



The Swedish-Norwegian border region as context for social vulnerability

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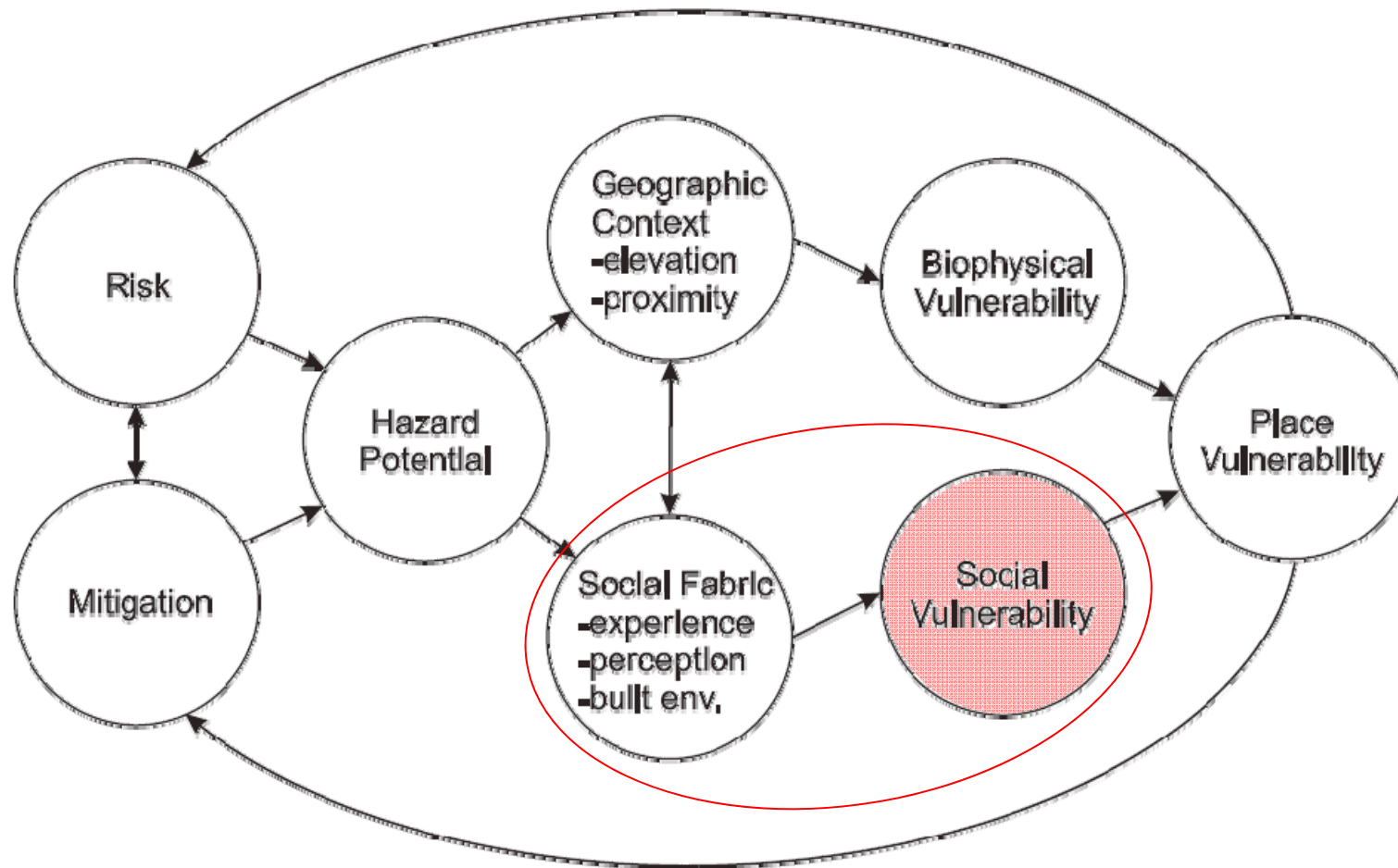
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Technology (NTNU)

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In this presentation

- Vulnerability
- Social vulnerability
- Social vulnerability assessment for Norway
- Common social vulnerability themes in the context of the Swedish-Norwegian border region
- Factors making the Swedish-Norwegian border region (**NSBR** – municipalities on the Swedish-Norw. National border, Värmland-Norrland) a special case within a social vulnerability context
- A few words on a possible path forward

A vulnerability model



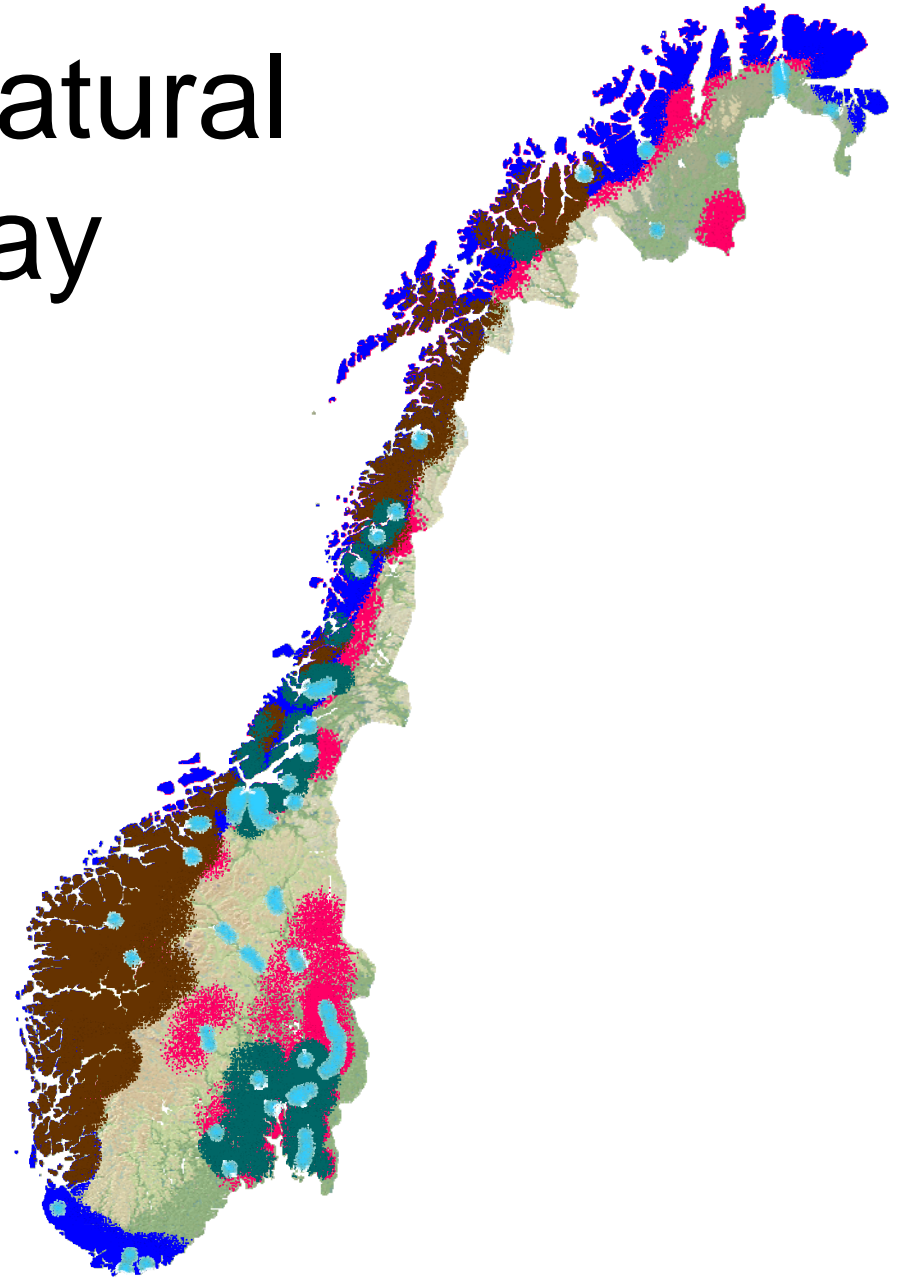
Hazards-of-Place Model of Vulnerability. Social vulnerability broadly defined as potential for loss of property or life. Adapted from Cutter, Boruff, and Shirley 2003

Why reduce social vulnerability?

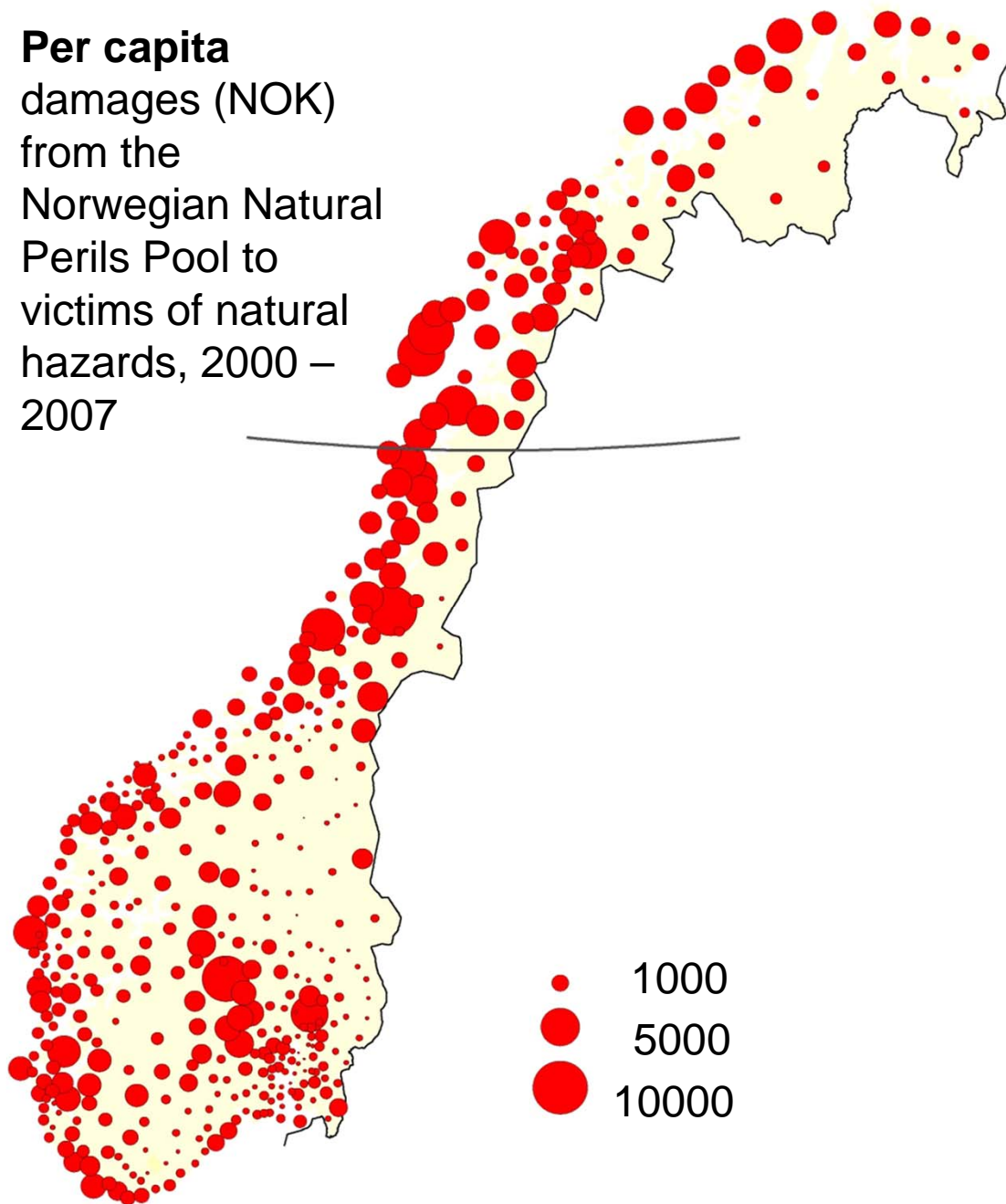
- Exposure to hazards is a premises we have to live with, and climate change is likely going to increase levels of exposure
- Reducing vulnerability = Building resilience
 - Loss reduction
 - Social benefits (e.g. safety as platform for willingness to invest in the future – individually, family, community, businesses)
 - Spending on mitigation usually less than potential response efforts (relationship 1:7 often quoted)
 - Sweden: Willingness to pay for preventing loss of one life SEK 20-50 mill (1997) (Mattson 2003)



