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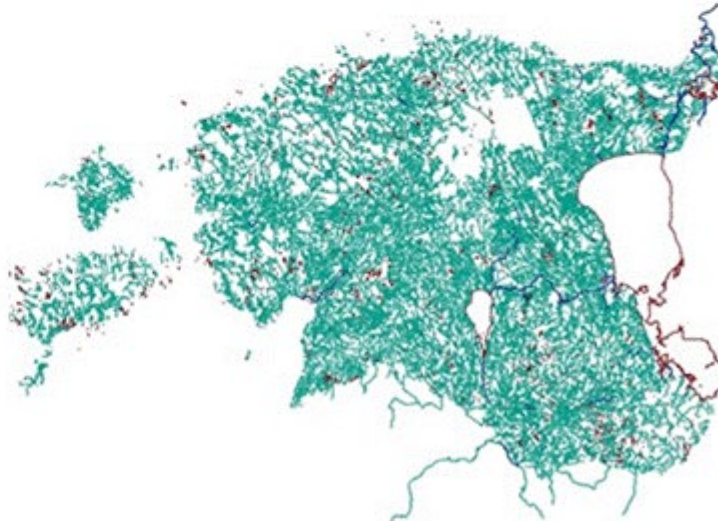
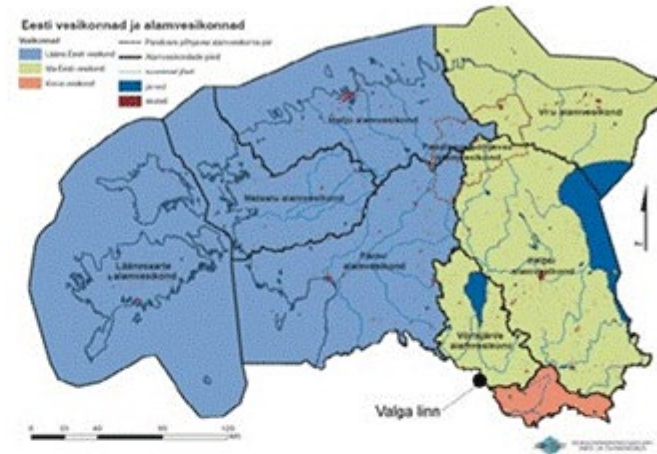
REPUBLIC OF ESTONIA
MINISTRY OF CLIMATE

