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Catchment-based water management supports our climate efforts

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9.9.2025 | PA Nutri Talks – Water and nutrient management in rural areas

National climate unit

- Coordinates, supports, promotes and monitors the implementation of the Climate Act in Finland regarding
  - climate change adaptation tasks
  - climate actions in the land use sector and agriculture
- Promotes the implementation of measures outlined in the Roadmap for Catchment-based Planning (abstract in English)
- Works in cooperation with regional, national and EU-level networks

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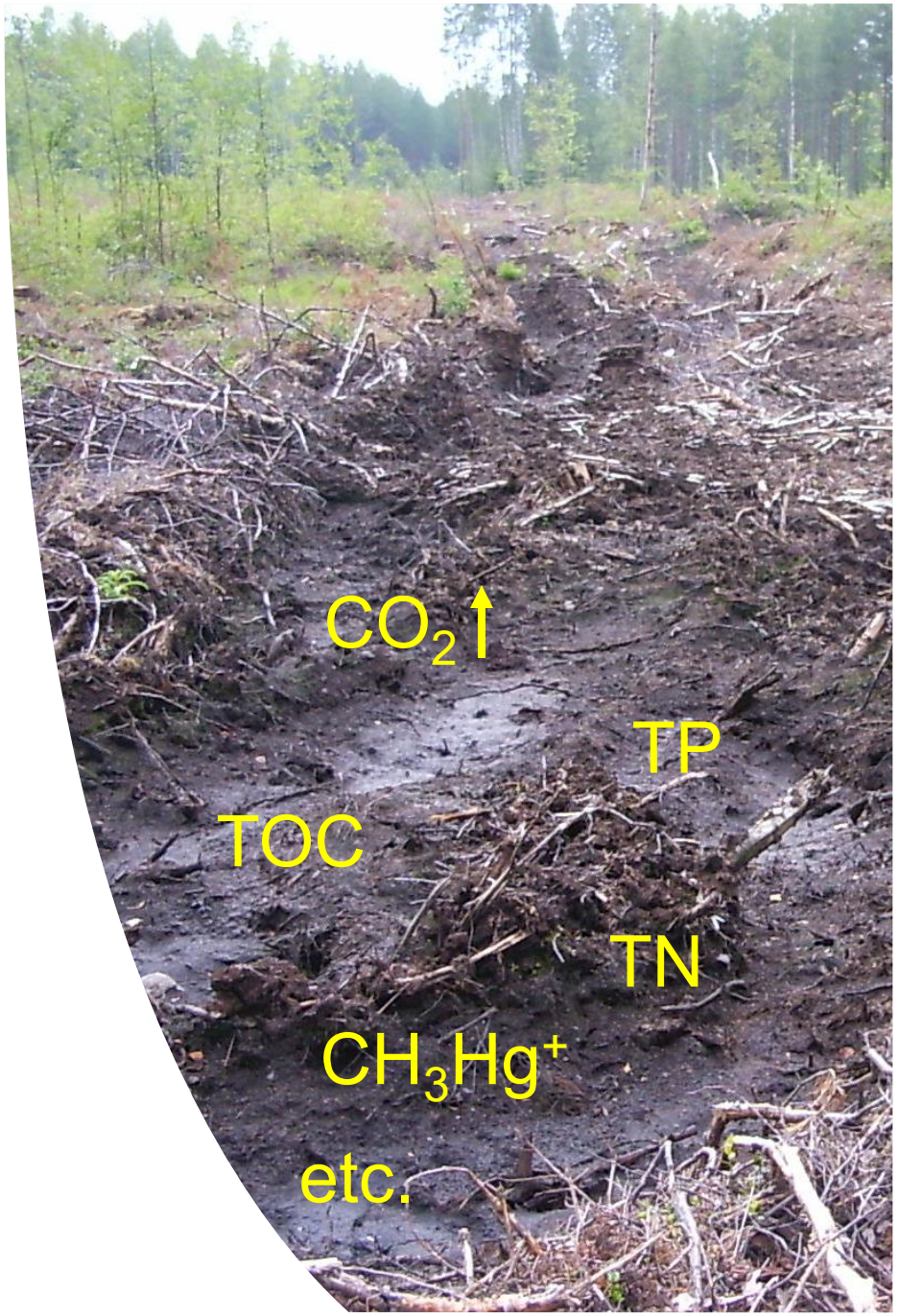
Why catchment scale?

