

Storm water management, planning tools *and new openings*

●
Helsinki

BSR WATER final conference
16.9.2021

Kajsa Rosqvist

Climate unit
City of Helsinki

Helsinki

PLATFORM
BSR WATER

 **Interreg**
Baltic Sea Region



EUROPEAN
REGIONAL
DEVELOPMENT
FUND

1. Strategic level
2. Implementation
3. New openings and actions

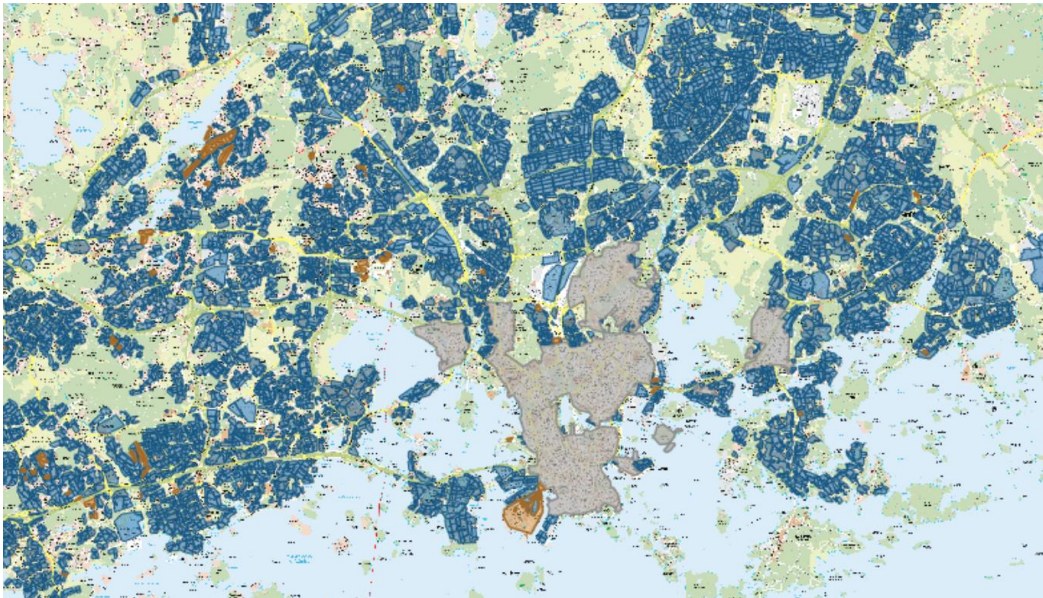


Quantity and quality management

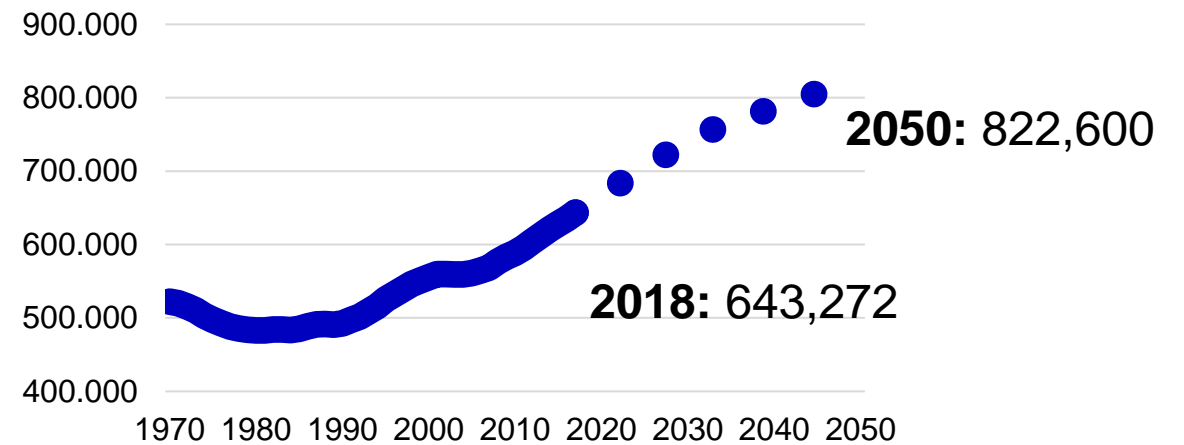
Why is storm water management difficult in cities?