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

Rene Reisner

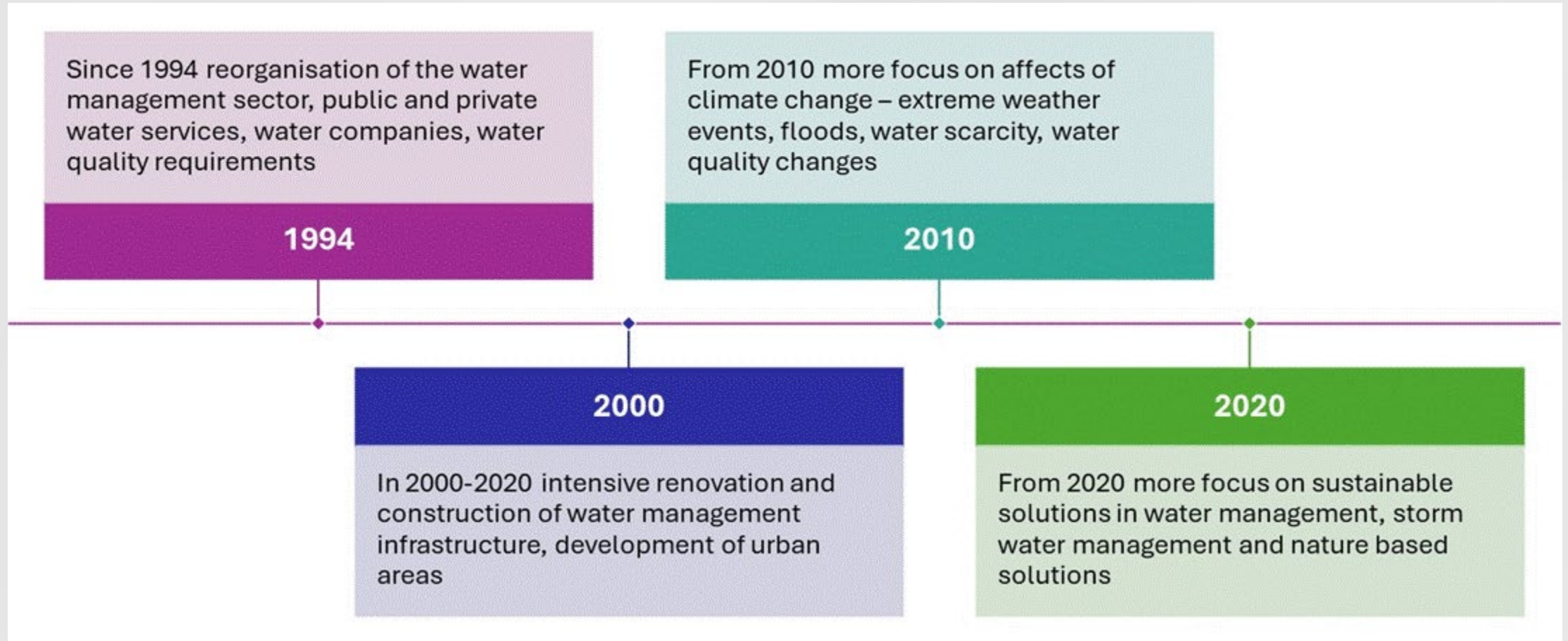
National Green Transition Coordinator

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

UrbanStorm

LIFE UrbanStorm: Reducing the vulnerability of Estonian cities to the effects of climate change

The LIFE UrbanStorm project is investigating nature based sustainable urban drainage systems (SUDS) suitable for Estonian conditions and testing selected solutions in Viimsi Municipality. Project activities also include development of a digital stormwater management system in Viimsi as well as various information and capacity building activities.

Visit our website: urbanstorm.viimsivald.ee | Contact project manager Mr. Tanal Mätlik: tanal.matlik@viimsivv.ee

Increasing heavy rains and floods due to climate change are forcing local authorities to pay more attention to stormwater management.

The traditional stormwater drainage can not accommodate the increased amounts of water, which results in floods and a concurrent risk of pollution.

LIFE UrbanStorm pilot area: Viimsi manor park
The aim of the test area is to use sustainable urban drainage systems to drain the excessively moist soil, protect the banks of the ditch from erosion, and make the park more popular among local people. The shores and the bed of the ditch were redesigned with wider sections, rapids, waterfalls, stepping stones, and a wooden platform.

LIFE UrbanStorm pilot area: Randvere tee parking lot
The aim of the area is to test different sustainable urban drainage systems techniques to be used at the parking lots to prevent rainwater from reaching the sewage system too fast and preventing floods. The tested techniques include different pervious pavements, filter strips and rain gardens. Different drainage systems direct the water to the ditch where the volume and quality of water is measured to conclude about efficiency of different techniques.

Planning of stormwater management in urban areas needs involvement of nature based solutions and a holistic approach starting from the source of stormwater runoff till the site and regional level.

Ditch and measuring walls
Porous asphalt
Filter strip
Rain garden
Asphalt with reused plastic
Modular permeable paving with grass or gravel

Interactive building and construction guide

Elamisel tejuhiks: selgitab mõisteid ja õigusraamistikku, kirjeldab olulisimaid tegevusi ja näitab, kas ja milliseid luba või kooskõlastusi on vaja



Elamu
Elamu või selle osa, näiteks eramaja, korter, suvila ja nende abihooned (saun, garaaz, e jms)



Mitteelamu
Hoone või selle osa, mis pole elamiseks, näiteks kontor, kauplus, kool, kultuurimaja, hotell ja tootmishoone



Rajatis
Ilima kinnise siseruumita ehitis, näiteks mängu- ja spordiväljak, piirdeaed, prügimaja, rattamaja, vaatetorn, tee ja tänav



