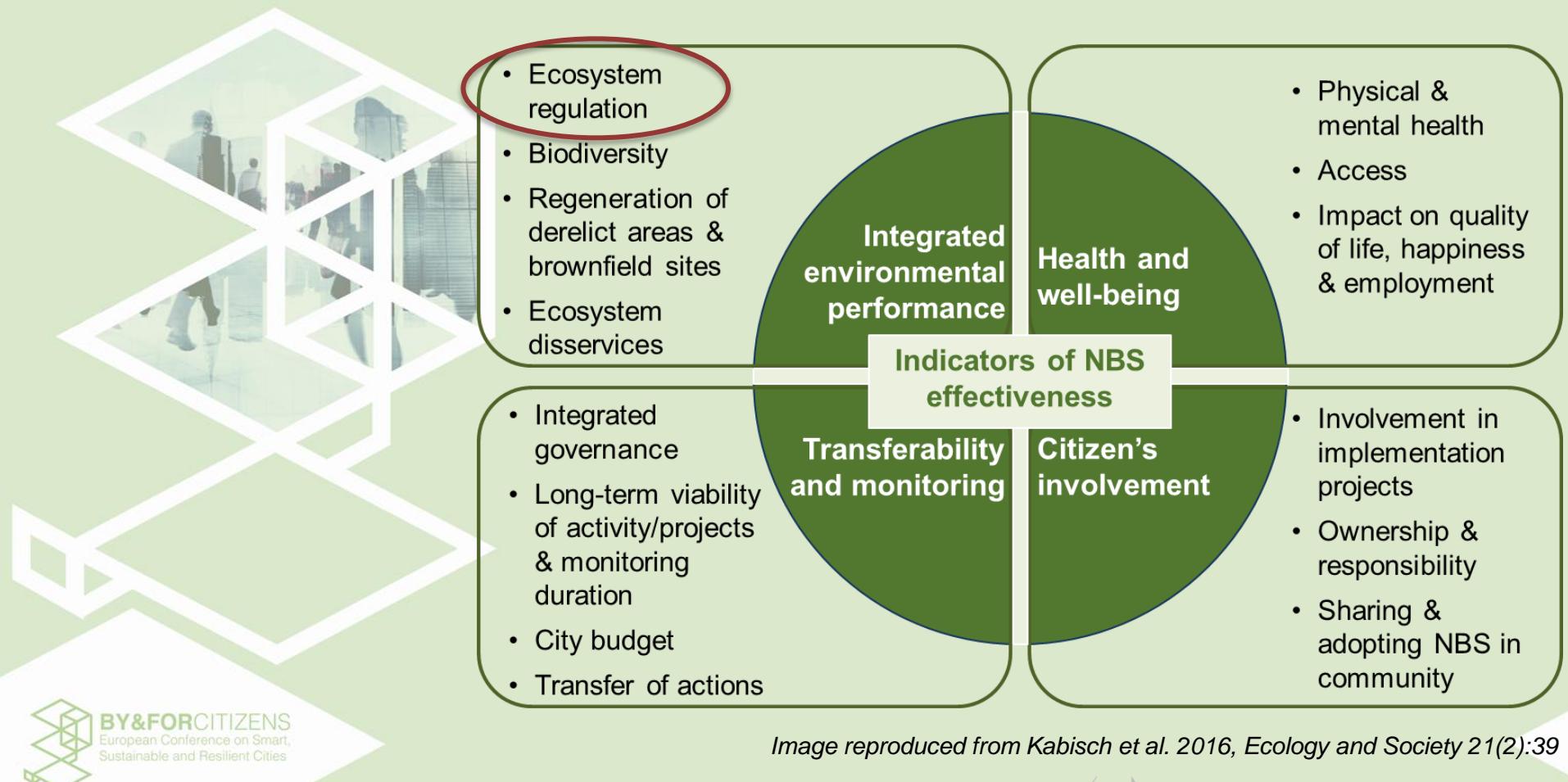
VTT Technical Research Centre of Finland
Representing Urban Nature Labs (UNaLab)

