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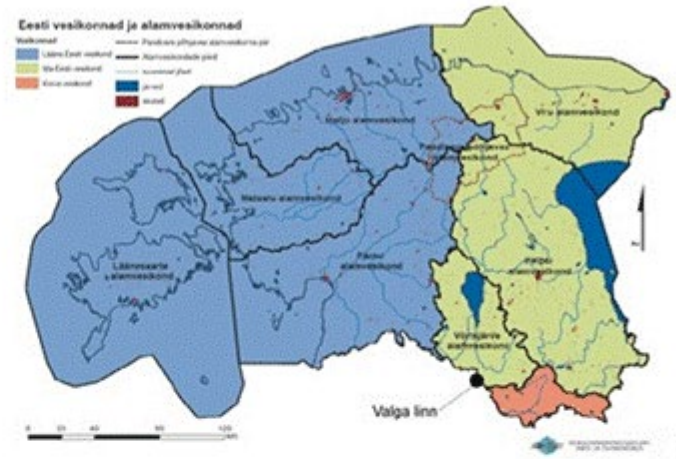
Republic of Estonia
Ministry of Climate

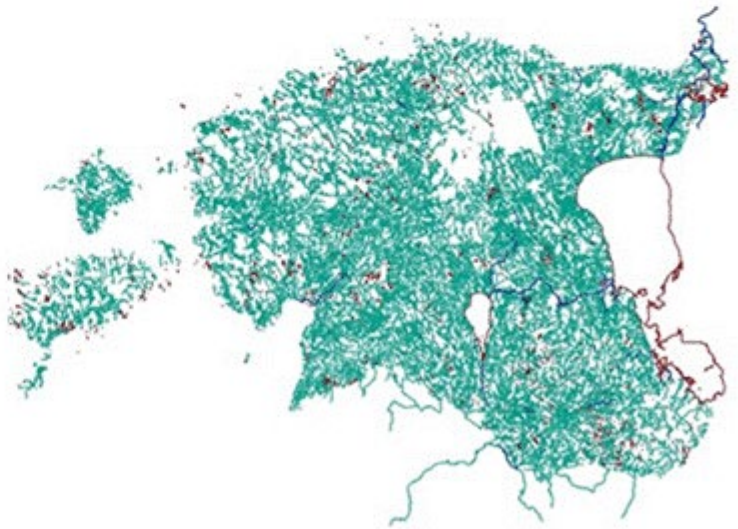
Achieving climate resilience through sustainable water management: the case of Estonia