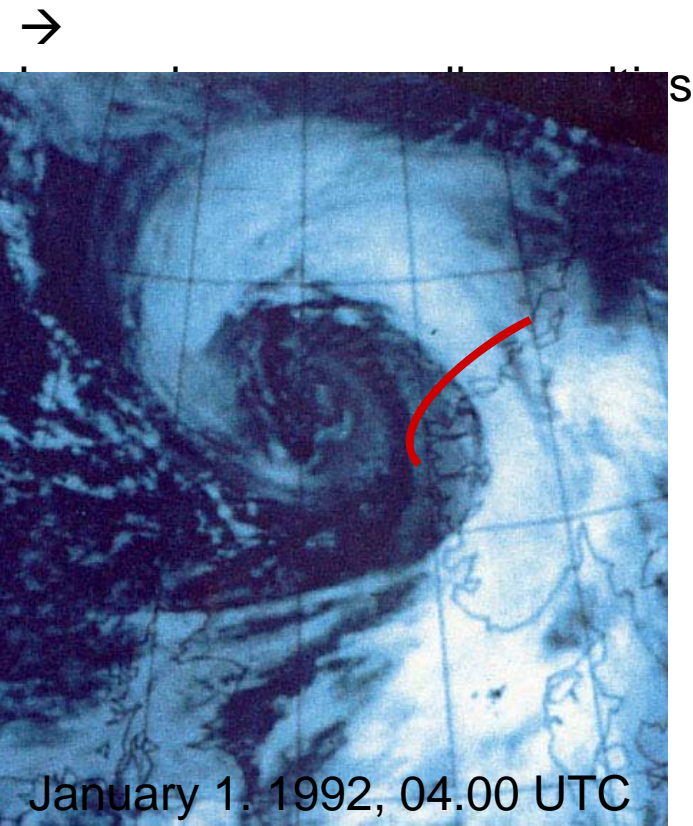
Vulnerability to natural hazards in Norway

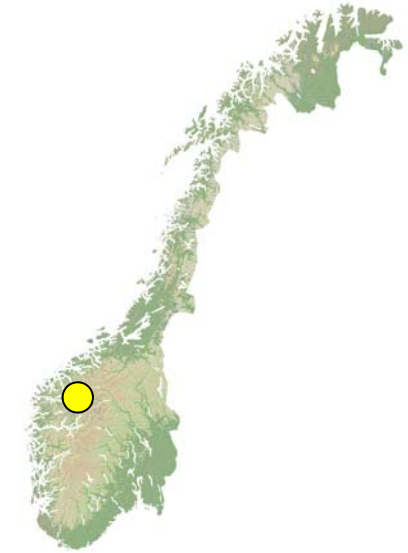


Per capita
damages (NOK)
from the
Norwegian Natural
Perils Pool to
victims of natural
hazards, 2000 –
2007






Situation New Years Morning
1992:
Sustained wind – 70 knots in
cities close to the coast
(hurricane 1),
90 knots in lighthouses on the
coast (major hurricane 3). Gusts
up to 120 knots.





The Fjørå community before and after the 1934 Tafjord accident (3 million m³ rockslide → tsunami)



Photo: Ingvald Uri. Source:   

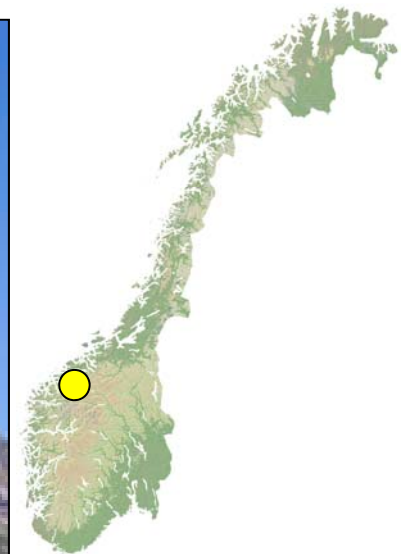
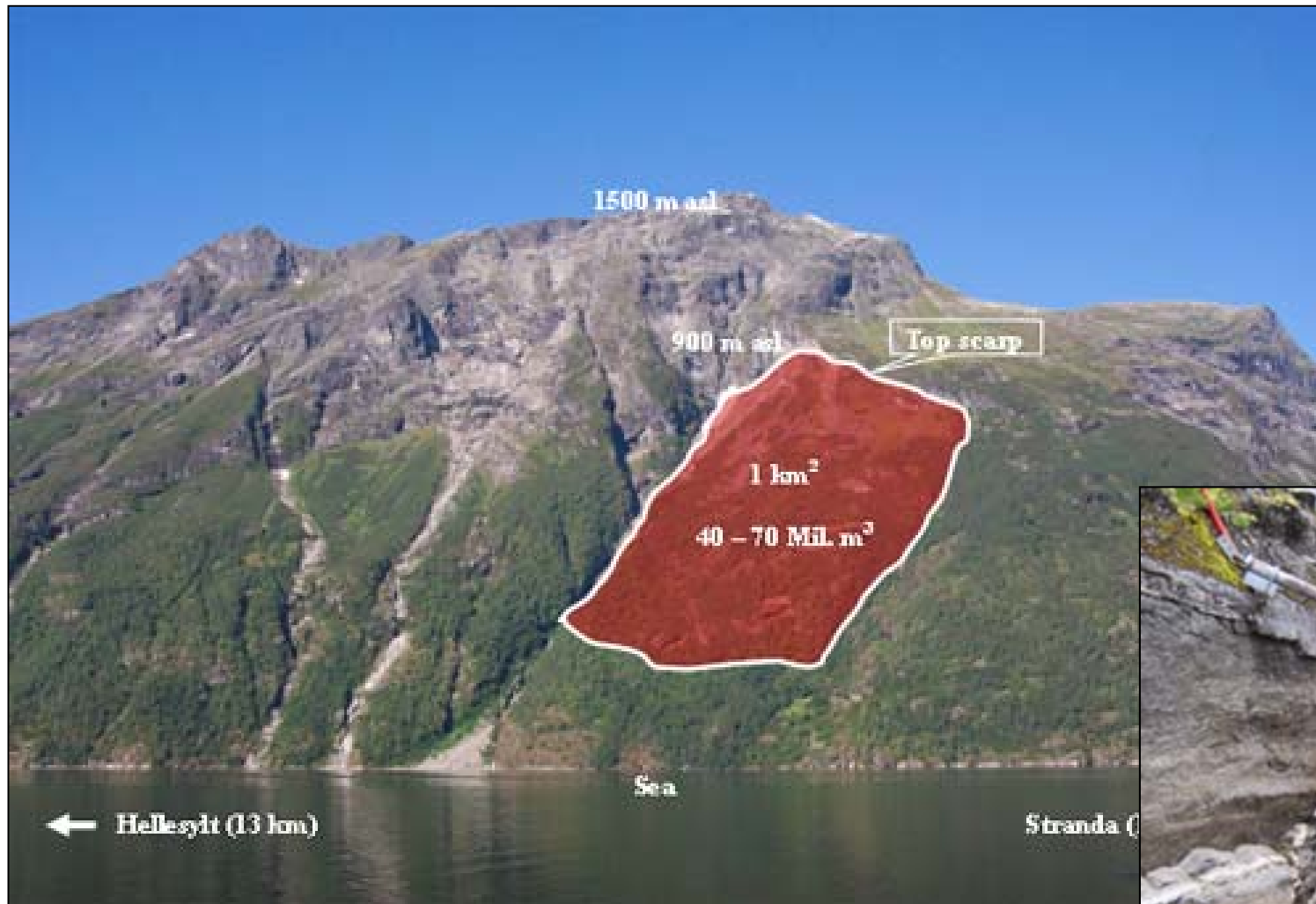


Photo: www.norsar.no

Aaknes (danger of 40-70 million m³ rockslide and tsunami)



Photo: Erik Olsen, NGU archives

Where the ground failed in the 1893 Verdal valley quick clay slide and the valley after the slide (65 million m³ quick clay slide → dam → flood)

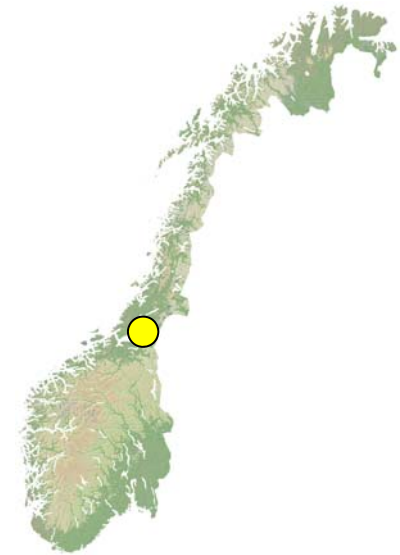
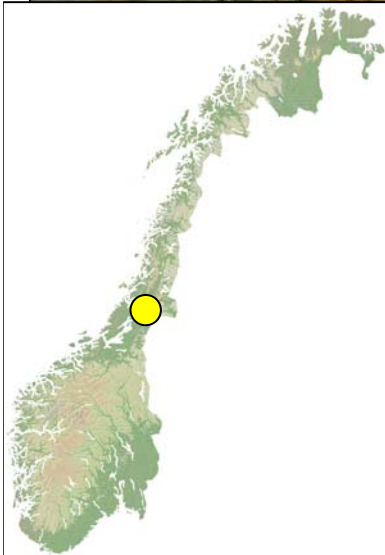


Photo: Erik Olsen, NTNU archives





Quick clay slide in Reina, Nord-Trøndelag, 2007. 1 million m³ moving 1,3 km downstream.