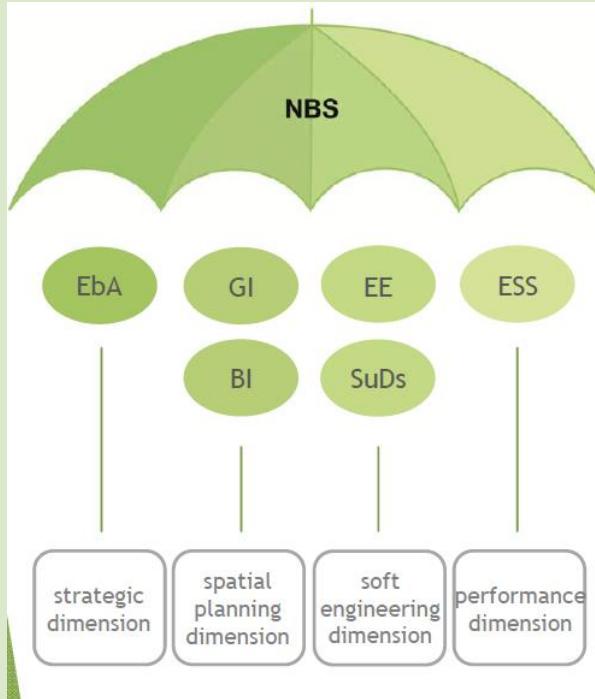
NBS & URBAN ECOSYSTEM SERVICES



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 730052 | **Topic: SCC-2-2016-2017: Smart Cities and Communities Nature based solutions**





NBS as a concept

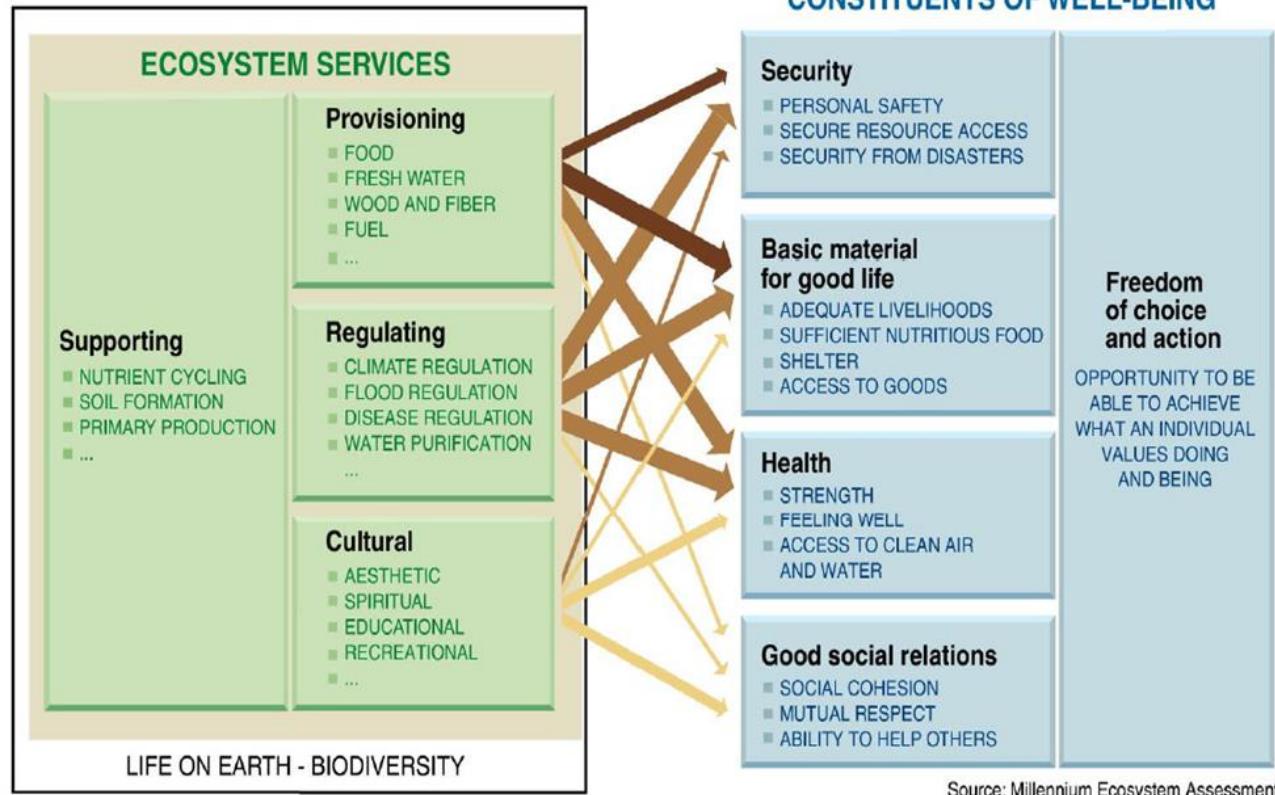
- EbA** → Ecosystem-based adaptation
- GI** → Green infrastructure
- BI** → Blue infrastructure
- EE** → Ecological engineering
- SuDs** → Sustainable urban drainage systems
- ESS** → Ecosystem services

