TAIWAN INT'L WATER WEEK

Turning the Tide:

Innovative Water Management and Climate Adaptation in Lithuania

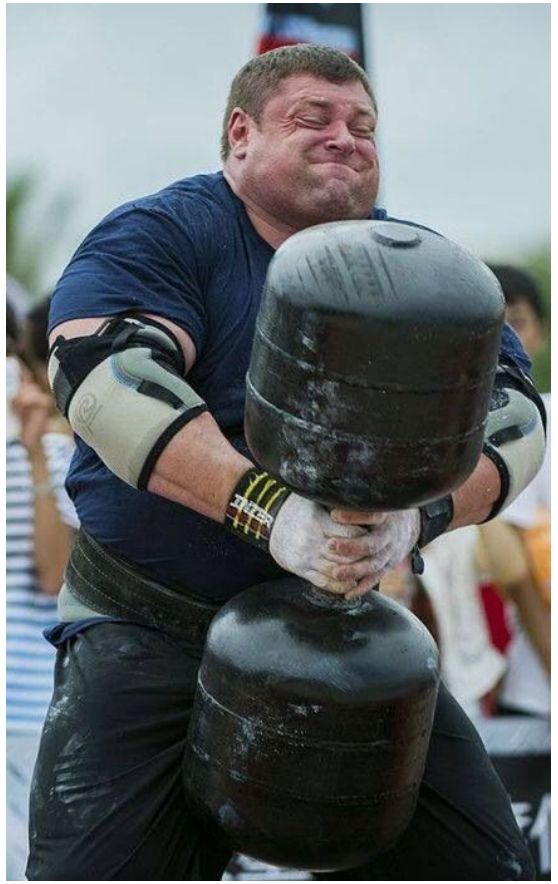
Smart Watershed, AI-Driven Innovation
智慧流域 AI領航
International Forum 2025