Photo: Lars Erik Skjærseth/NRK

Last updates

Sør-Trøndelag:

Fv 700 mellom Berkåk og Svorkmo, ved Ramlosletta har redusert fremkommelighet på grunn av jordras.

Fv 900 mellom Klett og Selsbakk, ved Heimdalsvegen 73 a har redusert fremkommelighet på grunn av oversvømmelse.

Fv 968 mellom Mebonden og Hammer i Selbu er stengt på grunn av jordras. Veitrafikksentralen sier at veien ikke vil bli åpnet i dag.

LES OGSÅ: [Dovrebanen stengt etter jordras](#)

Nord-Trøndelag:

E 14 mellom Stjørdal og Meråker, ved Vigdenes har redusert fremkommelighet på grunn av jordras.

Åpnet etter stenging:

Nord-Trøndelag:

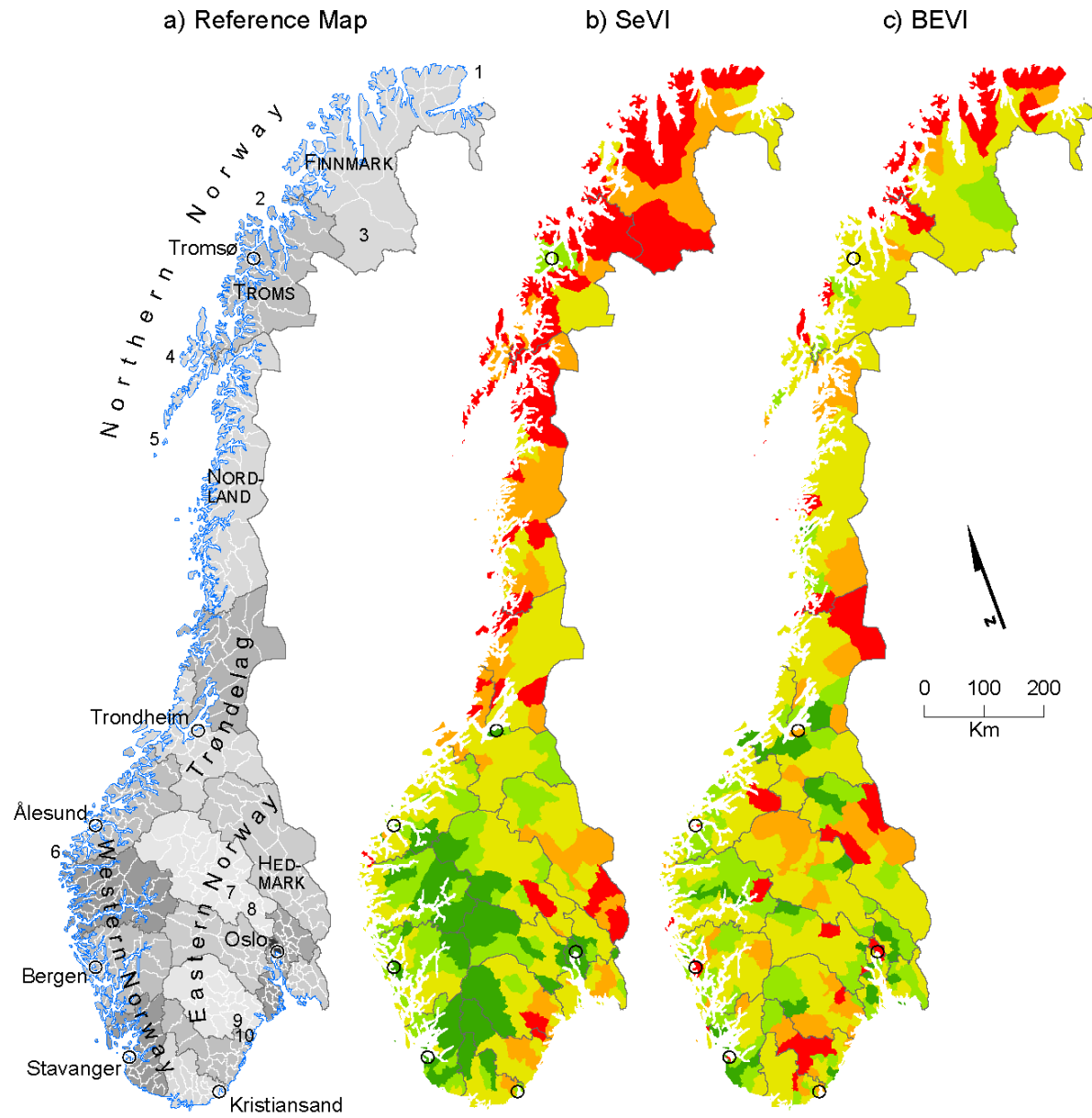
Fv 20 mellom Sona og Bekkåsen ble midlertidig stengt på grunn av jordras. Veitrafikksentralen melder at denne veien ble åpnet 12.57.

E6 ved Sæterhaug mellom Gartland og Namsskogan ble klokken 10.16 åpnet igjen etter bilberging av et utenlandsk vogntog.

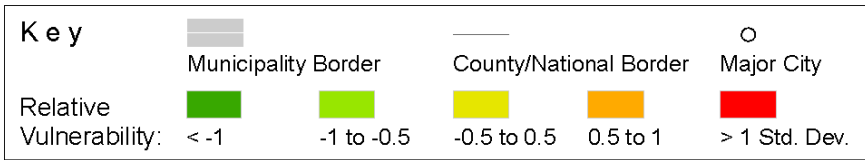
Fylkesvei 74 mellom Bjørgan og Murumoen er åpnet etter uvær og kolonnekjøring natt til tirsdag. Vegtrafikksentralen meldte om åpningen klokken 10.03.

Fylkesvei 363 mellom Skorovatn og Gjersvik er åpnet for trafikk etter bilberging. Vegtrafikksentralen meldte dette klokken 10.12.





- Municipalities referred to in text
- 1) Vardø
 - 2) Kautokeino
 - 3) Skjervøy
 - 4) Bø
 - 5) Værøy
 - 6) Selje
 - 7) Nordre Land
 - 8) Søndre Land
 - 9) Drangedal
 - 10) Gjerstad

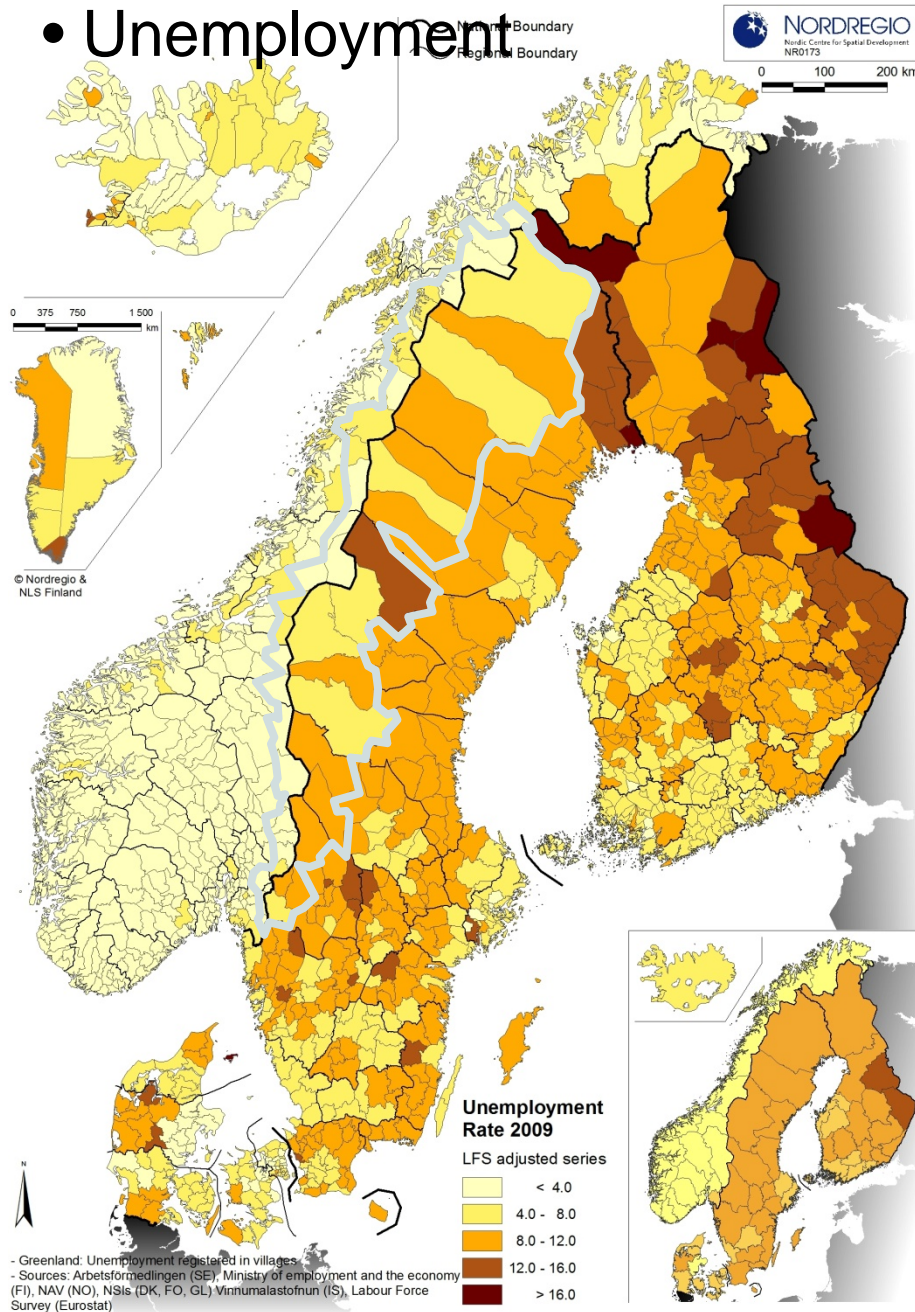


- High social vulnerability in areas on the Norwegian-Swedish/Finish national border
- Also high built environment vulnerability, mainly influenced by long travel times.
- Many indicators suggest common situation within NSBR