- Provide **solutions to climate change related challenges**: more/less rain, (storm)water quality/quantity, biodiversity, well-being
- Multifunctional** infrastructure: water management + recreation + biodiversity
- Replace/complement grey infrastructure** + food production
- Mimic nature**: biofilter, green roof/wall etc.



BY&FOR CITIZENS
European Conference on Smart,
Sustainable and Resilient Cities

This project has received
innovation programme
Smart Cities and Commu-



Source: Millennium Ecosystem Assessment

**Cities rely on local ES +
services from ecosystems
beyond city limits**

Ecosystem service providing unit = NBS?

SECTION	CLASS	SERVICE UNIT	DEMAND	
PROVISIONING	Cultivated crops	Fields, orchards, gardens	Consumption	
	Surface water for drinking	Watershed		
	Groundwater for drinking			
	Surface water / non-drinking use			
	Groundwater / non-drinking use			
REGULATING	Air filtration/pollutant sequestration	Trees, shrubs	Risk of exposure to pollutants	
	Reduced GHG concentration	Vegetation, soil	Risk of climate change	
	Micro/regional climate regulation	Vegetation, water bodies		
	Smell/noise/visual impact buffer	Vegetation	Risk of exposure to noise etc.	
	Hydrologic cycle maintenance	Vegetated & permeable surfaces	Risk of flood	
	Flood control	Wetlands	Exposure to flooding	
CULTURAL	Physical use of landscape/waterscape	Green and blue spaces	Potential & direct use	
	Scientific/educational			
	Heritage, cultural			

Exemplar water-related ES from Maes et al. 2016



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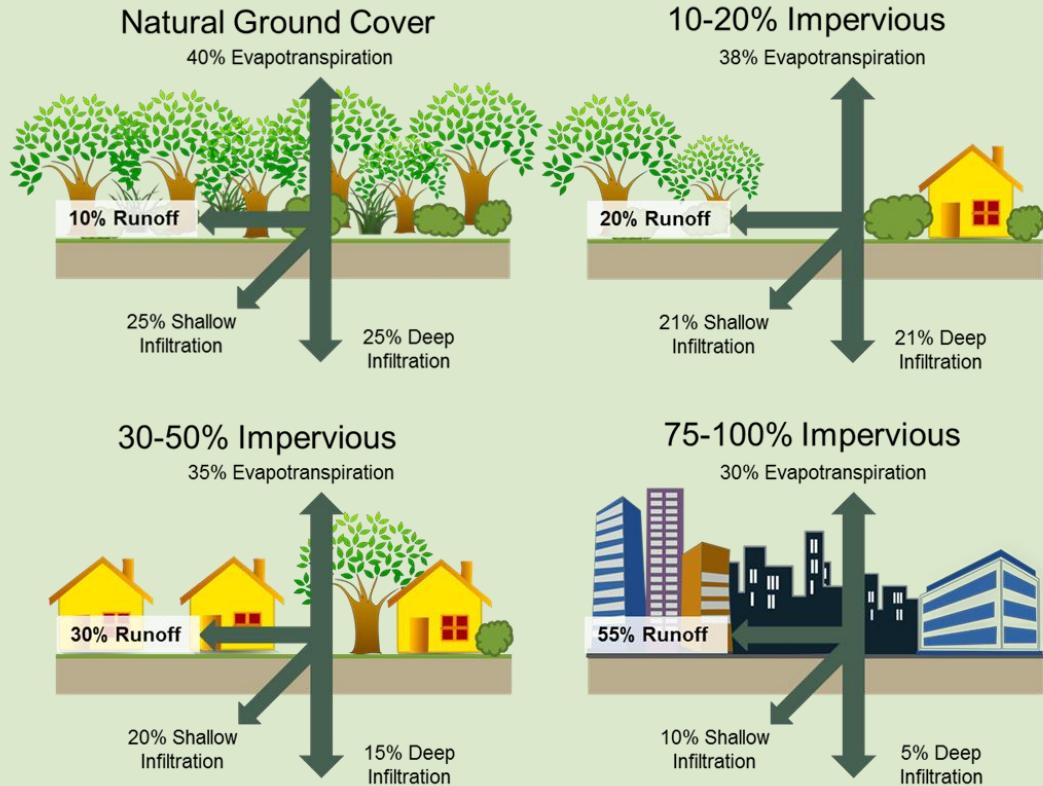