Tehnosüsteem ja tehnorajatis
Ehitise toimimiseks vajalik süsteem või iseseisev tehnorajatis, näiteks päikesepaneel, soojuspump, puurkaev ja reoveepuhasti

ehitustegevus

Elamutehnikas ja rajatistes. Rajatisel pole väliskeskonnast eraldatud siseruumi



Rattatee



Spordi- ja puhkerajatis

- Mänguväljak
- Seikluspark
- Vaatetorn
- Matkarada
- Spordiväljak ja väljõusaal



Varjualune ja terrass

- Lahtine kuur
- Rattamaja
- Prügimaja
- Väljakook
- Tehnika või loomade varjualune
- Lehtla
- Terrass



Piirdeaed ja värav

- Piirdeaed
- Müür
- Värav
- Tõkkepuu



Vee äärde ja vette ehitamine

- Supelranna rajatised
- Paadisild
- Slipp
- Muul
- Ujuvehitis
- Kaldakindustus



Väikevorm

- Linnamööbel
- Skulptuur ja mälestusmärk
- Purskkaev
- Lipumast
- Infotahvel ja viit

Millega arvestada ehitustöödel hoovis?

Elamut ümbritseva hoovi ümberkujundamine või sinna abihoonete ja rajatiste (nt piirdeaed, juurdepääsutee või lipumast) püstitamine võib sõltuvalt tööd ulatusest **vajada luba**. Hoovis tehakse ka selliseid töid, mida **ehitusseadustik ei reguleeri**, ent mis peavad vastama muudele nõuetele.



Elamu ja selle abihooned

Elamu ehitustegevuste nõuded kehtivad ka elamu **abihoonetele**, nende kohta loe Ehitusgiidi peatükkidest **püstitamine**, **laiendamine**, **ümberehitamine** ja **lammutamine**. Abihoonete hulka kuuluvad näiteks:

- saun
- garaaz
- suletud siseruumiga kuur
- kasvuhoone
- välikäimla

Kuni 20 m² ehitisealuse pinnaga ja kuni 5 m kõrge elamu abihooned püstitamiseks ei ole vaja luba taotleda.

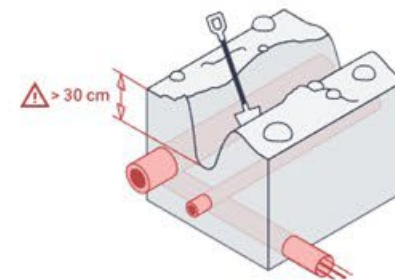
⚠ Isegi kui loakohustust ei ole, peab ehitustegevus siiski **vastama ehitamise üldnõuetele** ja mitmetasemelisele **kitsendustele**

Kitsendused

Kontrolli **Maa-ameti kitsenduste kaardil**, **kultuurimälestiste kaardil** või kohaliku omavalitsuse veebilehelt, kas ja millised **kitsendused** kehtivad kinnistule. Näiteks õhuliinide kaitsevööndis ei tohi istutada puid ega teha lõket ja miljöölal võivad olla piirangud piirdeaia välismusele.

Kaevetööd

Plaanides suuremaid kaevetöid oma kinnistul või mistahes kaevetöid avalikul maal, **uuri tingimusi kohalikust omavalitsusest**. Seal on enamasti kehtestatud kaevetööde eeskiri kaevamise kohta **sügavamale kui 30 või 40 cm**. Kaevetöökõks loetakse ka tööd, mida tehakse rikutakse tee- või pinnakatet (asfalt, sillutus, muru jm) või muudetakse maapinna kõrgust, samuti tööd, mis on seotud puude väljajuurimisega või istutamisega.



Arvesta naabriga

Kui teed hoovis töid, **arvesta naabri õigusi**. Oluline on ehitustöödel ja kinnistu hooldamisel **vähendada müra** ning müra tekitamisel jälgida kellaaegu. Müratase ei tohi ületada elu- ja puhkealadele **kehtestatud normtasemeid**. Kohalik omavalitsus võib olla kehtestanud üldplaneeringuga ka rangemad müranõuded.