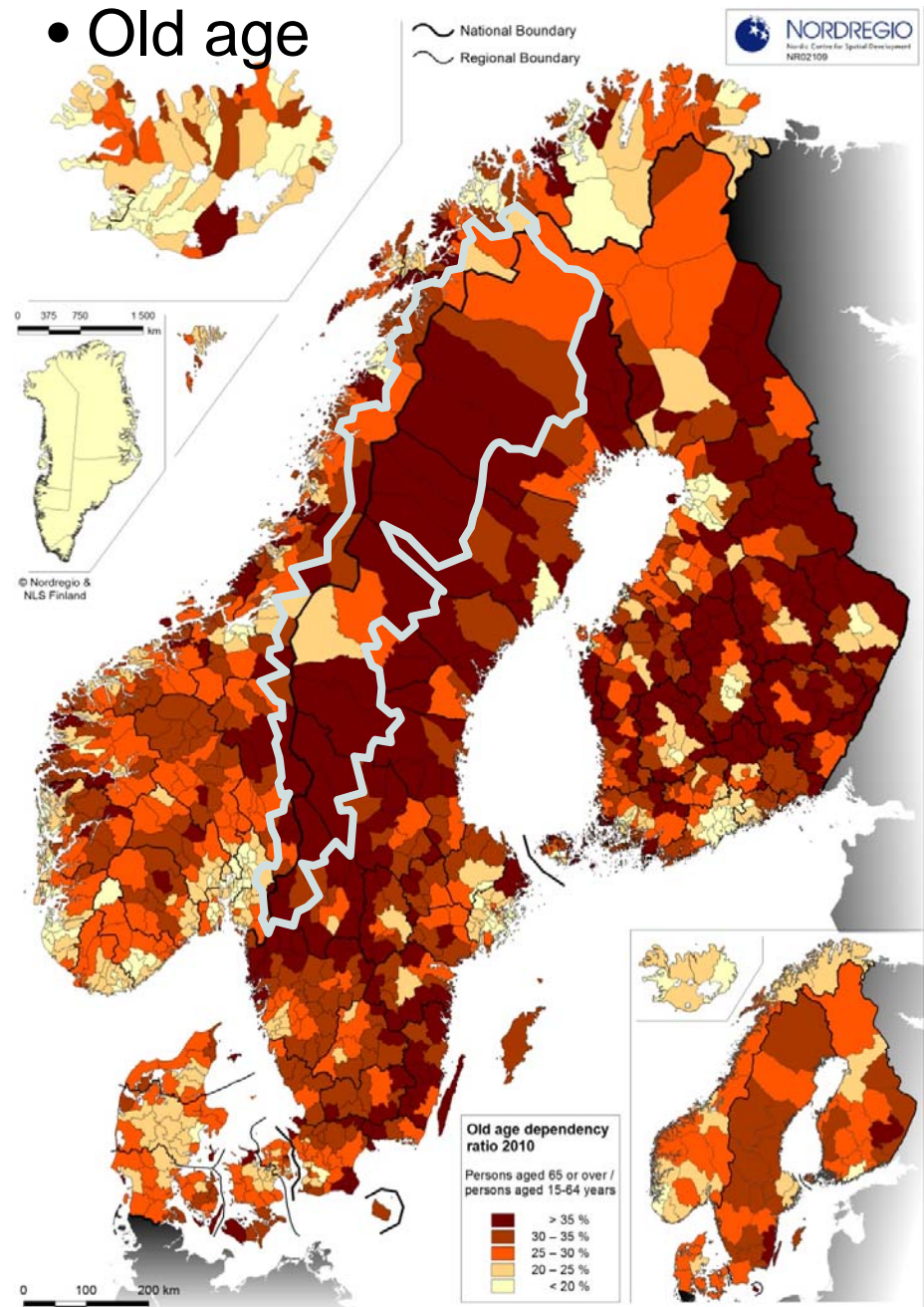
Source: Holand, Lujala, and Rød 2011.



• Unemployment

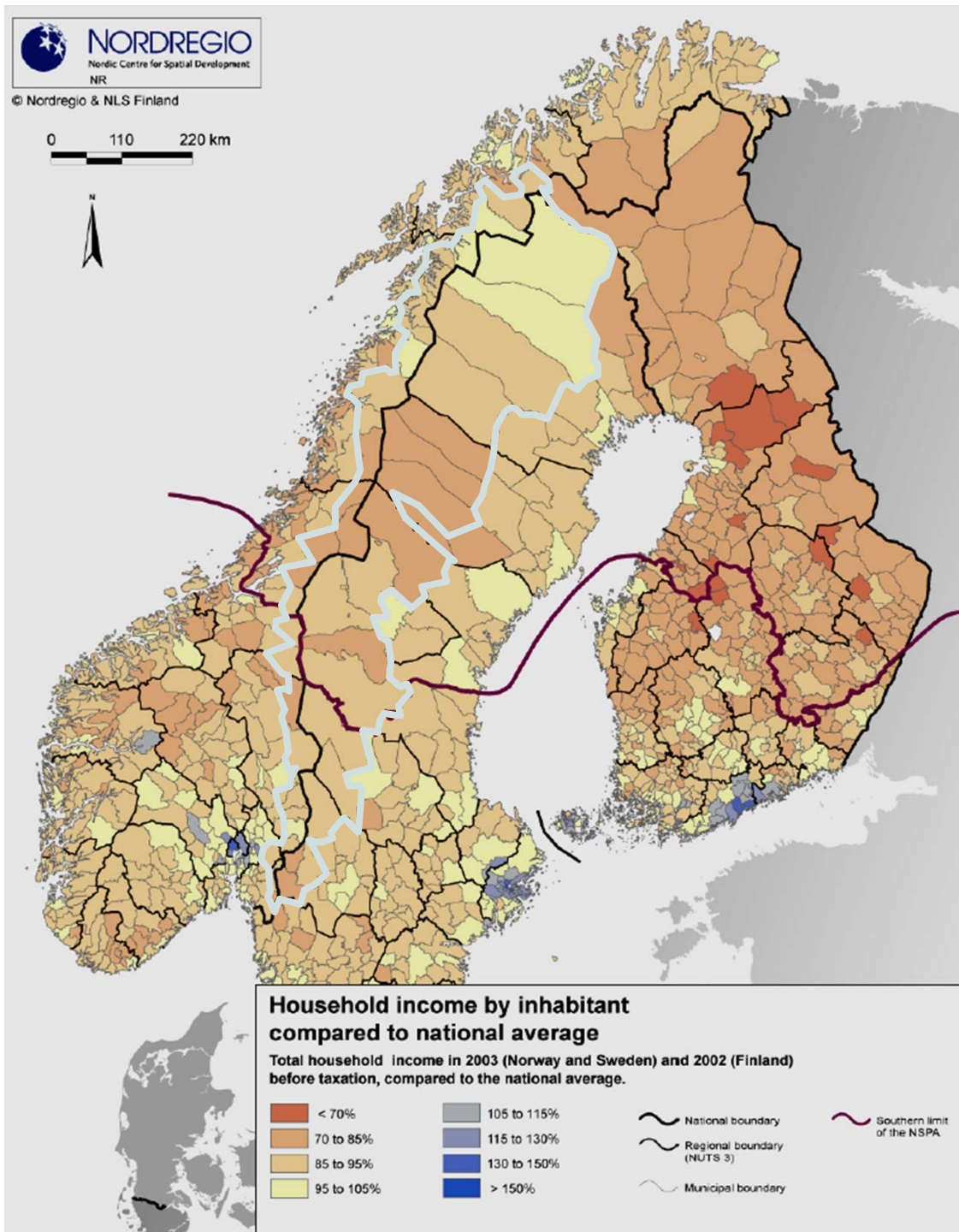


• Old age



Source: Gløersen 2009, Nordregio Report 2009:2.