- Pavements (decreasing infiltration)
- Limited capacity and combined sewers
- Population growth -> densification of old areas and construction of new... more pavements, more water in sewers...



Helsinki population 1970–2017 and forecast to 2050





**Plus, the climate has changed ->
increasing amounts of rain, rainy
days and cloud bursts**

Strategic level:

Integrated storm water management program

City of Helsinki's storm water management program



+ cross-sectoral storm water group

<https://www.hel.fi/static/liitteet/kaupunkiymparisto/julkaisut/julkaisut/julkaisu-03-18-en.pdf>

2018-

Aims:

1. Storm water has been utilized for increasing the attractiveness of the environment, maintaining biodiversity and promoting good condition of surface and ground water

- 2. Regional and local drainage, climate change and densifying city structure has been taken into account
- 3. Storm water quality is improved
- 4. Conveying storm water into combined sewers has been reduced
- 5. Cooperation and procedure models for overall management of storm water are in use and competence and resources have been secured

Priority order

- 1** Primarily, storm water will be treated and utilised at the source.
- 2** Storm water will be conveyed away from the source with a system that retains and detains the water.
- 3** Storm water will be conveyed away from the source in a storm water sewer to retention and detention areas located on public areas before conveying the water to a water body (brook).
- 4** Storm water will be conveyed in a storm water sewer directly to the recipient water body.
- 5** Storm water will be conveyed in a combined sewer to the Viikinmäki wastewater treatment plant



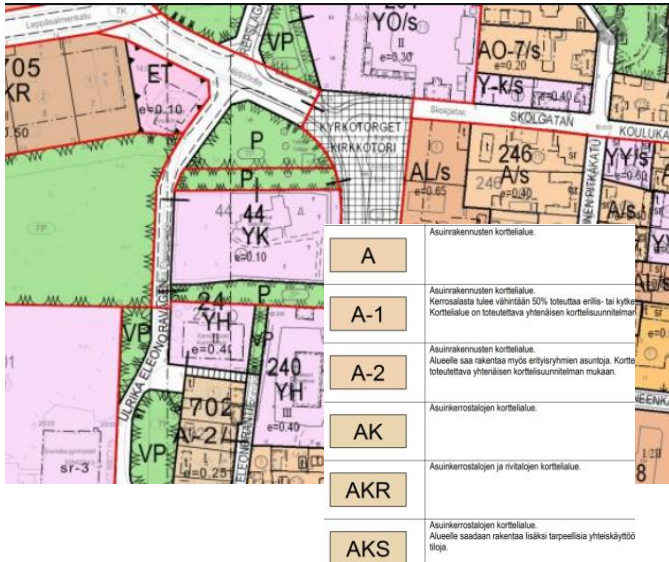
Implementation: Planning tools

The Green Are Factor (GAF) ensures sufficient green infrastructure when building new blocks in a dense urban environment

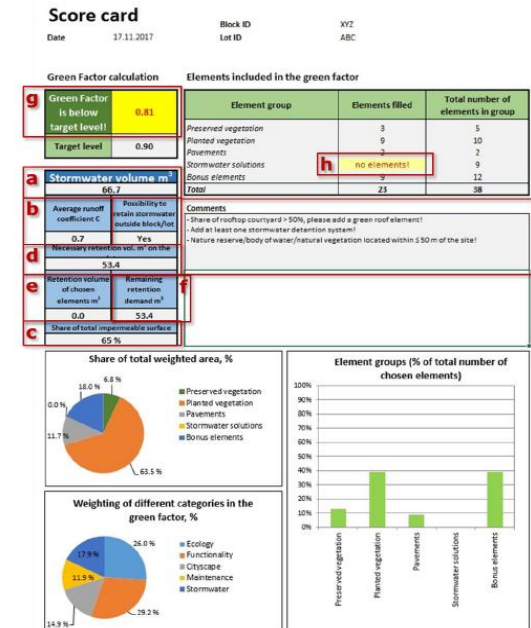
$$\text{Green factor} = \frac{\text{Scored green area}}{\text{Lot area}}$$

Used on new residential areas!

How is the GAF used in Helsinki in the city planning process?