Rene Reisner

National Green Transition Coordinator

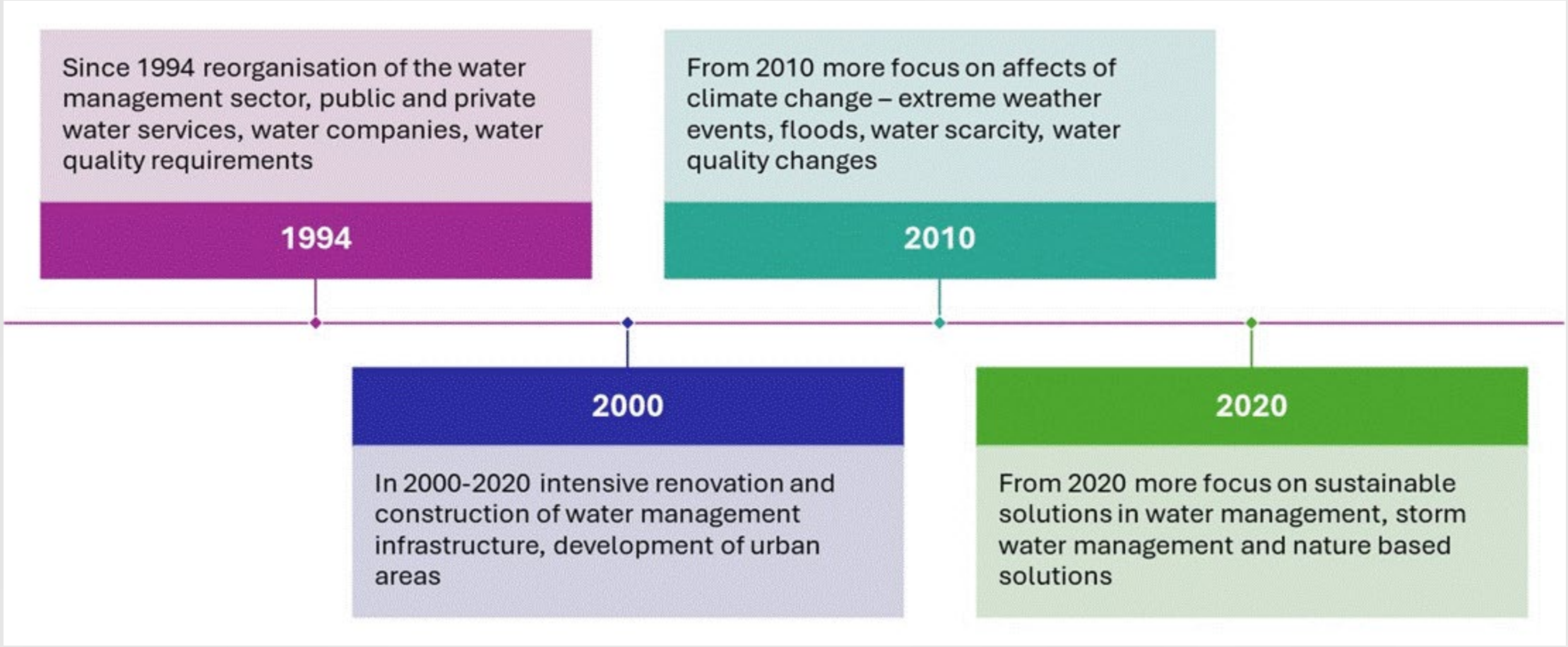
Water management in Estonia





- Entirely in the catchment area of the Baltic Sea
- Three river basin districts and river basin management plans
- Flood risk management plans
- 1900 rivers with total length of 30000 km
- 2500 lakes
- 3500 km of coastline
- Significant water management issues:
  - agricultural pollution
  - free flow of rivers
  - new impacts from climate change

Trends in water management



From 2020 more focus on sustainable solutions in water management, storm water management and nature-based solutions, what are we doing today?