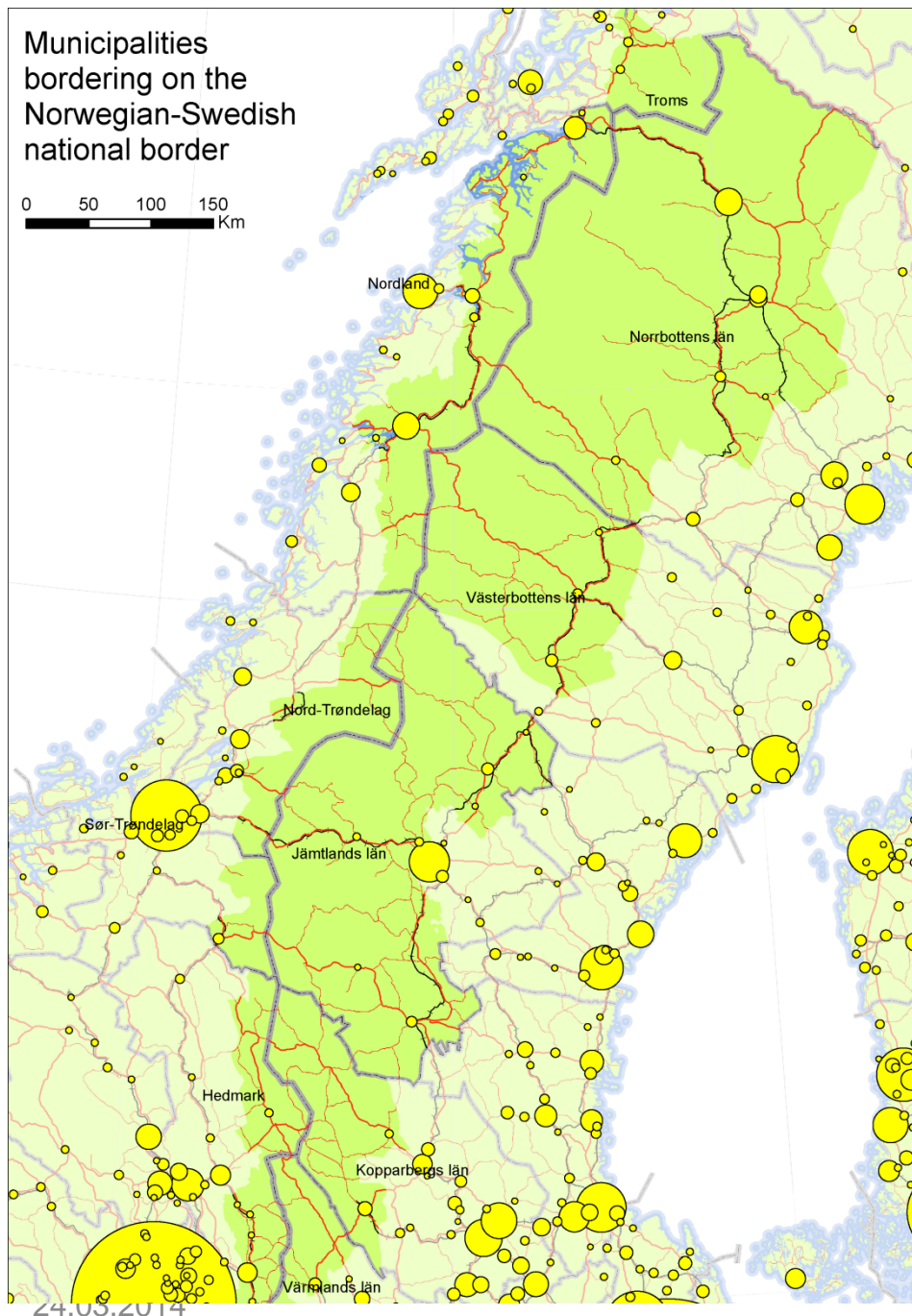




- Low income levels

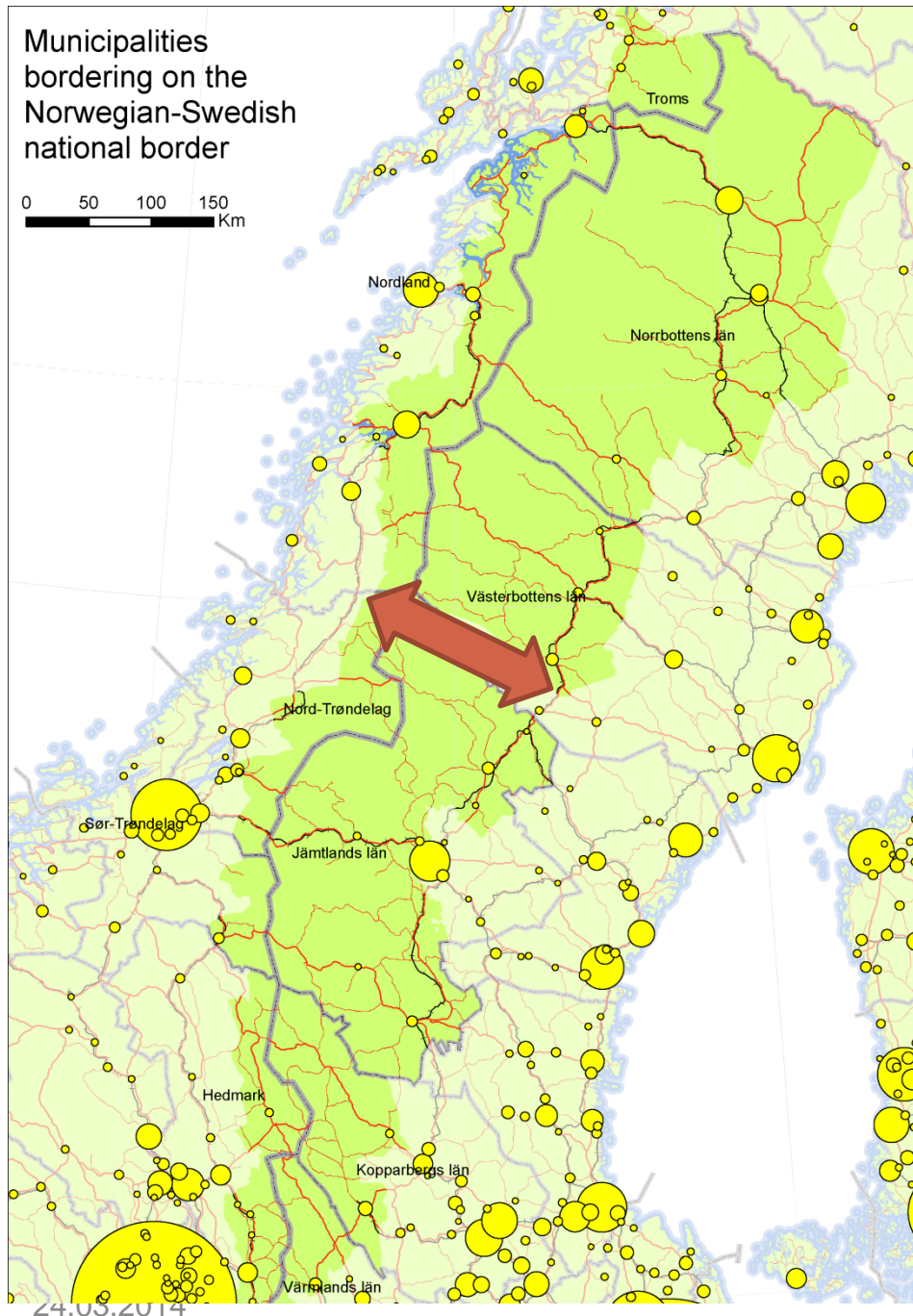
→ probably high level of relative social vulnerability, but not an exceptional case

Source: Gløersen 2009, Nordregio Report 2009:2.



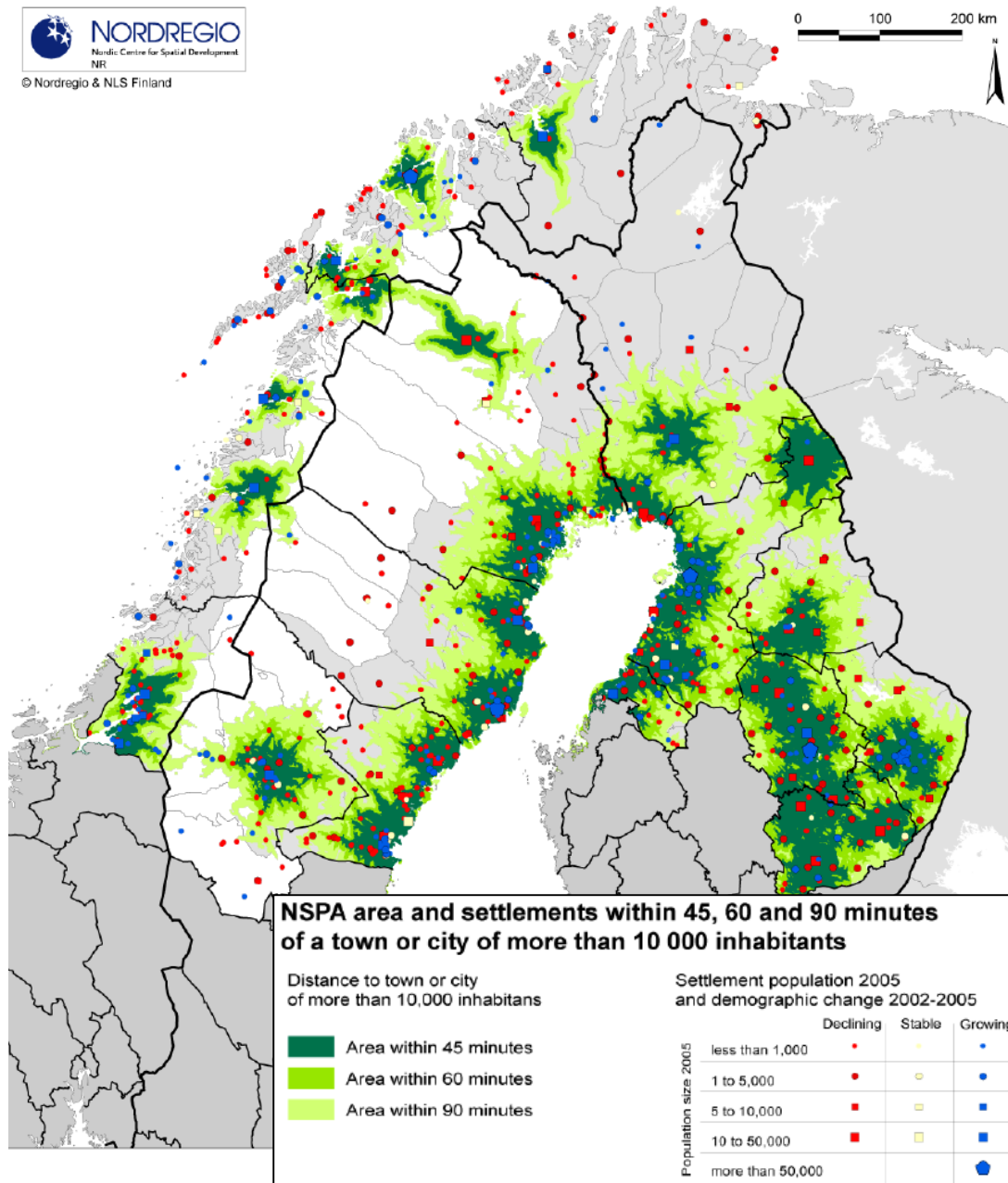
Shared challenges affecting social vulnerability within NSBR

- Large (about 150 000 km²), sparsely populated region. In most of the area, declining population numbers
- Population density less than 1,5 persons per km²
- Most population centers located in outskirts of region