- A catchment integrates land, water, and people
  - a systemic approach for multi-purpose planning of the land use and water management -> climate resilience
- Interactions and synergies - cross-cutting objectives
  - Effectiveness and impact
- Source-to-Sea approach

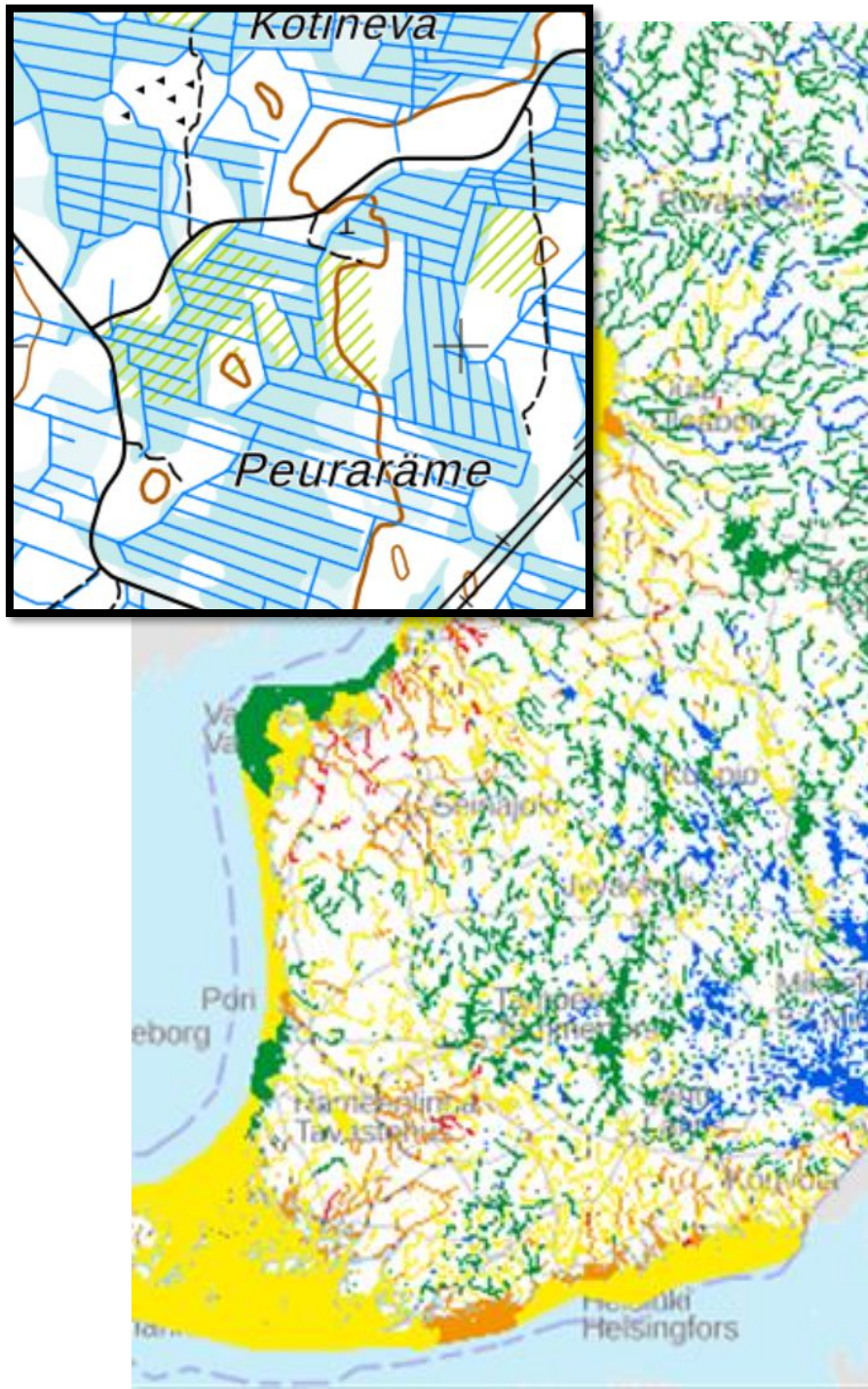
From restoration of watercourses towards comprehensive water management