River Basin Management Plans

Flood Risk Management Plans

Spatial plans at the national, regional and local level

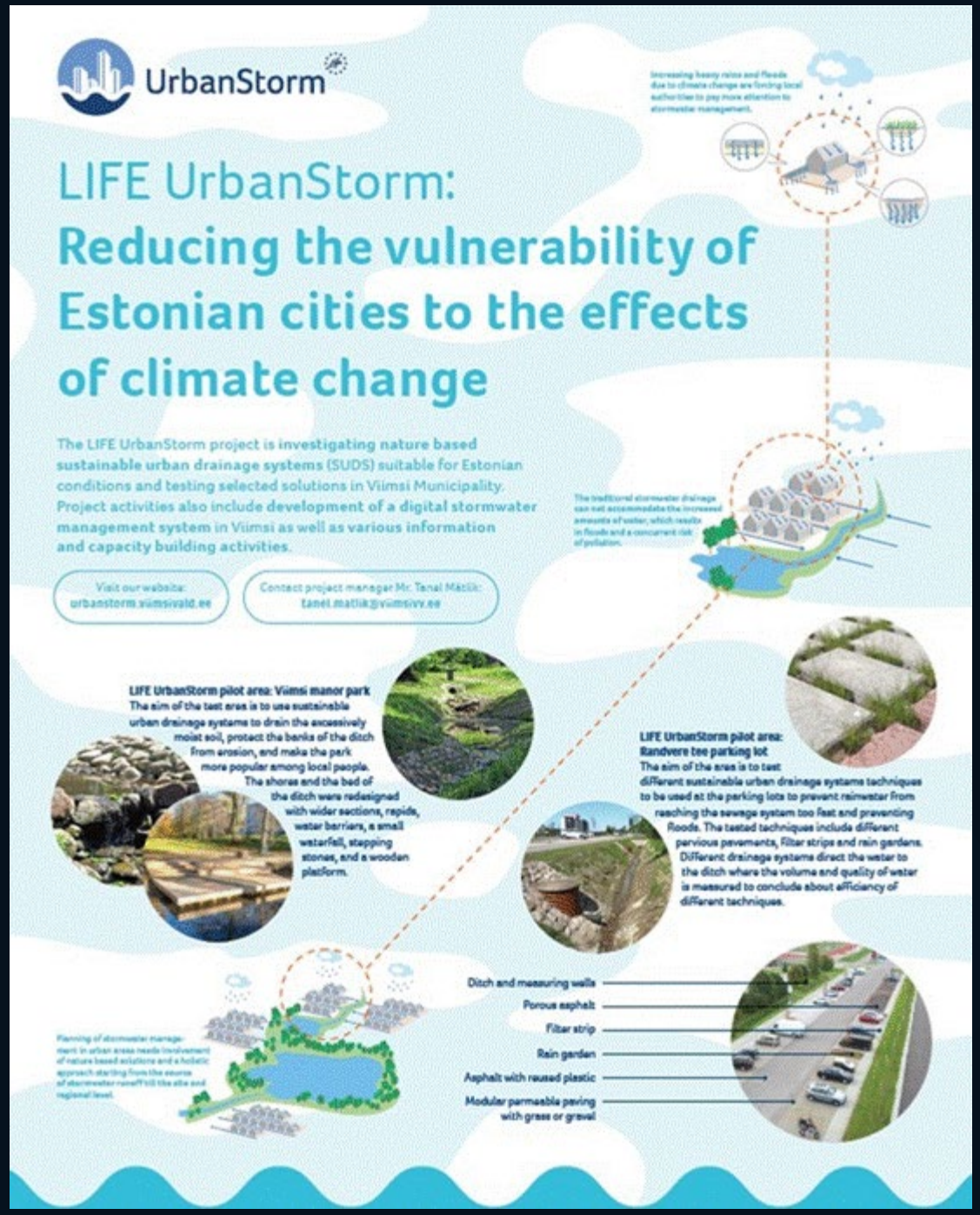
Themed plans