Shared challenges II

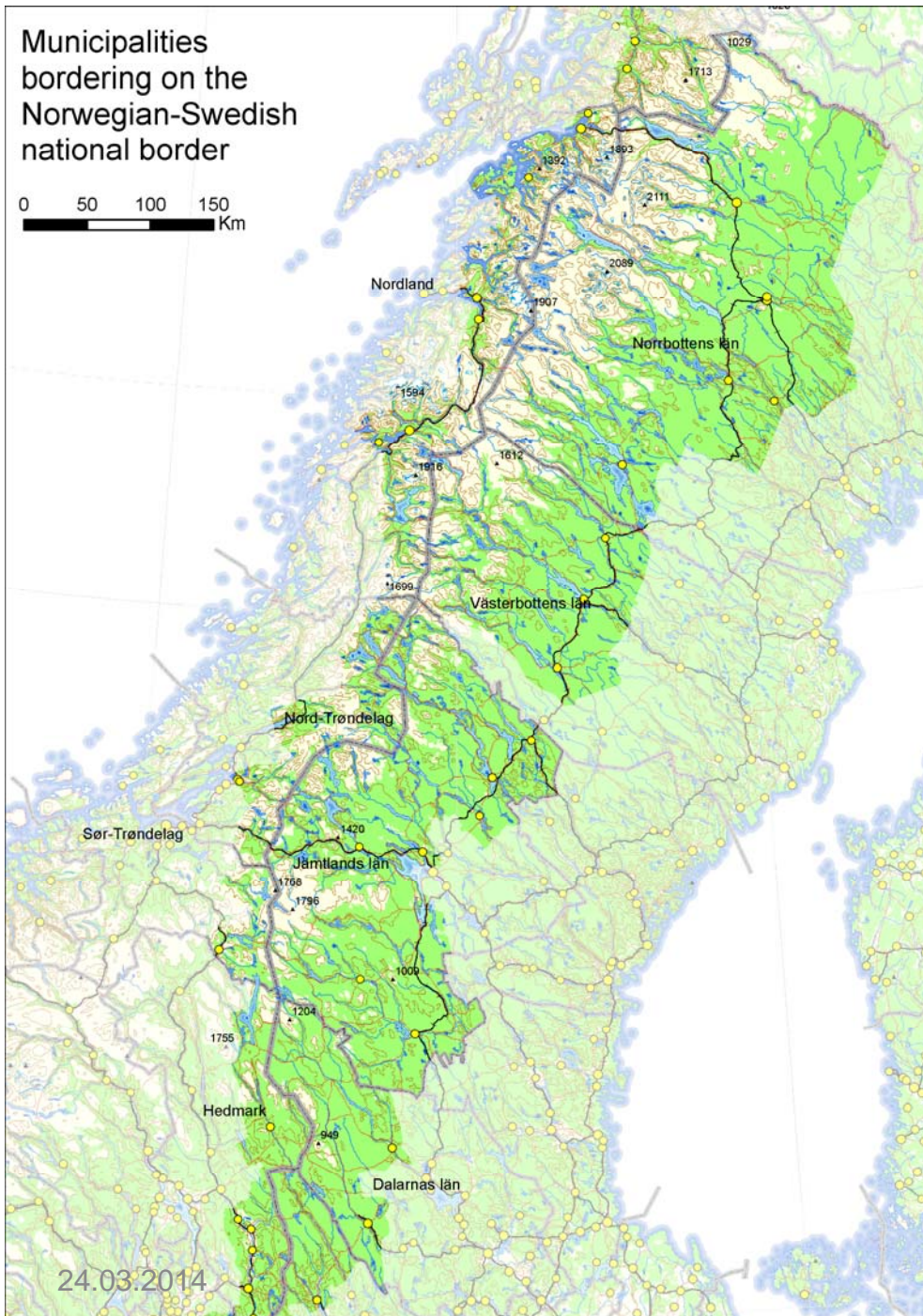
- Sparse infrastructure networks, especially from Trøndelag/Jämtland and north
- Potential for being cut of from national networks
- Infrastructure orientated across region, increasing demand for cross-border cooperation on emergency issues



Shared challenges III

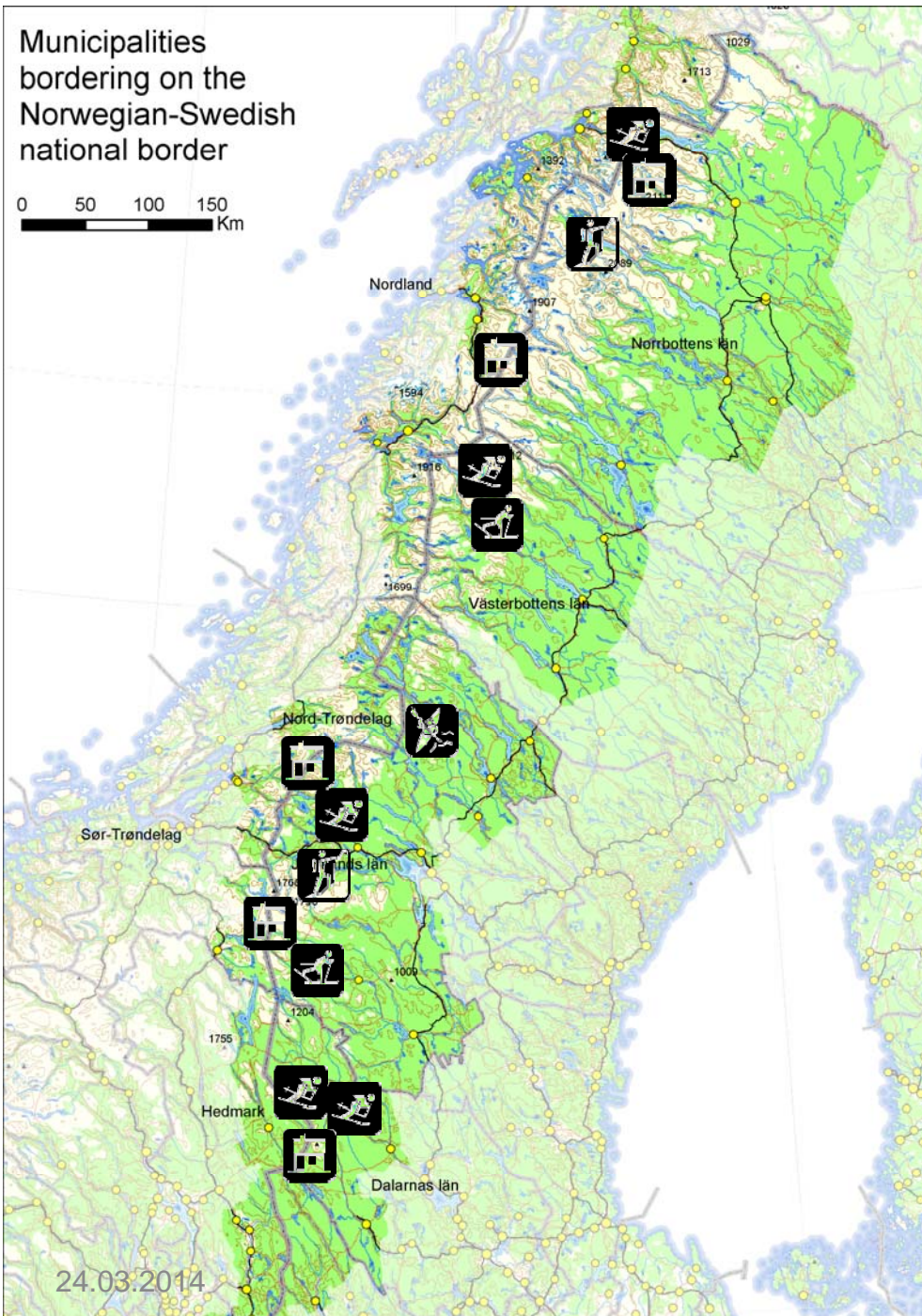
- Long distance/travel times to/from cities, hospitals etc.
- Potential difficulties in reaching necessary services or get assistance in case of an event
- Dependency on local resources for emergency response

Source: Gløersen 2009, Nordregio Report 2009:2.



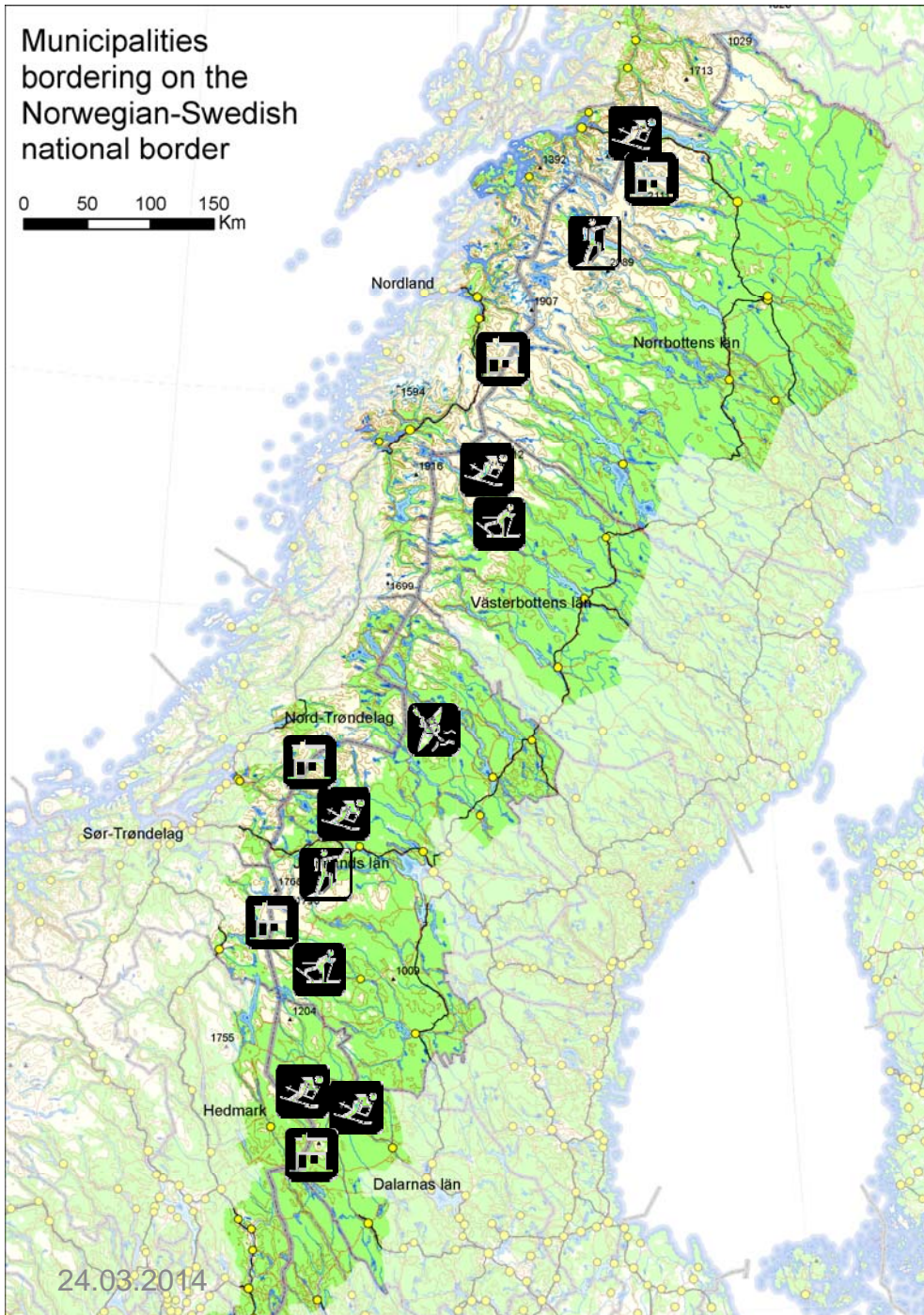
Shared challenges and opportunities

- Largest pristine natural environment close to European markets...
..but also a harsh mountainous environment..
...for which visitors may not be prepared
- High number of tourists contribute to maintaining infrastructure throughout the region...
..nevertheless stretching emergency response capacities



Tourists within NSBR

- About 3 million visitors a year in the three largest ski resorts within the region. 8-11 million tourist-days a year in Jämtland.
- About 65 000 holiday houses on the Norw. side, 27 000 in Jämtland
- Backcountry activities
- Number of visitors exceeding population numbers



Tourists/transients

Not accustomed to local conditions and hazards

We don't know how many they are, who they are, where they are, or what they are doing...