Image adapted from US EPA 1993, Pub. #840-B-92-002

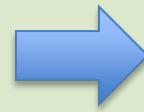




NBS in Practice: Genova

Brownfield regeneration at Gavoglio Barracks

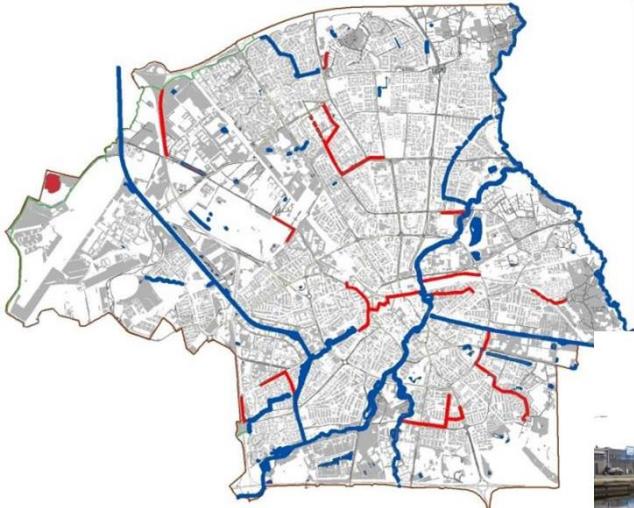
- Multifunctional green space with recreational areas, community gardens & orchards, stormwater ponds, forested areas, playgrounds, green wall(s)





NBS in Practice: Eindhoven

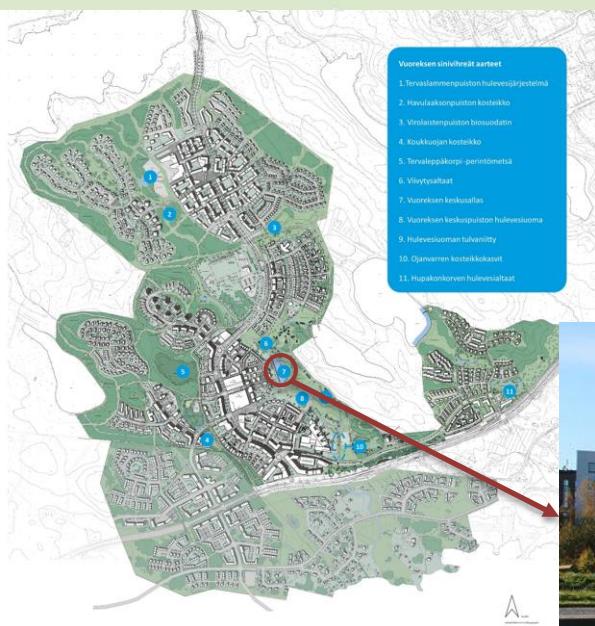
Watercourse reconstruction, green roofs/walls & increased vegetation



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NBS in Practice: Tampere

Vuores stormwater management system

- Multifunctional green space with stormwater ponds, surface & subsurface water filtration (wetlands, biofilters)



© City of Tampere / Vuores



Quantifying ES provision by NBS

- Most policy goals now 'structure oriented' rather than 'supply oriented'
- ...but ecosystem services (provided by NBS) may be specifically targeted in policy
- Evidence for NBS (co-)benefits facilitates systemic approach to ecosystem services provision in cities
- NBS implementation should involve explicit consideration of ecosystem services (supply oriented) as well as form (structure oriented)



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THANK YOU!



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