



# Climate change in the Arctic

## Who is vulnerable?

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# Overview

- What is the Arctic? The Arctic as a contested and changing region
- Adaptation to multiple stresses in northern Europe (forestry and reindeer husbandry examples)
- Who is vulnerable?



# Climate change: a concurrent challenge



*The Arctic is now experiencing some of the most rapid and severe climate change on Earth. Over the next 100 years, climate change is expected to accelerate, contributing to major physical, ecological, social, and economic changes. Changes in the Arctic climate will also affect the rest of the world.*

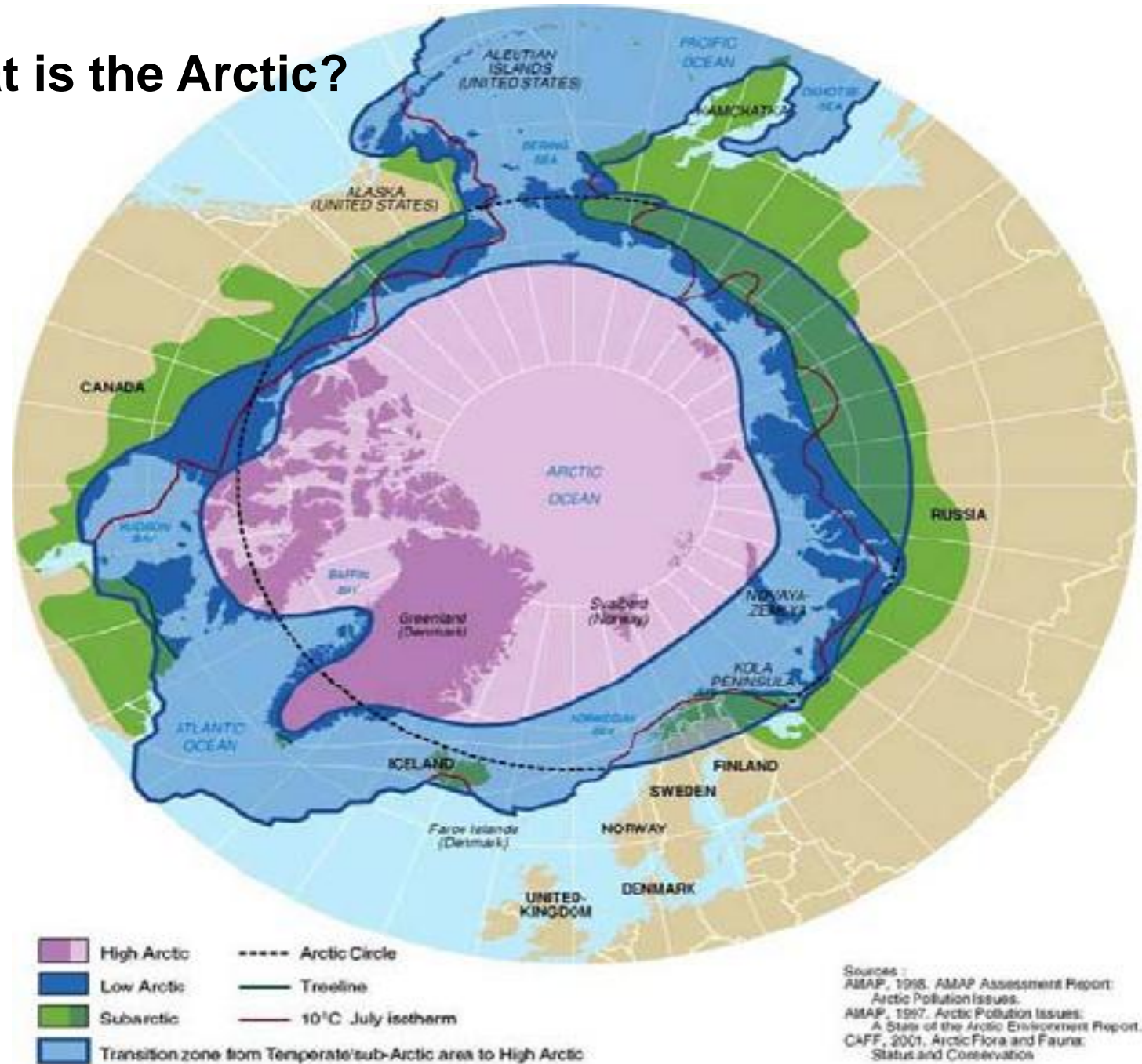
Warming in the Arctic 2-3 times global increase: 3.5-6°C by year 2100

- Melting of glaciers and sea ice
- Shorter and warmer winters
- Northward species and vegetation shifts
- Expanding oil exploration and transport routes





# What is the Arctic?





# What is the Arctic?

## Not a given

- "The Arctic": Historically a smaller and qualitatively different area
- Arctic Council, 1996: "a symbol of the emergence of the Arctic as a distinct region"
  - Participants: Traditional delineation of five sea states expanded to *Arctic Eight* states (USA/Alaska, Canada, Russia, Norway, Denmark/Greenland, **Sweden, Finland, Iceland**) and indigenous peoples.
  - Issue areas: Environment (conservation) and sustainable development (subsistence)
  - Delineation: 60° north to Arctic Circle



# Similarity across “the Arctic” cannot be assumed

- The “Arctic” today highlights a politically constructed area
- Divergent development
  - “New World”, e.g. Canada: late settlement, frontier development, indigenous subsistence, young population in social change
  - “Old World”, e.g. Sweden: long term and gradual settlement, comparatively integrated and aging population, integration in market systems. Largest problems economic marginality and industry structure (service economy with few large, export oriented industries)
- “The Arctic” is not one unit



# Studies of adaptation to multiple stresses in northern Europe

- **Multiple use areas** (forestry, mining, windpower, water power, reindeer husbandry, tourism, recreation... )
- **Focus on communities or environmental resource based-sectors** (companies, interest organisations, local-regional administration, entrepreneurs)
- **Semi-structured interviews on themes:**
  - “Describe your work, groups and organisations that impact it, problems, possibilities and trends”
  - “What would happen if these trends continue – how could you adapt?”
  - “How would it impact you if... [specific projected climatic change, i.e., spring arrives earlier?]”
  - “How would you be able to adapt to this?”