..which implies, difficult to

- measure statistically
- include in conventional response systems
- include assessments of vulnerability

Summing up on the NSBR

With respect to social vulnerability, in a European context, the combination of factors

- low population density
- sparse infrastructure networks
- high number of transients
- harsh natural environment

is a special case



Paths forward

- Pursue efforts to make the most of sparse emergency response resources across a large region:
 - share resources
 - plan for emergency response and conduct exercises together
(Gränsredningsrådet, GGI, GGS are good examples)

Paths forward

- Facilitate assistance for tourists/transients by realising systems that enable
 - monitoring of the whereabouts of tourists/transients (someone in the hazardous area?)
 - anticipatory communication with tourists/transients in preparation for hazard events (advice, warnings etc.)
 - maintaining communication throughout hazard events (ok/not ok)



Samarbete/samarbeid/partners

Sverige

Polisen
Jämtkraft
Länsstyrelsen i Jämtlands län
Räddningstjänsten i Åre

Norge

Politi Nord-Trøndelag
Politi Sør-Trøndelag
Nord-Trøndelags fylkeskommune
Sør-Trøndelags fylkeskommune
El-nett

Kontakt/kontakte/contact

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🌐 www.netGSS.org




-  Gränsöverbyggande samverkan för säkerhet
-  Grense..
-  Gaining security symbiosis

Takk!
Spørsmål?





Major winter resorts

 Winter resorts, cities

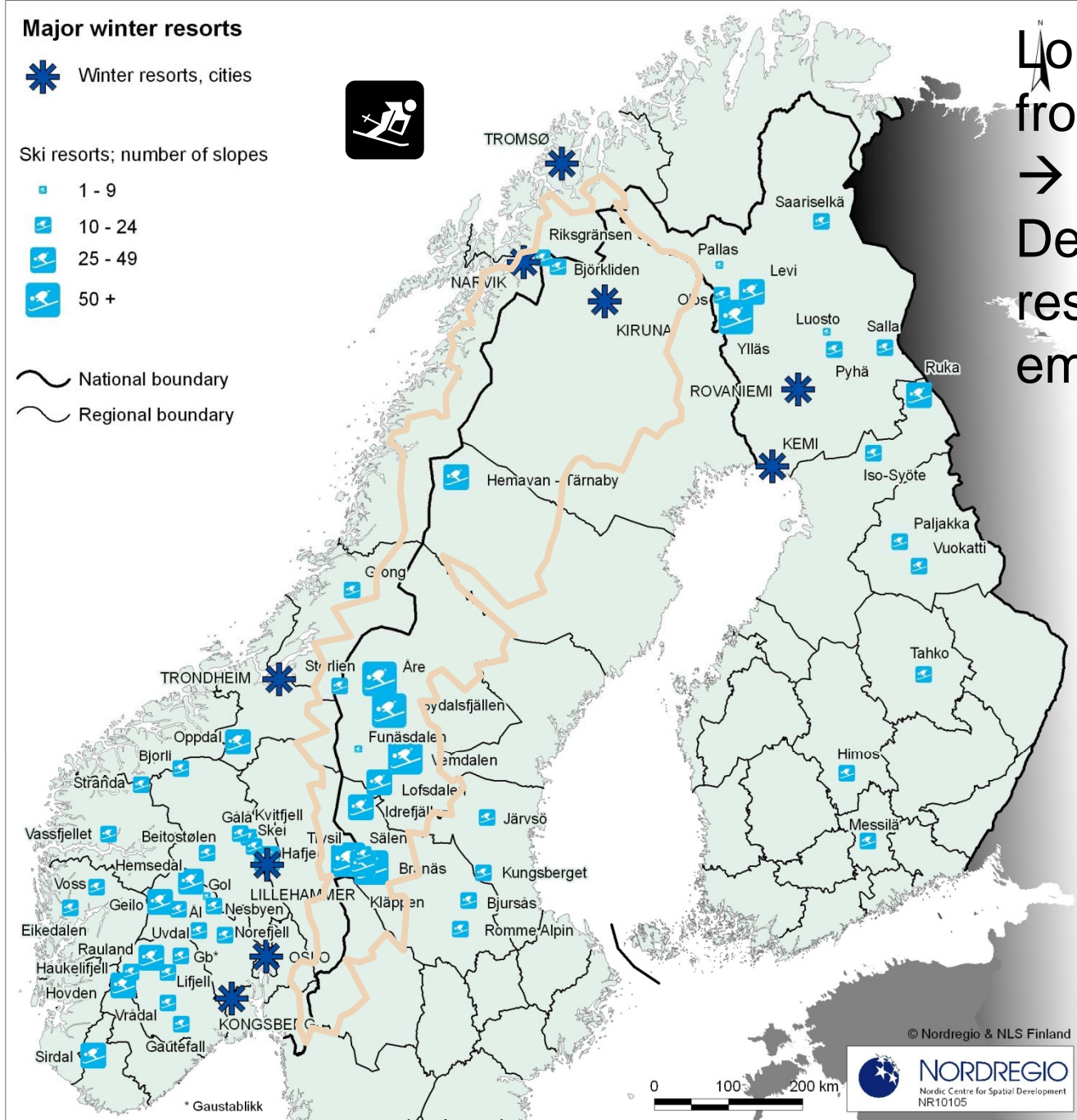


Ski resorts; number of slopes

-  1 - 9
-  10 - 24
-  25 - 49
-  50 +

 National boundary

 Regional boundary



Long travel times
from cities



Dependency on local
resources for
emergency response

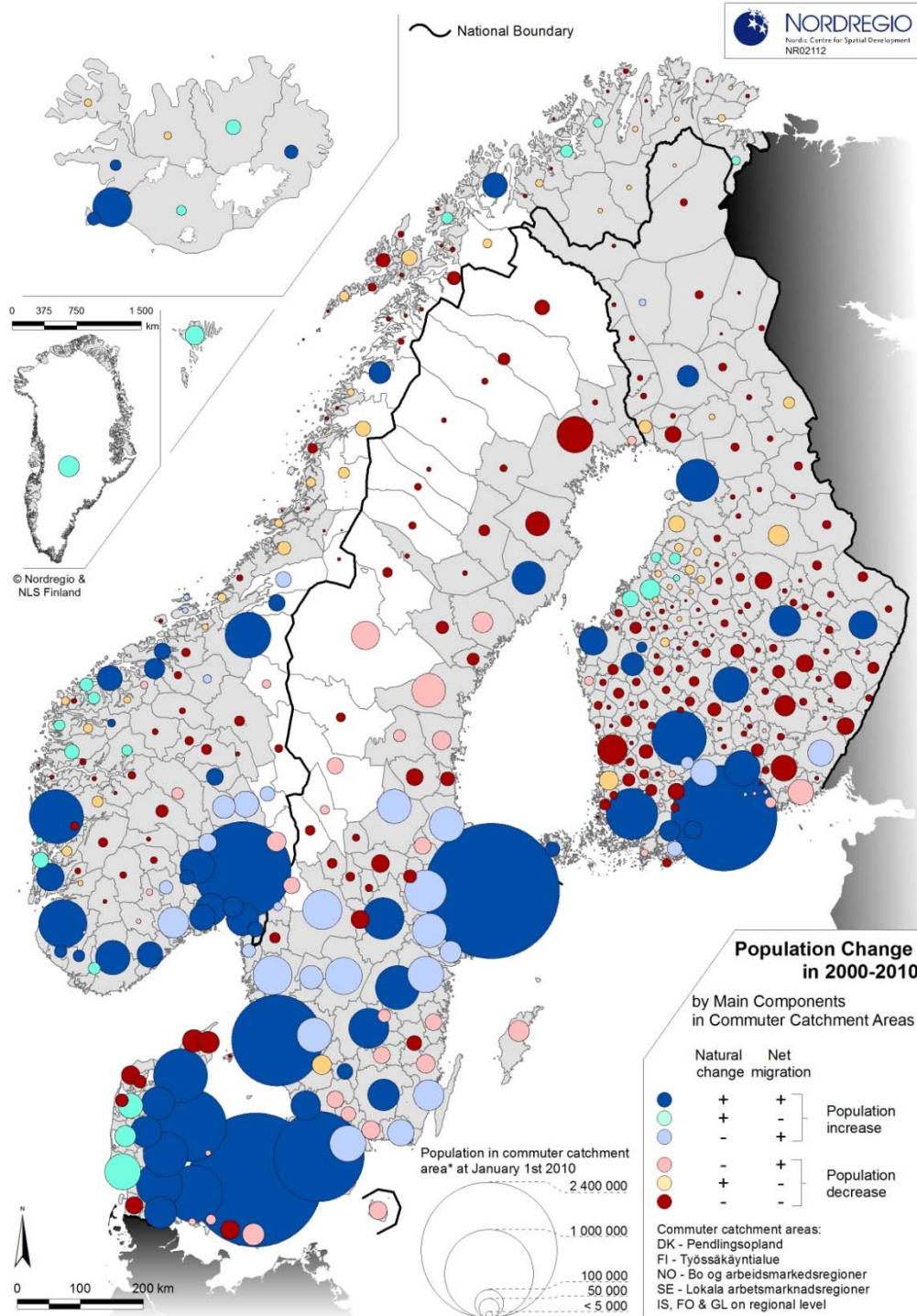


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Source: Gløersen 2009
Nordregio Report 2009:2





