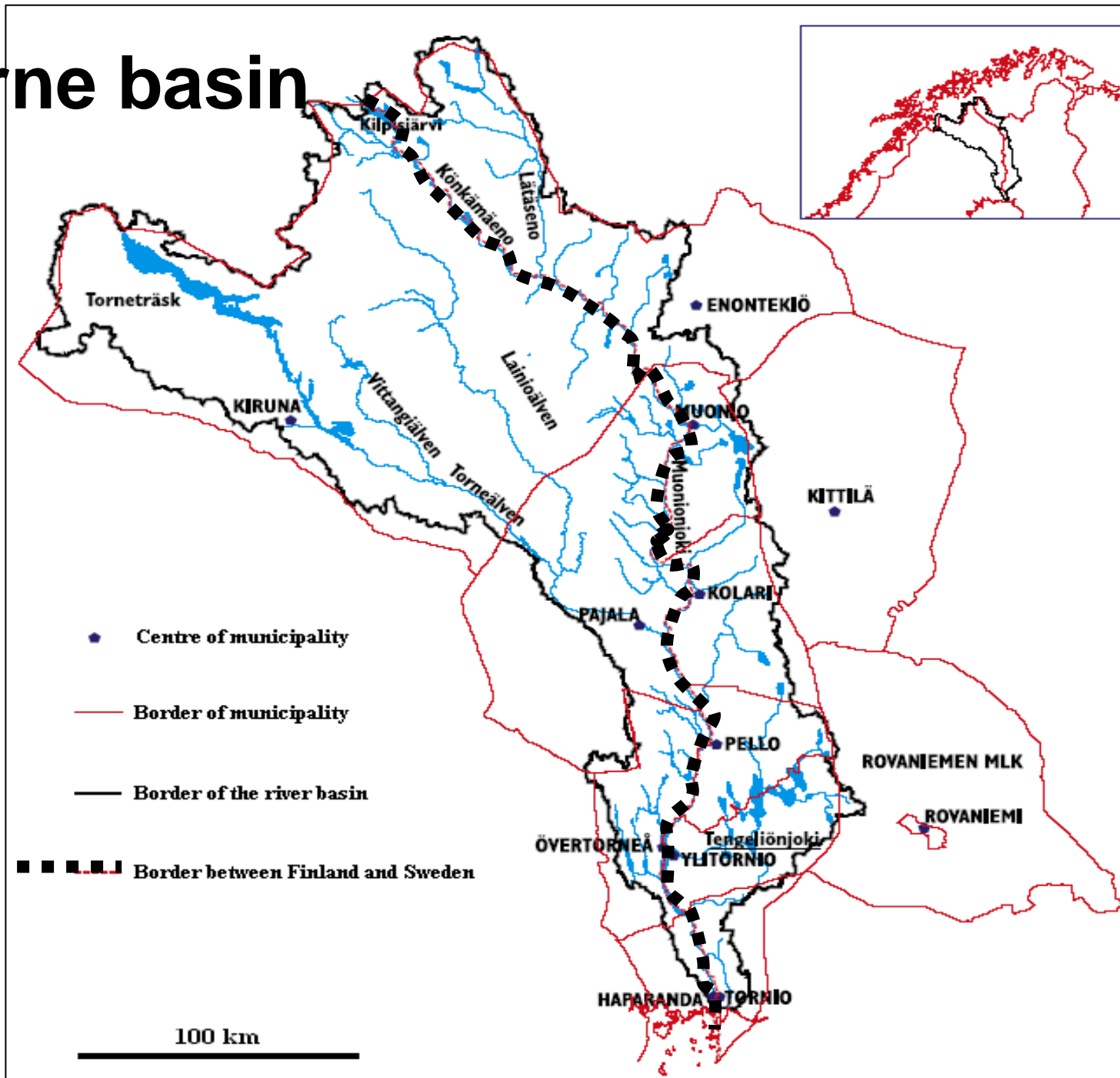


Torne basin

Workshop on transboundary water mgmt. in
Western and Central Europe, Budapest,
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Torne basin



General description of the Torne basin

- The river length 470 km
- Outlet at the Gulf of Bothnia, in the Baltic Sea
- Two dams on the Torne's tributaries --- the main channel free of dams
- Altitude 200-500 m.a.s.l
- Total 40'157 km² (Norway <1%, Finland 36%, Sweden 64%)
- Waterbodies 5,5%, forests 92,2%, cropland 1,4%, urban/industrial 0,8%
- 2,25 persons/ km²
- 9 Natura areas, 3 RAMSAR sites

Hydrology

- Surface waters 13,6 km³ /year
- Ground waters 0,1 km³ /year
- Water per capita 350 863 m³/year

Discahrge characteristics 1991-2005 (1961-1990)

- Q_{av} 430 (387) m³/s
- Q_{max} 3179 (3667) m³/s
- Q_{min} 58 (57) m³/s
- Peak flow in May 1093 (1037) m³/s –June 1187 (1019) m³/s

Projected climate change impacts

- Increase of 1,5-4,0 Celsius in annual mean temperature
- 4-12 % increase in annual precipitation in forthcoming 50 years
- Changes in seasonal hydrological change -5...+10%.
The frequency of spring floods may increase
- The lowest groundwater levels on late summer and in autumn may be even lower in the future than nowadays
- Extreme water conditions → overflows of treatment plants
- In small groundwater bodies oxygen depletion, contents of dissolved iron and manganese and other metals may increase
- Flood risk mgmt plan 2015-2021

Trans-boundary groundwaters

- Not an issue, so far.

Main problems

- Spring floods & ice jams
- Eutrophication
- Scattered settlements and summerhouses
- On Finnish side; agriculture, peat production and fish farming caused P 15 tn/a and N 262 tn/a discharge into lower part of the river
- Forestry: Felling trees, tilling the land and draining cause erosion and solid matter increases
- Mining industry is a growing sector

Status and transboundary impacts related to water quality and quantity

- Pollution from municipal wastewater; 2-3 municipal wastewater plants will be renovated by the end of 2015
- Currently, the transboundary impact is insignificant
- Most of the nutrients originate from background and non-point loading
- On Finnish side ecological status not good; lakes 21 km², rivers and streams 138 km

Response measures

- Finnish-Swedish Border River Commission;
- Powers of the Commission; It is the explicit organ confirming or rejecting plans or programs for the river basin district.
- River Basin Management plan for the years 2009-2015
- Erosion caused by forestry; Cooperation INTERREG project 2011-2013
- Flood risk management plan by 2015-2021
- Awareness raising from 2006 onwards; "Torne River Parliament" for wide audience and stakeholders.

Thanks for attention !!!