Ričardas Valančiauskas

Director

Lithuanian Hydrometeorological Service

Lithuania



Water Resources

29.000 rivers

6.000 lakes

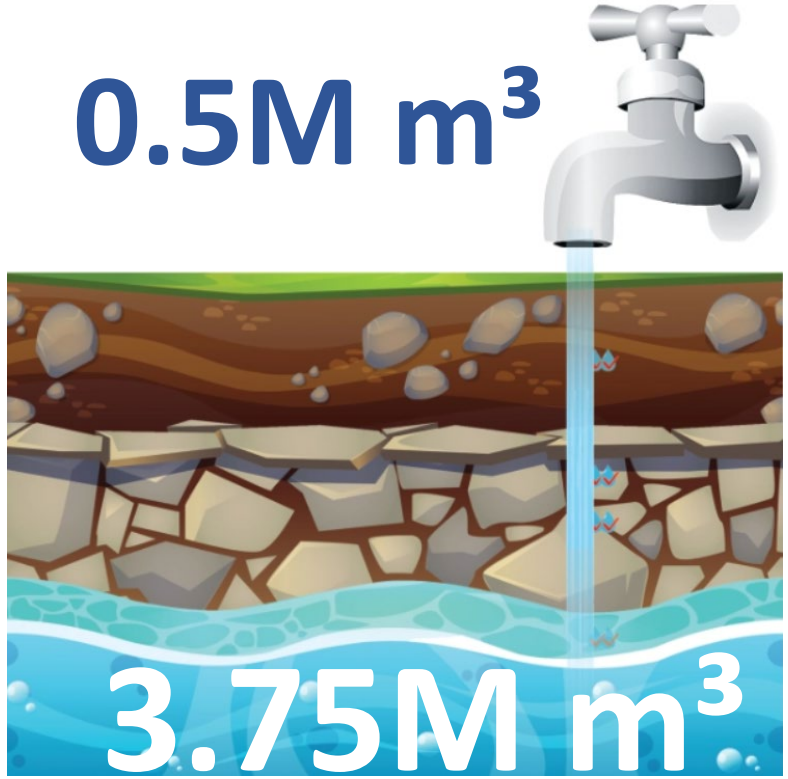
Curonian Lagoon

Baltic Sea

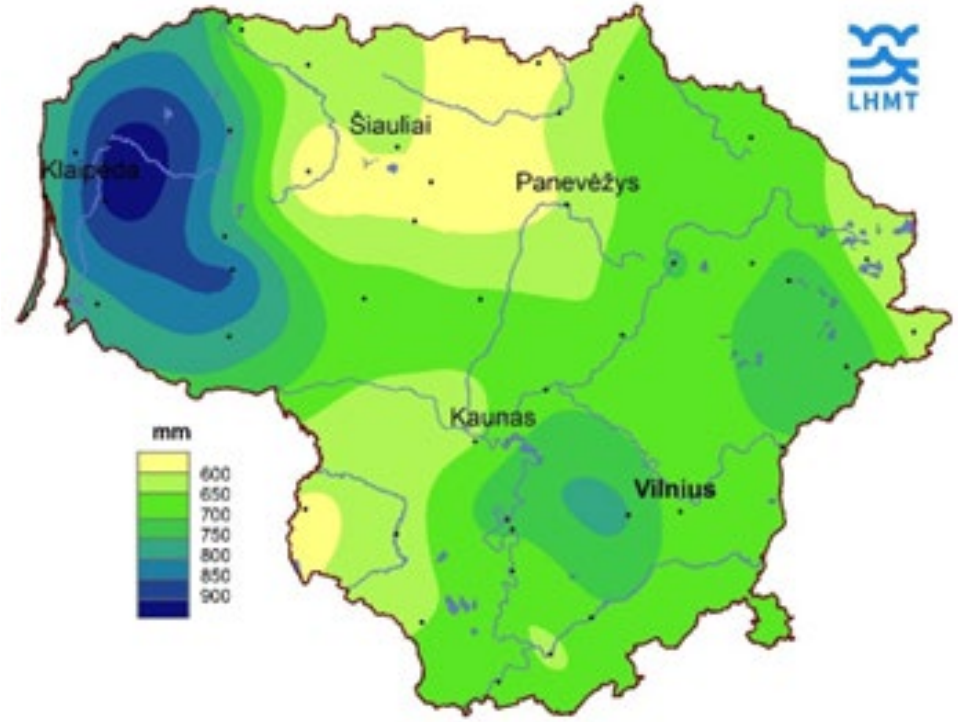
Fresh Water

groundwater use is

13%



Precipitation



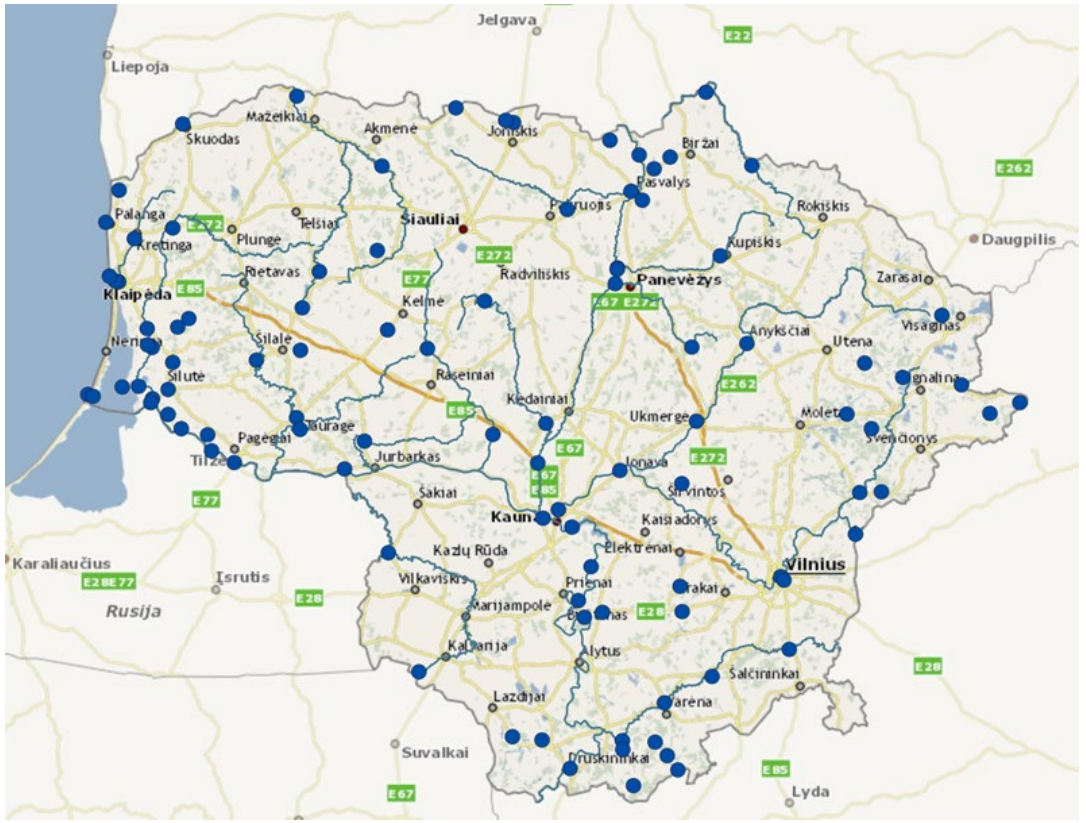
695 mm per annum

66% - from April to October

intense precipitation events are more frequent

Hydrological Network

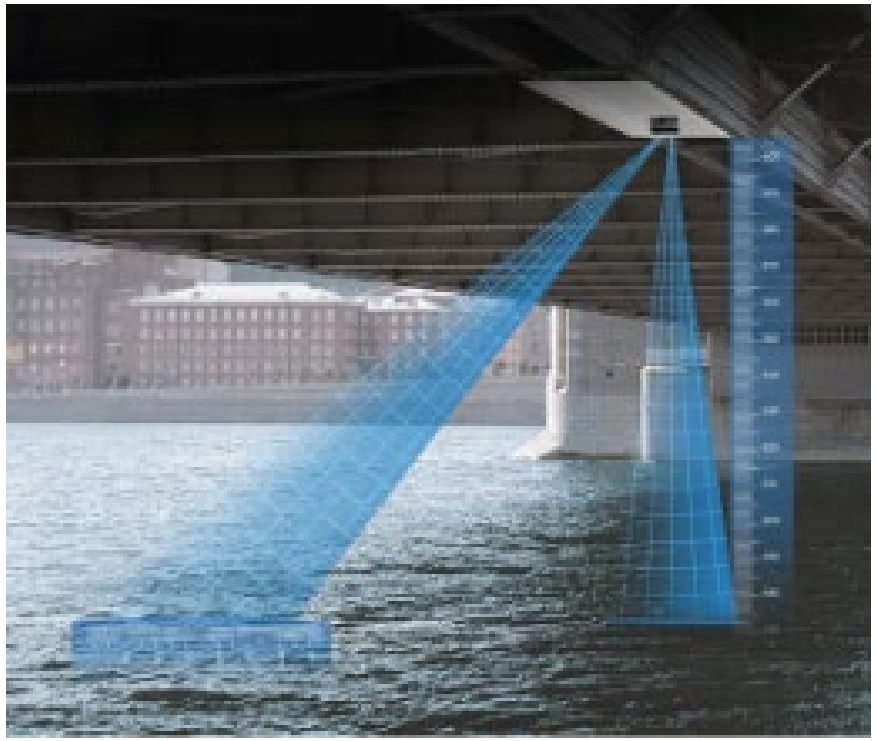
101 water gauge station