Sparsely populated and declining population numbers

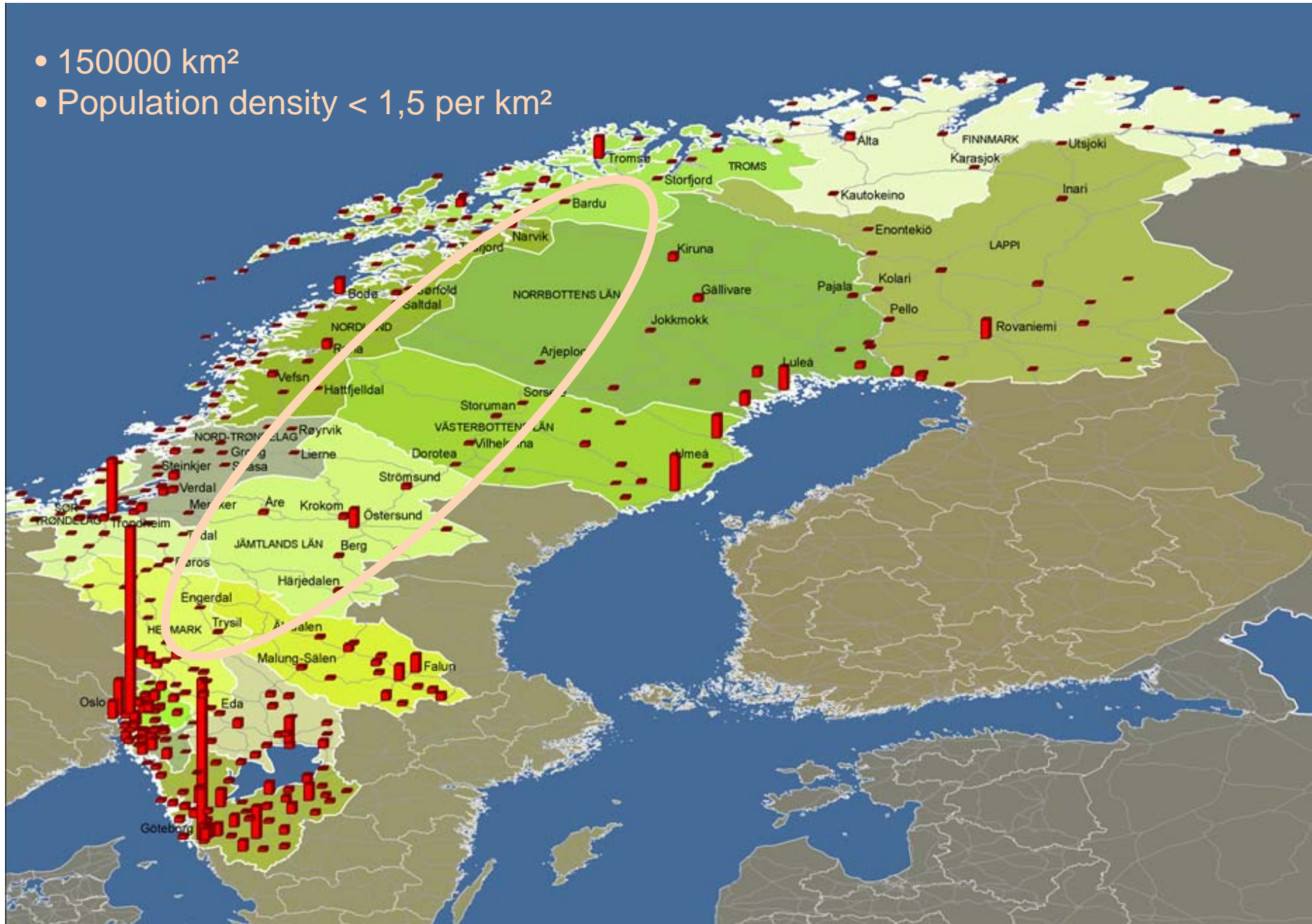


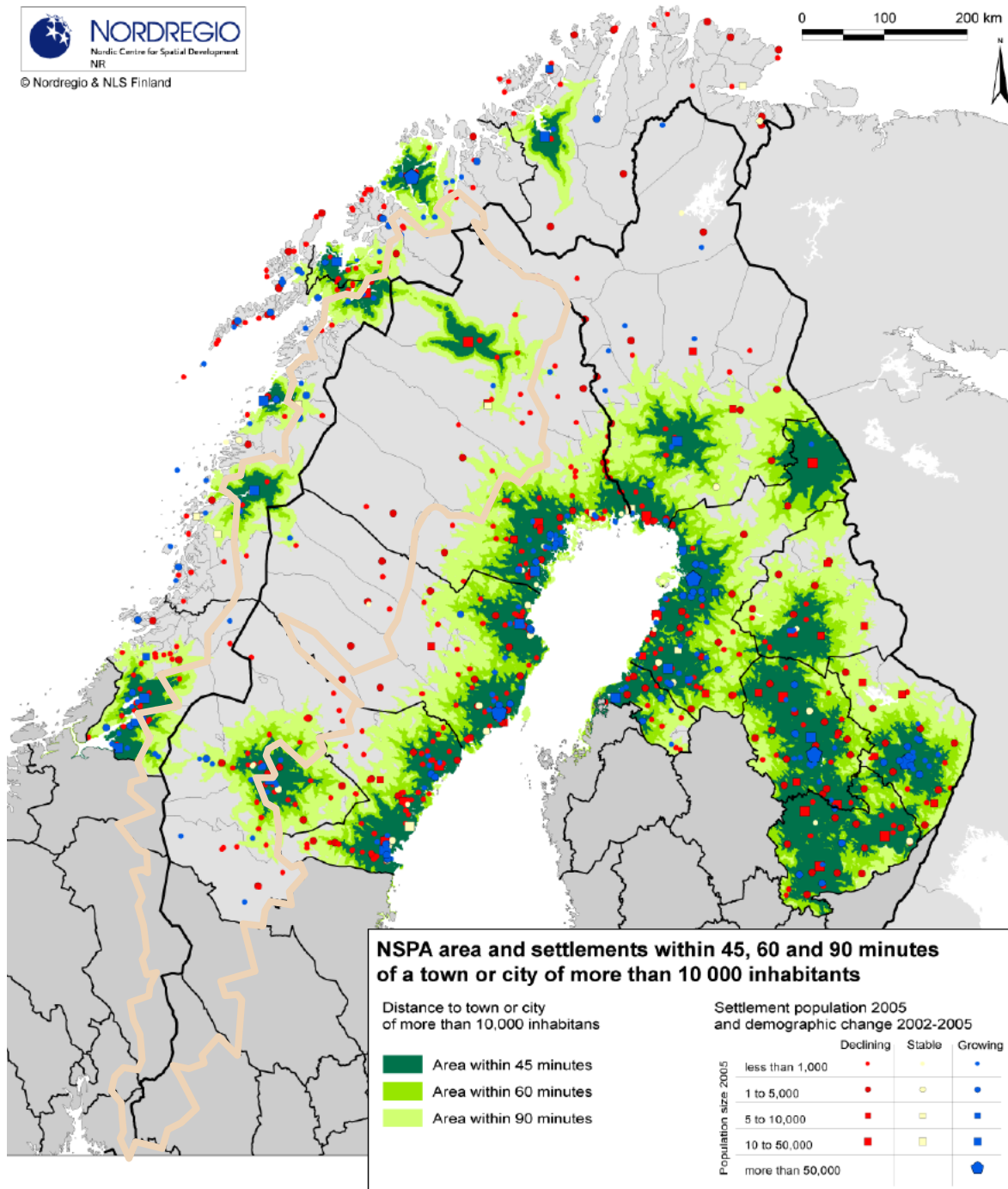
Sparse resources in case of emergency events

Population change in commuter catchment areas in the Nordic Countries, 2000-2010. Source: Johanna Roto, Nordregio at www.nordregio.se



- 150000 km²
- Population density < 1,5 per km²



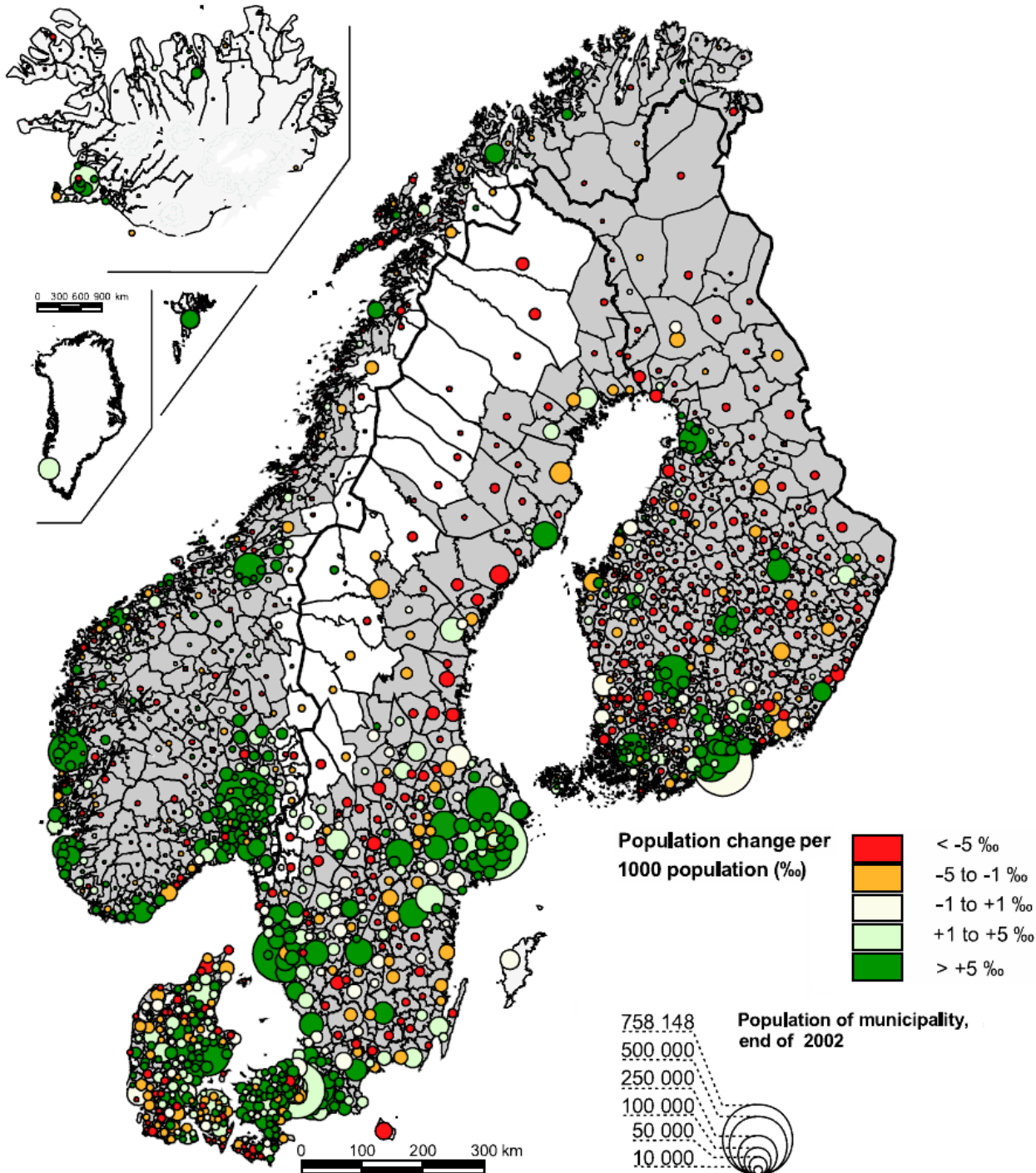


Long travel times
from cities



Dependency on local
resources for
emergency response

Source: Gløersen 2009, Nordregio
Report 2009:2



High social vulnerability in areas on the Norwegian-Swedish/Finish national border

Also high built environment vulnerability, mainly influenced by long travel times

Population change 1996-2001 and 2002, municipalities and counties within the Nordic Countries. Source: NORD 2004-2