GAF requirement in **zoning regulations** of city plans



The GAF **score card** is attached to the **building permit** and checked by the city construction supervision

Calculation of the GAF using the excel tool

Instructions

Limitations (baseline information)

Green elements

Results = score card (target level)

Element group	Element description	
Preserved vegetation and soil	Preserved large (fully grown > 10 m) tree in good condition, at least 3 m (25 m ² each)	
	Preserved small (fully grown ≤ 10 m) tree in good condition, at least 3 m (15 m ² each)	
	Preserved tree in good condition (1.5–3 m) or a large shrub (3 m ² each)	if of a building is reduce rough events, air, and a
	Preserved natural meadow or natural ground vegetation	
More info	Preserved natural bare rock area (at least partially bare rock surface, not many trees)	native roof top elements, is potentially significantly reducing
Planted/new vegetation	Large tree species, fully grown > 10 m (25 m ² each)	
	Small tree species, fully grown ≤ 10 m (15 m ² each)	
	Large shrubs (3 m ² each)	
	Other shrubs	
	Perennials	area of ing onto and wall panels is (exterior)
	Meadow or dry meadow	ually absorb, d reflection,
	Cultivation plots	the most e suffering ed and is
	Lawn	
	Perennial vines (2 m ² each)	
More info	Green wall, vertical area	etically duction by rural support ing lots, can be argued to a r sub-base
Pavements	Semipermeable pavements (e.g. grass stones, stone ash)	
More info	Permeable pavements (e.g. gravel and sand surfaces)	
	Impermeable surface (calculated automatically)	
Stormwater management solutions	Rain garden (biofiltration area) with a broad range of layered vegetation	our asphalt, sion slightly g the water to or grass in
	Intensive green roof / roof garden, depth of substrate 20–100 cm	
	Semi-intensive green roof, depth of substrate 15–30 cm	for use for num reduce the activities, and
	Extensive green roof, depth of substrate 6–8 cm	
	Infiltration basin or swale covered with vegetation or aggregates (no permanent pool)	nted, i convey ay, parking selling in contrast to er velocity, ediment
	Infiltration pit (underground)	
	Pond, wetland or water meadow with natural vegetation (permanent water surface remains moist)	e or these can truction than ion. An d the soil is not necture on of the use a variety
More info	Retention or detention1) basin or swale covered with vegetation or aggregates (permeable)	
	Retention or detention1) pit, tank or cistern (underground, notice units: volume!)	
More info	Biofiltration basin or swale	They can including the treatment,
Bonus elements, max score 1 per category	Capturing stormwater from impermeable surfaces for use in irrigation or directing it to greenery	
	Directing stormwater from impermeable surfaces to constructed water features, such as ponds	
	Shading large tree (25 m ² each) on the south or southwest side of the building (especially deciduous)	
	Shading small tree (15 m ² each) on the south or southwest side of the building (especially deciduous)	
	Fruit trees or berry bushes suitable for cultivation (10 m ² each)	

Implementation:

Piloting of nature based solutions

Biofiltration using sand (old public area)