Keelatud on näiteks

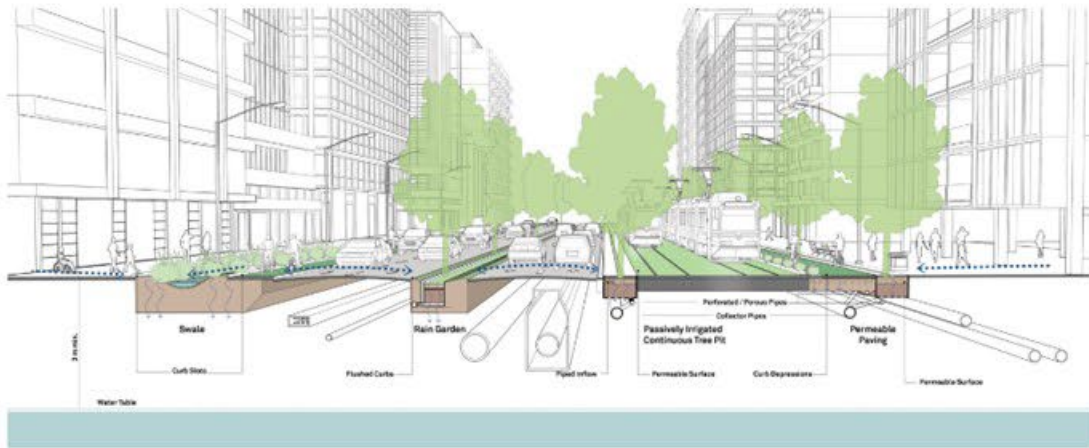
- kinnistupiiri ääres maapinda süvendada ja tõsta, sh rajada süvend, mis ohustab naabri hooneid

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

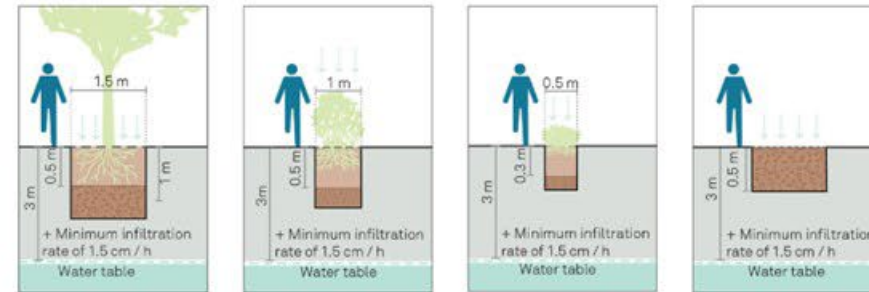


Diagram showing minimum width, depth, and infiltration rates required for a variety of tree-pit types.

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 to the top of the groundwater table.

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.



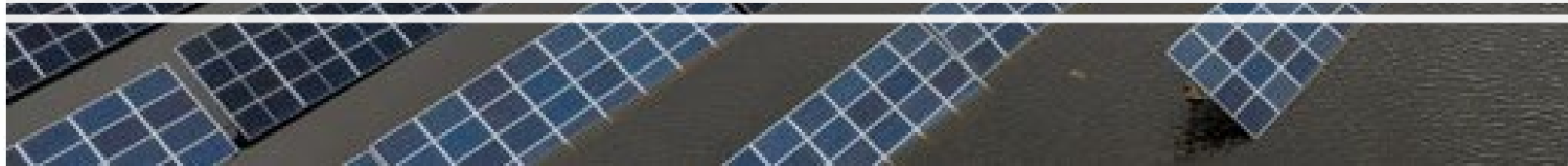
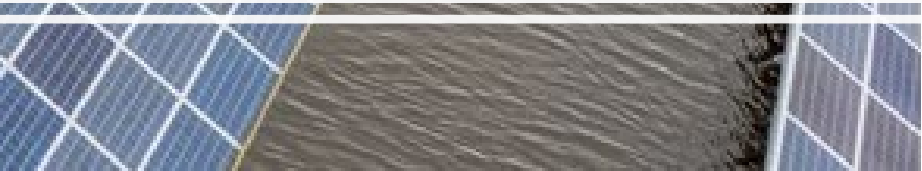
New in Estonia

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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