

Impact of Climate Change on Water in the Western Estonian River Basin

Discussion at the Ministry of Climate, 17th September 2024, 14:00

Summary of the Discussion

Background Information

The Ministry of Climate invited representatives of authorities, municipalities, businesses, research institutions, and other interested parties to discuss the problems affecting water due to the changing climate. A changing climate typically brings more extreme weather conditions, such as floods and droughts. These, in turn, directly impact Estonian residents and businesses. Water resources are reduced, water extraction increases, water quality changes, and the risk of pollution spreading rises. There might be insufficient water or too much water, making agricultural land less usable.

During the discussion, we sought to understand the immediate issues noticed due to the changing climate in Estonia and what problems might affect us in the future. We also discussed how to better prepare for these new problems, what specific research is needed for better preparedness, and what countermeasures should be planned.

Agenda

14:00-14:15

Introduction and project overview by Rene Reisner, Adviser, Green Reform Department, Ministry of Climate

14:15-14:30

General overview of water management in the Western Estonian River Basin and the water management plan by Reeda Iisma, Adviser, Water Department, Ministry of Climate

14:30-15:00

Droughts, floods, and climate adaptation: current status in Estonia and main work directions by Agne Aruväli, Adviser, Water Department, Ministry of Climate

15:00-15:30

Hydrology, data, and the changing climate: what data shows about climate change impacts on water, what data is missing, and what to be prepared for by Jana Pöldnurk, Head of Hydrology Department, Environmental Agency

15:30-16:00

Discussion, proposals, and summary

Detailed Discussion

To discuss the impacts of climate change on the Western Estonian River Basin, an open discussion was organized at the Ministry of Climate on 17th September 2024. A total of 39 participants attended, some in person and most online. Participants represented the

Ministry of Climate, the Ministry of Regional and Agricultural Affairs, the Environmental Board, the Environmental Agency, municipalities, water companies, non-governmental organizations, the Environmental Investment Centre, and various business and production sectors.

The primary objective of the meeting was to understand the immediate problems observed due to climate change in Estonia and to foresee future issues. Additionally, it aimed to explore how to better prepare for these challenges, what exactly should be studied to ensure better preparedness, and what countermeasures should be planned.

The meeting began with an overview of the project presented by the project manager and adviser for the Green Reform Department, Rene Reisner. Reeda Iisma, Adviser from the Water Department of the Ministry of Climate, provided an overview of water management in the Western Estonian River Basin. Agne Aruväli summarized droughts, floods, and climate adaptation. Finally, Jana Põldnurk, Head of the Hydrology Department at the Environmental Agency, discussed hydrological events and data.

During the meeting, typical topics related to climate change's impact on water were raised, particularly issues with water infrastructure and the capacity to adapt to a changing climate. Special attention was given to new cases from the past summer, where intense rainfall caused flooding in agricultural areas of Western Estonia, destroying the crops of several producers. The key question raised was whether this situation should be expected in the future or if there is a reasonable solution to cope with such events. It was suggested that the state could provide more support to small-scale agriculture to avoid the damage caused by floods to large agricultural areas.

A representative of a non-governmental organization stated that enlarging drainage systems is not a good solution for agriculture, as it would simply move the water downstream. During the discussion, the proposal was made to use controlled drainage more, which has not yet been widely implemented in Estonia.

Researchers proposed that seasonality should be incorporated into hydrological forecasts. For example, Estonian rivers are typically small, and seasonality, including precipitation patterns, can produce various and hard-to-interpret results. In warm summers with evaporation, changes in water bodies differ significantly from those seen in autumn or spring.

Researchers also highlighted that the existing hydrological pattern in Estonia is changing. Winters are warmer, less snow accumulates, and what snow there is melts earlier. As a result, water flows continuously into the sea instead of seeping into the soil. This decreases the water retention time in bodies of water and the soil, contributing to the lowering of groundwater levels and worsening water shortages in the summer.

Given the seasonal variations, future studies should focus more on seasonality and meteorology. Approaches based on annual average hydrological calculations are no longer adequate for managing various water uses or achieving water-related goals.

Municipal representatives pointed out that floods could cause wastewater to mix with stormwater and enter wells, spreading pollution. In general, municipalities in Estonia are responsible for stormwater management, while water supply and sanitation tend to fall under the responsibility of water companies. Water companies primarily focus on underground infrastructure, but surface solutions for managing stormwater should also be considered, as not everything can fit into the sewer system.

In Estonia, there is also a significant connection to the sea. Excess water cannot always be directed into the sea, as this could cause flooding in coastal areas if the sea cannot absorb the water.

From a technical perspective, participants suggested reviewing baseline designs used for engineering structures. This would help predict changes in agriculture and forestry more effectively.

Additionally, the development plans for municipal water and sewerage systems need to be updated, especially in sparsely populated areas. For instance, stormwater in densely populated areas is directed to rural areas, but there is little information on what happens to this excess water in rural regions.

Participants

- Ministry of Climate
- Ministry of Regional and Agricultural Affairs
- Ministry of Climate
- Tallinn University
- Tallinn City Government
- AS Tallinna Vesi
- Environmental Board
- Environmental Agency
- OÜ Skepast ja Puhkim
- AS Entec
- Environmental Board
- Agriculture and Food Board
- University of Tartu
- Environmental Board
- OÜ Skepast ja Puhkim
- Energex OÜ
- Tallinn City Government
- Environmental Agency
- Ministry of Regional and Agricultural Affairs
- AS Tallinna Vesi
- Ministry of Regional and Agricultural Affairs
- Estonian University of Life Sciences

- Environmental Board
- Environmental Agency
- Ministry of Climate
- Viimsi Municipality
- Estonian Fund for Nature
- Hiiumaa Cooperation Network
- Ministry of Climate
- Environmental Agency
- Estonian Chamber of Agriculture and Commerce
- Energex OÜ
- AS Kuressaare Veevärk
- Ministry of Climate
- Ministry of Foreign Affairs
- Tallinn City Government
- Environmental Investment Centre
- Environmental Agency
- AS Tallinna Vesi