Hydrological Measurement

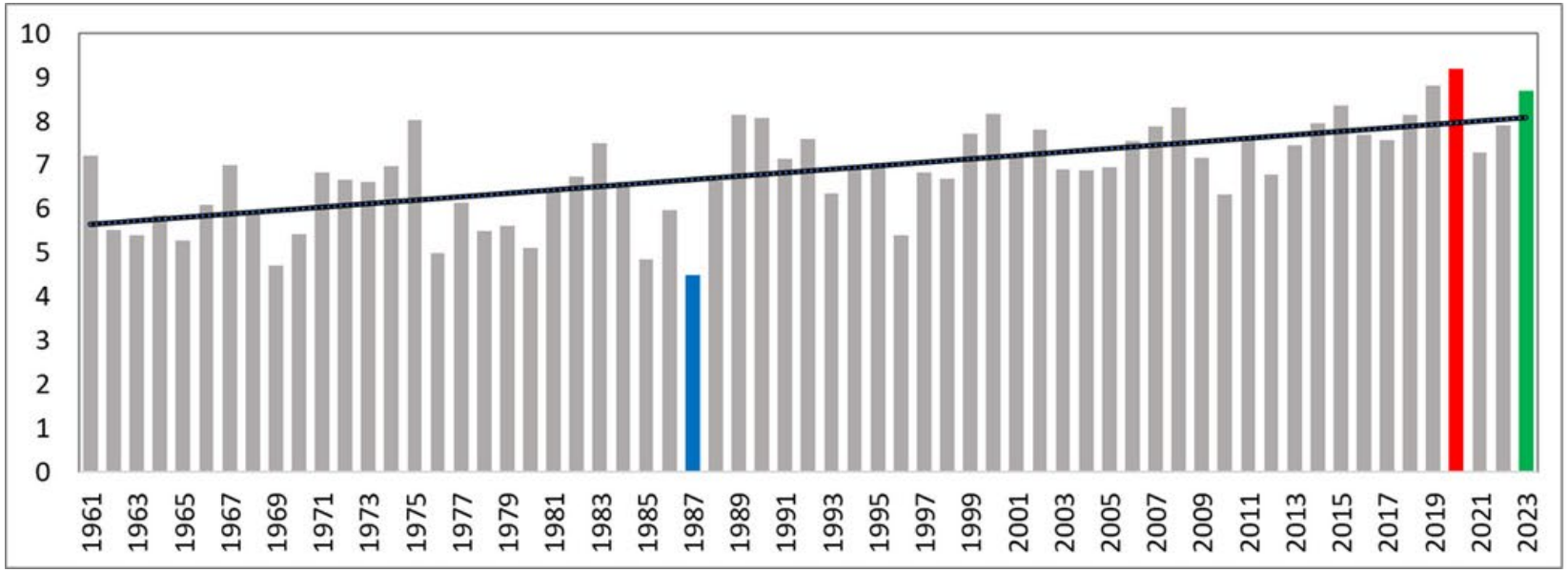
Remote Sensing

Upcoming Development



Climate Change (1)

Average annual air temperature in Lithuania



+2,3 °C !

Climate Change (2)

Over the past decade, Lithuania has seen five of its hottest years:

2015, 2019, 2020, 2023, 2024

In 2024: **18** extreme (2 of them – catastrophic) meteorological events, **12** extreme hydrological events.

Floods in Lithuania (1)

The number of very powerful floods is decreasing.

The overall number of floods is increasing.

Floods in Lithuania (2)

Aspects that may influence changes in flood dynamics:

- **Climate Change** (e.g., increased precipitation or snowmelt processes)
- **Urbanization** (e.g., insufficient planning or poor maintenance)
- **Water Management Systems** (e.g., flood control capacity)
- **Human Activity** (e.g., deforestation, groundwater pollution, compaction of water bodies).
- **Monitoring and Forecasting Systems** (e.g., improvement in the ability to assess and predict flood risk, enabling timely preventive measures).