**Biofiltration using biochar, chrushed stone and willows
(old public area)**

Picture Niina Kautto/ HSY



Nature based solutions on new residential area, public space & lots



Picture Viliina Evokari



Picture Niina Kautto¹⁷

New openings and actions

New strategic openings

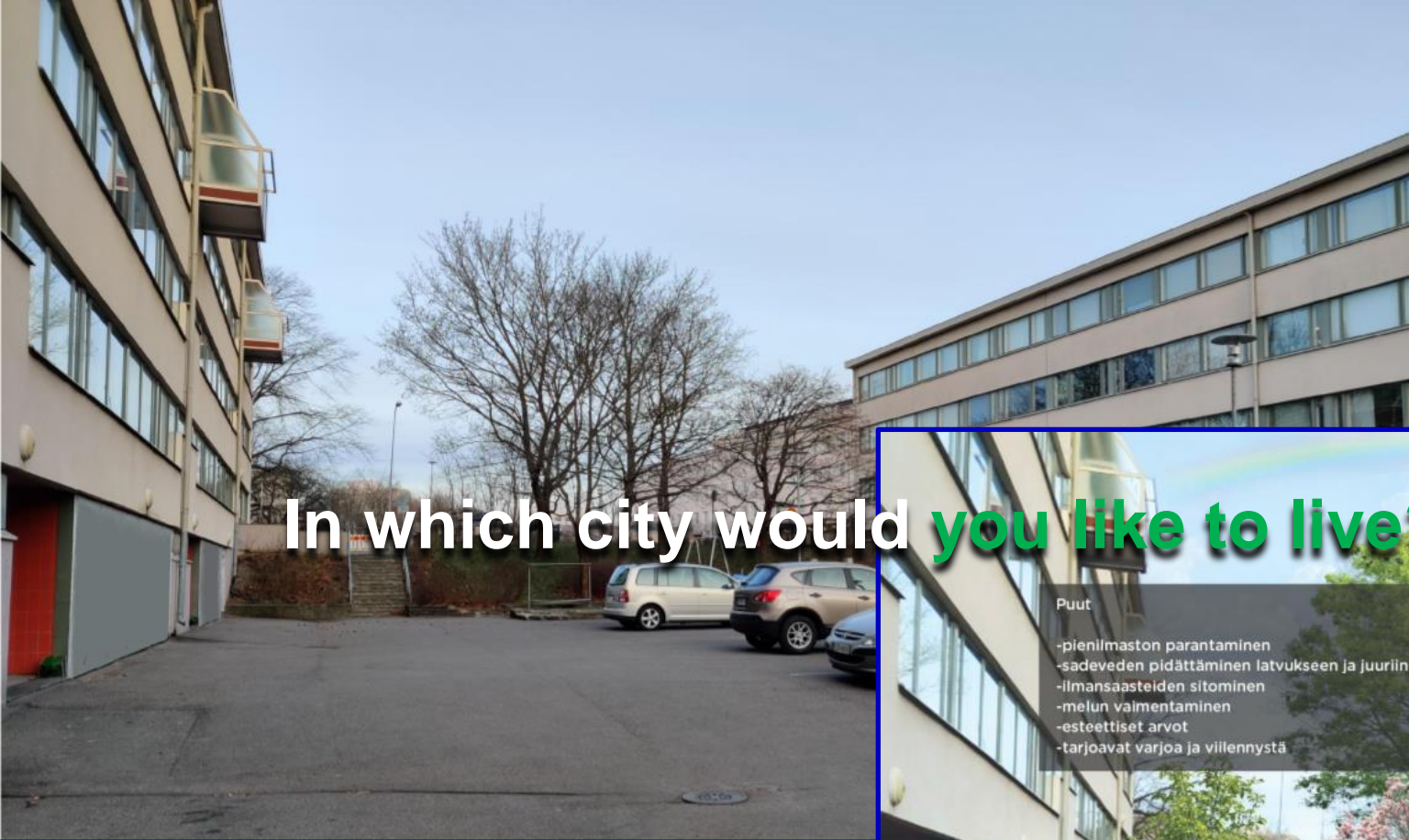
- Aims for **climate change adaptation** seems as strong as for mitigation in the new **city strategy** (2022->)
- **Climate Unit** created as a independent unit below the sectoral leadership of the Urban Environment Division
 - Responsibility of storm water management program coordination
 - Better influence for climate change adaptation and sustainable storm water mangement in general
- New cross-sectoral **climate change adaptation group** has started its work (September 2021) and prioritized urgent actions:
 - Strengthening **green solutions (mainstreaming pilots!)**
 - **Sustainable stormwater management incl. quality**
 - Climate-proof construction
 - Climate change risk management

New concrete actions

- Green Area Factor
 - Impact assessment of the usage of the Green Area Factor – how many green solutions are realized? (compiled at the moment)
 - Widening the use/scope of the Green Area Factor
 - A Green Area Factor for retrofitting on lots in old areas
 - Regional Green Area Factor incorporating public and private areas (first steps taken)
- Storm water quality risk area assessment
 - HuLaKaS –project
 - Risk areas will be specified (desk work and water sampling)
 - Instruction for cities risk area assessment

New concrete actions

- Communication with citizens: showing alternatives - "in which city would you like to live?"
 1. Info package for yard retrofitting directed to housing cooperatives (for planning, maintenance services and property managers)
 - Benefits of green solutions by yard design examples
 2. Social media campaigns
 - Benefits of green solutions



In which city would **you like to live?**

1) Info package to housing cooperatives





2) Social media campaign

In which city would you like to live?

Helsinki

Pictures Auli Honkanen

Green solutions are
the **superheros** of
climate change
adaptation and storm
water management



Thank you!
kajsa.rosqvist@hel.fi