Greening of spatial plans

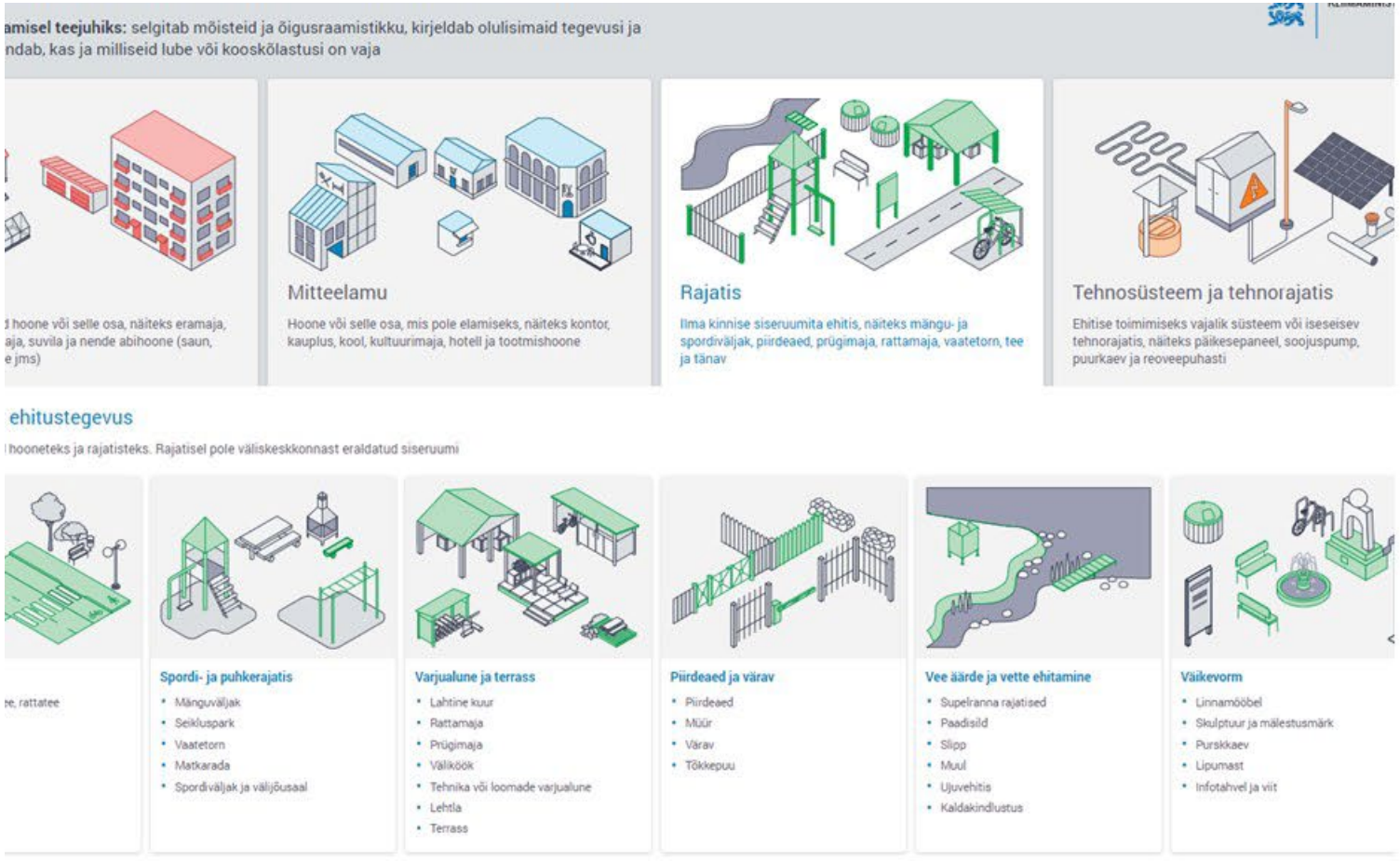
Guidance on greening of spatial plans

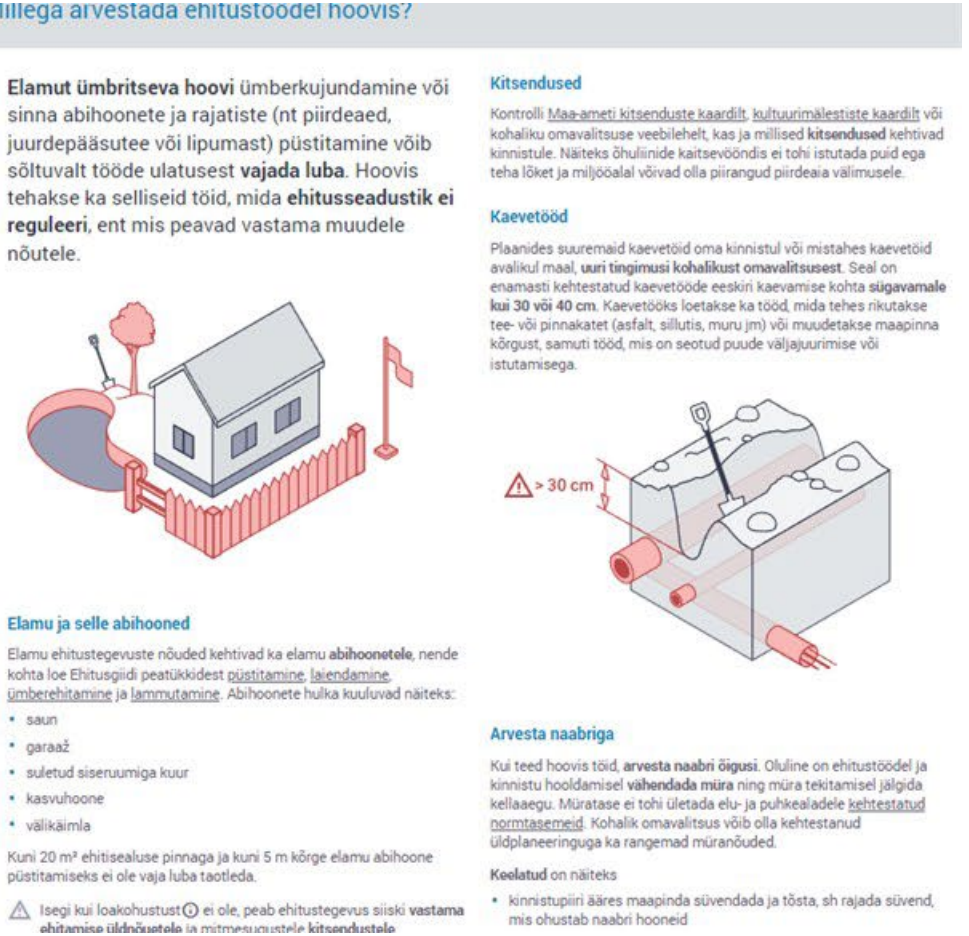
National guidance on sustainable solutions