- Source-to-Sea – A catchment-based approach
  - Assessment and targeting of measures in a multi-beneficial and resource-efficient way
- Water retention produces ecosystem services
  - Beneficial for the nature, climate and people
    - Both mitigation and adaptation
  - Nature-based solutions



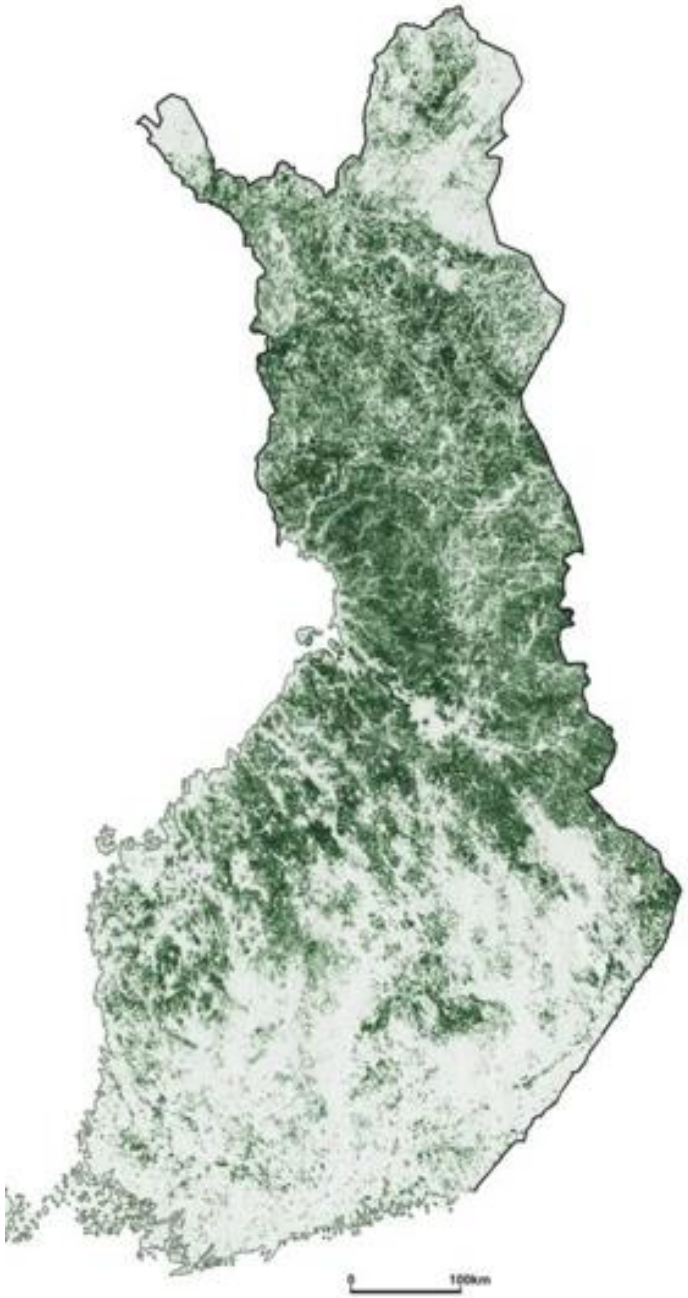
Water management challenges

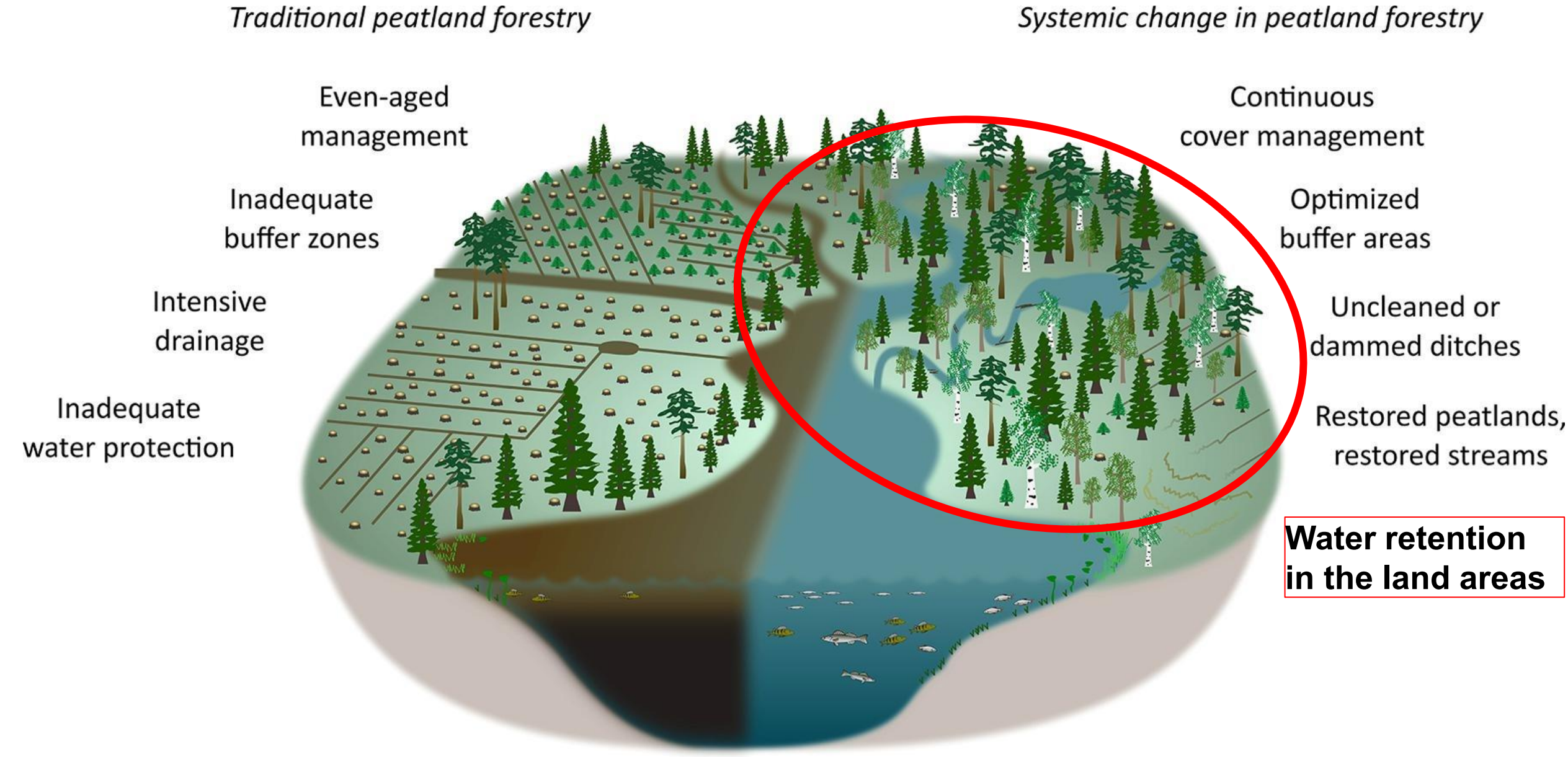
- Drainage on agricultural areas is often necessary
  - Winter rains and heavy rain occasions are expected to increase -> timing of floods shifting
- Dry summers more frequent
  - Decomposition of peat increases
  - Agriculture and forestry - lower production
- The patterns of water flows have already changed
  - At the same time, landuse is affecting the water quality
- Conflicts – who is allowed to use limited water resources?