Main Challenges

Agricultural pollution (nitrogen, phosphorus, pesticides)

Climate change impacts (droughts, floods, rising temperatures)

Hydromorphological alterations (dams, land drainage systems)

Unequal wastewater treatment coverage in smaller settlements

Surface Wastewater Management

Objectives

- Protection of life and reduction of risks to public health
- Reducing flood risks and financial losses to the private and public sectors
- Protection of surface and groundwater resources
- Improving the quality of life in urban areas
- Consideration of physical, chemical, biological and ecological perspectives

Measures to Reduce Impact of Urbanization (1)

Non-structural measures

- Enactment and implementation of legislation
- Environmental impact assessment for all development projects
- Coordination of development projects
- Pollution control
- Control of stormwater runoff from private properties
- Flood prevention

Measures to Reduce Impact of Urbanization (2)

Structural measures

- Runoff containment and stopping measures:
  - Retention and storage ponds
  - Biodegradable ponds
  - Wetlands
- Infiltration measures:
  - Infiltration ponds and downspouts
  - Landed depressions
  - Conductive strips
  - Conductive pavements

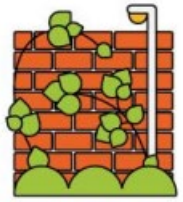
Vilnius

Greening and Greenery Maintenance Standard

Vilnius

Greening and Greenery Maintenance Standard (2)

Preserving Trees



Every Open Space is Green

The Sponge City

The Green City Corridor

Biodiversity

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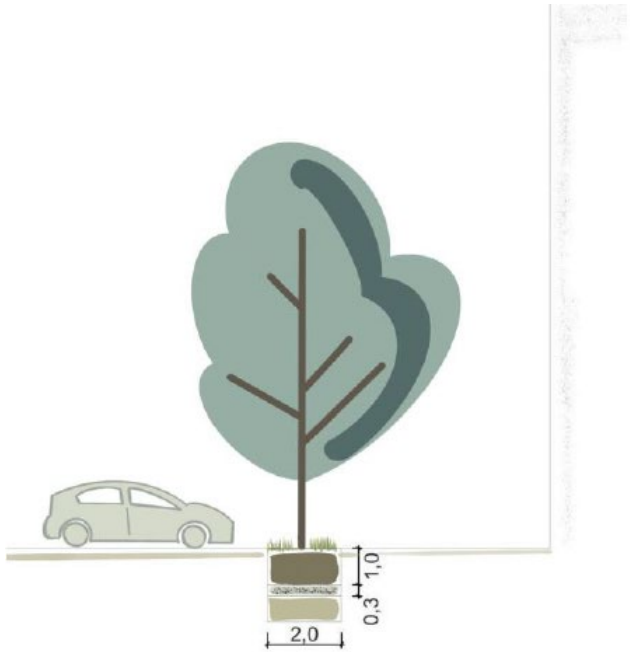
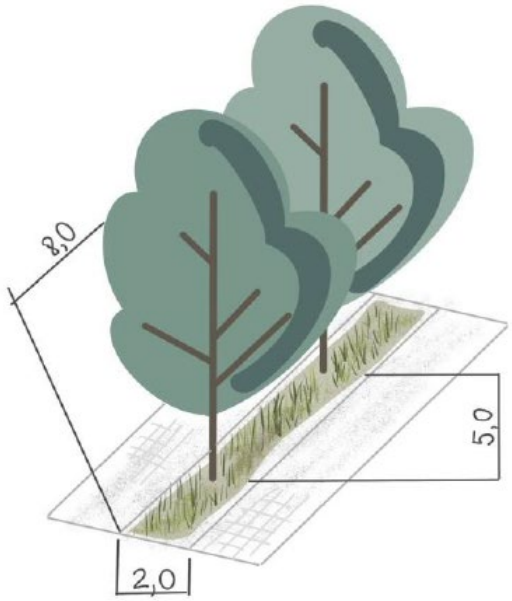
Greening and Greenery Maintenance Standard (3)





optimal area for new greenery – 16 m^2, the recommended width – at least 1.5 m

the layer of crushed stone – at least 0.3 m; the soil depth – at least 1 m

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Greening and Greenery Maintenance Standard (4)

rainwater collection through greenery and diversion into stormwater systems (dry infiltration basin)