- Tailor made solutions, tested and suitable for Estonian conditions
- How to select suitable solutions
- How to implement these solutions
- Technologies
- Examples



Interactive building and construction guide

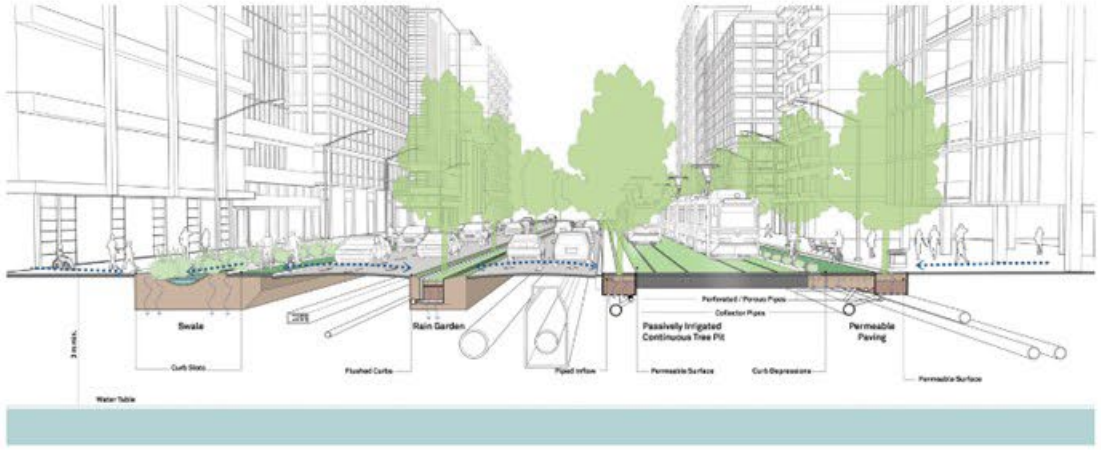




Interactive street design guide (similar to: https://globaldesigningcities.org/)

Green Infrastructure and Stormwater Management

Green infrastructure in urban streets complements traditional piped water drainage systems. Vegetation, soils, and natural processes capture and infiltrate or evaporate water before it enters the piped system. Green infrastructure can help reduce flooding and water pollution by absorbing and filtering stormwater. It simultaneously provides a natural relief to the built environment, improves the street aesthetic, and delivers benefits to the community. Green infrastructure must be carefully coordinated to avoid conflicts with utility placement, high water table levels, and subterranean conditions such as the location of bedrock. Considering the soil conditions is critical when planning green infrastructure strategies. While the components and processes involved in green infrastructure are vast, some of the major components are listed below.



Green Infrastructure Design Guidance

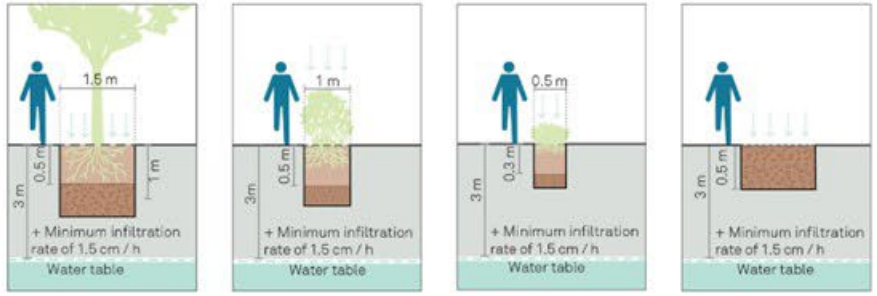


Diagram showing minimum width, depth, and infiltration rates required for a variety of tree-pit types.