# Results: Forestry in northern Sweden and Finland

Marked economic changes: restructuring, internationalisation of production, de-coupling from local level. Concerns over local industry. Local companies export oriented.

Adaptations:

- Access to financing, production oriented
- Competition over resources with environmental protection as perceived limiting factor, increased environmental consideration due to forest certification
- Adaptation to e.g. seasonal shifts: improved forestry machines and roads to access logging



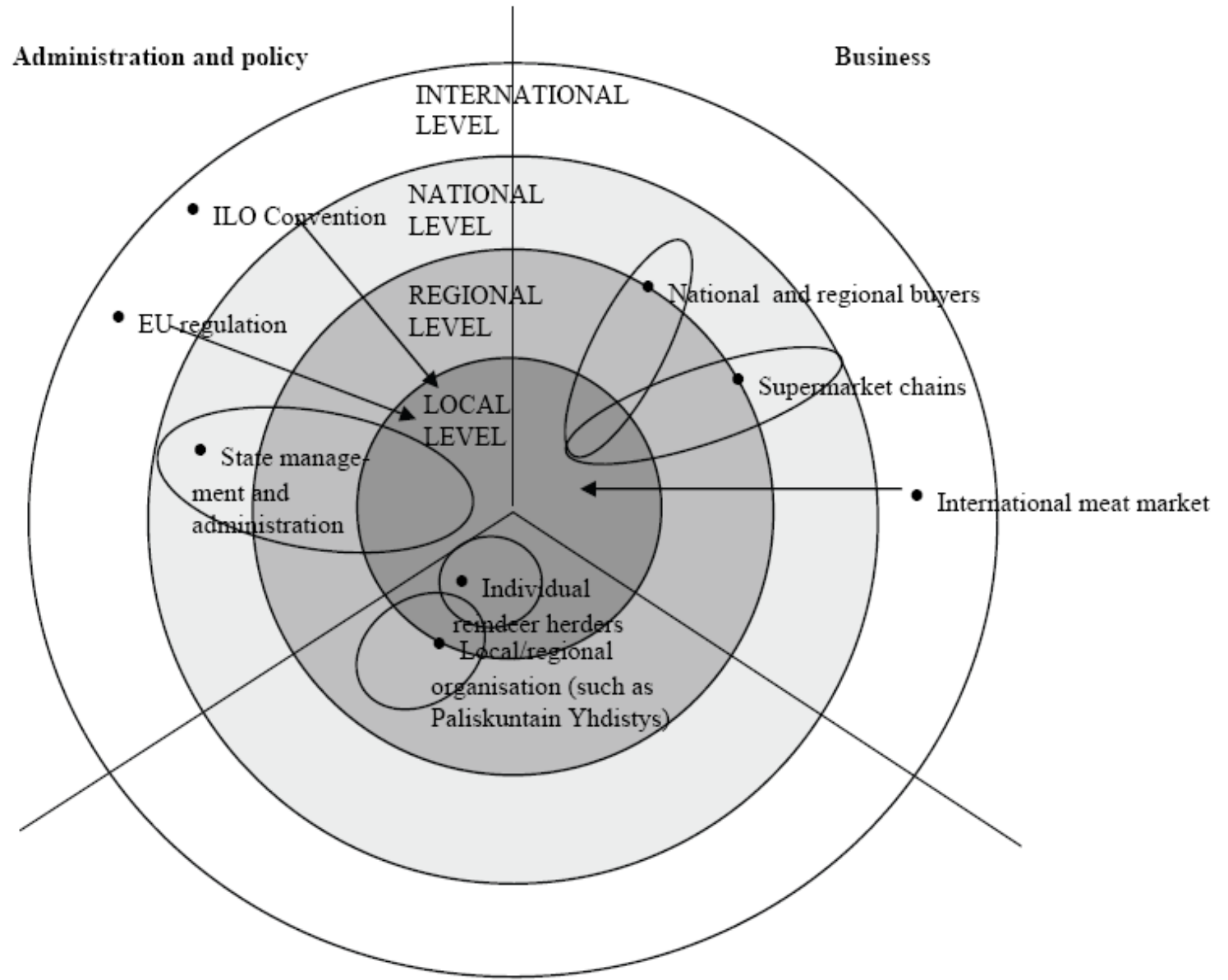


# Reindeer husbandry in Sweden, Finland and Norway

Integrated in market system, largest problem meat price, competition with New Zealand red deer meat. Few buyers and need to improve marketing. Especially impacted by changes in seasons, summer heat and changes that impact freeze-thaw states ( $0^{\circ}$  C), which may lock grazing.

Adaptations:

- Increased additional feeding or reindeer farming, technological adaptations (helicopters)
- Adaptations limited by access to areas with natural emergency grazing (tree lichen) due to forestry
- Political venues for increasing adaptive capacity? ILO Convention as international level impact on regulation



Interest organisations and practitioners

Keskitalo 2008



# Who is vulnerable?

- Sectoral studies highlight globalising features that are not prominent in Arctic discourse: increased internationalisation, competition and resource regulation
- Vulnerability needs to be seen in context of multiple uses in the relatively dense institutional frameworks in northern Europe
- Understandings of areas as “Arctic” may lead to maladaptation



# References

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