Peatlands – the most important carbon storage in Finland

- Peatlands cover almost one third of land area
  - Flat landscape, precipitation > evapotranspiration
- 53% of peatlands are drained for forestry
  - Mostly in 1960’s
  - Net carbon sinks due to high growth rate -> forests are reaching mature stage -> sinks?
- 11% of agricultural land on peatlands
  - 60% of agricultural GHG emissions
- Humus transport from drained peatlands

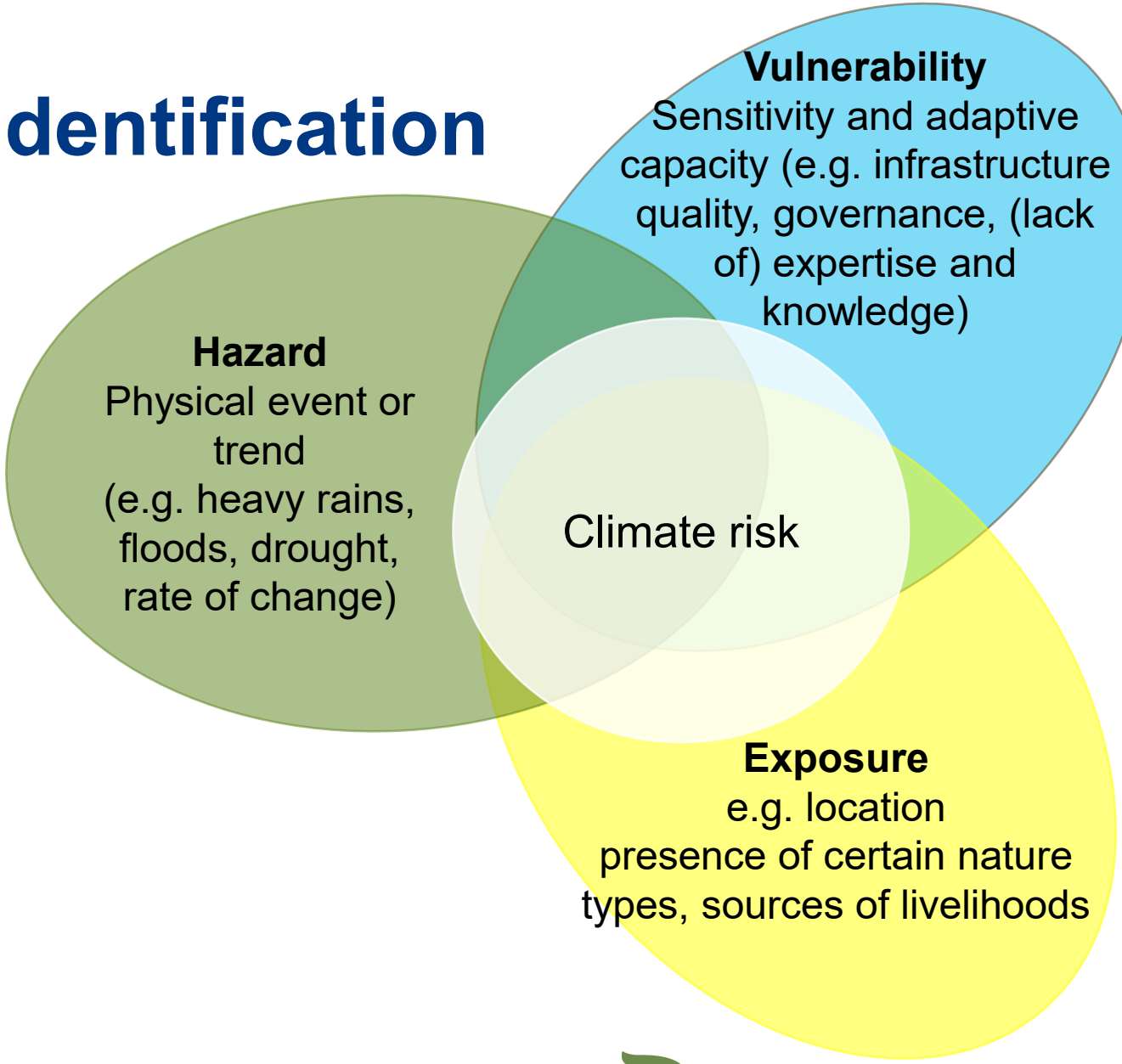




https://www.sciencedirect.com/science/article/pii/S0378112723000099#f0020 Härkönen et al. 2023