Design Considerations

Plan green infrastructure in conjunction with regional systems, taking into account conditions such as the water table, topography, and local climate. Consider the following design criteria:

Groundwater Table. Maintain a minimum of **3 m**, with **1 m** under drains, from the ground surface

Climate Considerations

High Rainfall. Locate inflow and outflow structures close to each other or design the system to feed the inlet from the back, and allow high flows to bypass the system completely. Avoid pavers with loose material as these are vulnerable to erosion. Passive irrigation can be used for all climate zones but is most effective where rainfall is regular.

Curb Extensions. Use curb extensions to place smaller areas of green infrastructure. Place rain gardens and tree pits at intersection gateways, on bus bulbs, or between on-street parking spaces.

Side or Central Median. Provide green infrastructure within the side or central medians, depending on the grading of the street and the underground conditions. Medians help

What are we doing in urban areas

- Priority financial support for NBS
- Retention bonds
- Cleaning and widening ditches
- Real time monitoring equipment
- Storm water treatment systems
- Bioretention basins
- Permeable roads
- Parking lots
- Green roofs and walls
- Reusing collected storm water in buildings

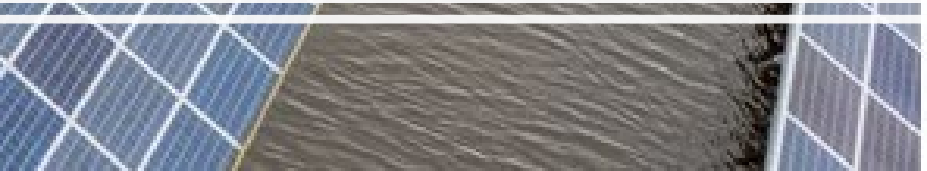
Solutions for rural areas

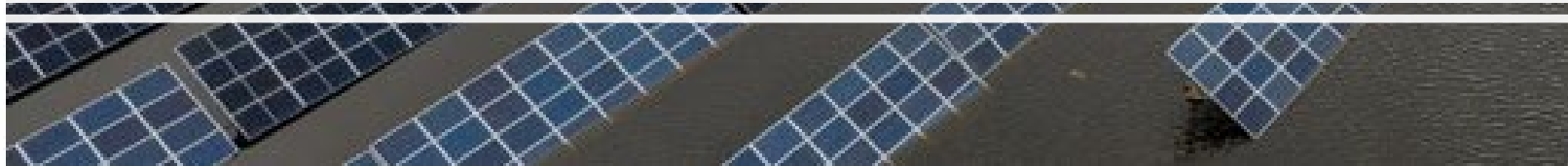
- **Wetland restoration**
  - Wetlands are rehabilitated to absorb excess rainwater, reduce flooding, and recharge groundwater.
- **Agroforestry and buffer zones**
  - Trees and natural vegetation are planted between fields and water bodies to reduce soil erosion, filter agricultural runoff, and improve water quality up to 20m
- **Peatland conservation:**
  - Peatlands are restored to retain water and carbon, supporting both flood prevention and climate mitigation.
- **Re-meandering rivers:**
  - Restoring natural curves to straightened rivers helps slow down the flow, reducing erosion and allowing floodwaters to spread naturally over a larger area.
- **Floodplain restoration:**
  - Reconnecting rivers to their natural floodplains allows water to be temporarily stored, lowering flood risks downstream.
- **Vegetation planting:**
  - Native plants along riverbanks stabilize soil, filter runoff, and further slow down water movement.

New in Estonia

Restoring wetlands in forest areas

Alternative uses for flood prone areas





Dedicated flood areas – how to make the most of the bad situation

In conclusion, to achieve climate resilience through sustainable water management

- **Embrace nature-based solutions** that enhance biodiversity and ecosystem health while effectively managing water resources.
- **Implement adaptive water management policies** that respond to the changing climate and incorporate the latest scientific findings.
- **Invest in sustainable infrastructure** that can withstand extreme weather events and support efficient water use.
- **Foster cross-sectoral collaboration** among governments, communities, and stakeholders to ensure a cohesive approach to water management.
- **Promote public awareness and community involvement** in water management practices to build resilience at the local level.

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Thank you!

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