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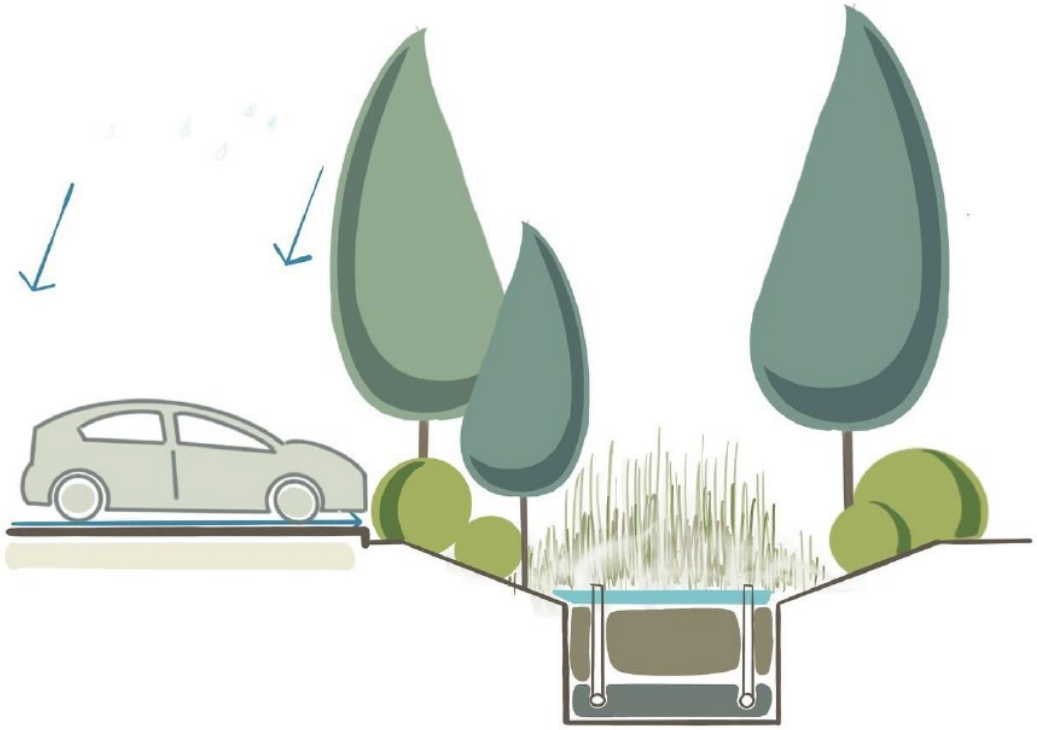
Greening and Greenery Maintenance Standard (5)



rainwater collection within greenery (rain garden / constructed wetland)

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Greening and Greenery Maintenance Standard (6)

rainwater drainage through a ditch, infiltration basin

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Greening and Greenery Maintenance Standard (7)

Plant Tolerance to Waterlogging:

- short-term waterlogging (up to 3 hours)
- short-term (up to 3 hours) and long-term waterlogging (up to 3 days)
- plants that can be permanently flooded (during spring floods or heavy rainfall)

Climate Adaptation Measures

Flood risk reduction: constructing protective levees, reinforcing riverbanks, upgrading hydraulic structures.

Coastal resilience: beach nourishment in Palanga and Šventoji, dune stabilization and regeneration in the Curonian Spit.

Multifunctional ship for marine incidents: acquiring a vessel capable of firefighting, emergency towing, pollution control.

Hydrometeorological monitoring network: upgrading and expanding observational systems to improve forecasting and early warning.

Public awareness and capacity building: educational and outreach initiatives to enhance resilience and preparedness.

Public Awareness

94% recognise the need to adapt to climate change.

56% recognise that they will have to adapt their lifestyle due to climate change.

29% think they will have to move to a less climate-vulnerable place (whether locally or abroad) to avoid floods, forest fires or other extreme weather events.

23% say they will have to move to a cooler region or country.

謝謝

Thank you!

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