Risk assessment and identification

- Unexpected and rapid changes
- Interactions and coordination of different objectives for landuse
- Indirect effects
  - Browning of waters, eutrophication, pollution



Adaptation needs local activity

- Large variation in climate risks between regions
- Proactive measures
  - Co-operation
  - Flexibility and transformability of measures
- Learning and competence building
  - Online course (in Finnish): Valuma-aluesuunnittelun ABC (eoppiva.fi)

Water retention in the catchment:

(Adaptation)

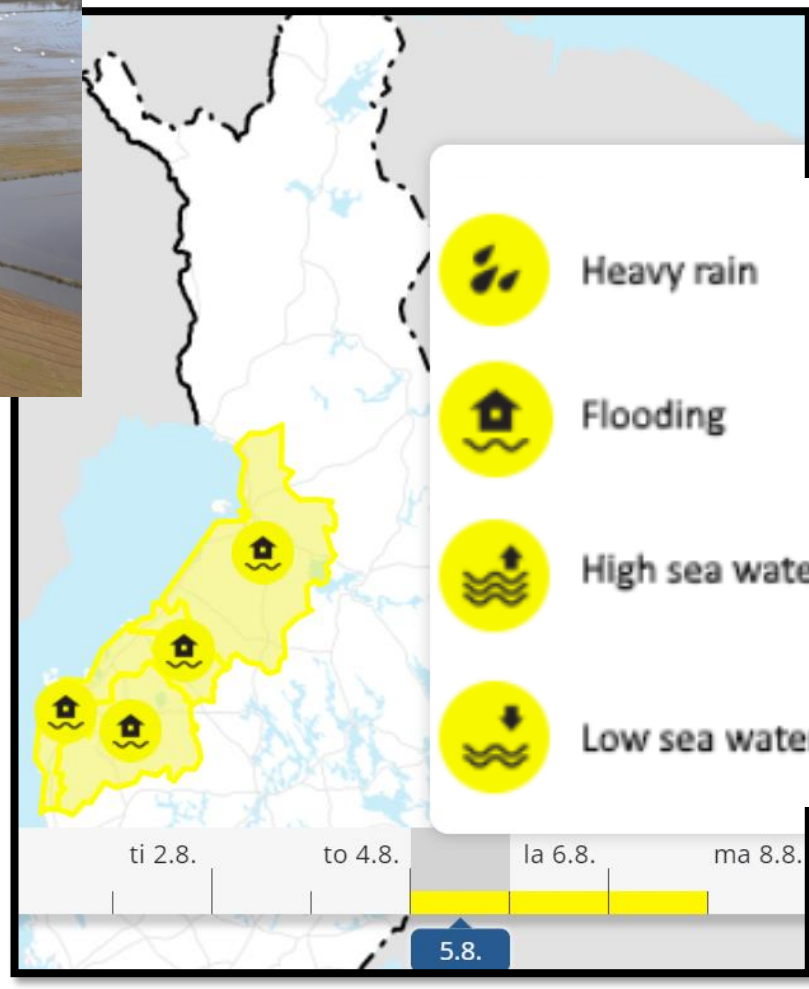
- **Reduces the adverse effects of climate change –** water directed to retention areas
- **Advantages –** stored water ensures production

(Mitigation)

- **Increases carbon stocks –** water is needed for growth in fields and forests
- **Decreases carbon emissions –** return and retain water on peatlands

More information

- Information of waters in Finland (waterinfo.fi)
- Information of climate change in Finland (climateguide.fi)
- National Climate Unit (ely-keskus.fi)



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Thank you!

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https://www.ely-keskus.fi/web/ilmastoyksikko/in-english