

# **Stakeholders' narratives of vulnerability and adaptive capacity**

**A multiple-impacts study design  
and application**

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# Presentation Overview

- Introduction
- Main concepts: Vulnerability and Adaptive Capacity
- Case Study Areas
- Methodology
- Globalisation and Climate Change
- Results
- Discussion and Conclusion

# Introduction

Aim:

*To describe how local and regional stakeholders view change and their possibilities to adapt to change.*

Double or multiple impact (globalisation and climate change).

Case studies – sectors and areas:

- Forestry, reindeer herding and fishing (renewable resource dependent)
- Economically vulnerable and sparsely populated regions (northern Norway, Sweden and Finland – northwestern Russia study ongoing)

# Main concepts: Vulnerability and Adaptive Capacity

- Vulnerability: “the capacity to be wounded”.

*Vulnerability = sensitivity to impacts - adaptive capacity*

- Adaptive capacity: “the broader ability of a system to cope with change-related risks and opportunities”.
- Adaptation: specific adaptations

Focus on local level: Two areas in the same region can be impacted differently by change, depending on their prerequisites (also, mitigation of limited relevance).

# Interpretations of vulnerability and adaptive capacity: study design

Divergence from many climate change-focused studies:

- Not only of climate or specified impacts
- Limited, only general basis in scenarios – limited impact by changes in specificity
- Focus on interviews rather than focus groups
- Focus on governance: multi-scalar adaptation networks
- *Open questions for interviewees' self-definition*

# Introduction

## Research Questions:

- What is the current situation and trends regarding economic, political and environmental change? (empirically based)
- What further change can be expected? (theoretically based)
- In what ways and to what extent can societies adapt to these changes? What is the degree of vulnerability in the studies areas and sectors? (empirically based)

# Case Study Areas

**Kemi, Piteå and Tana river valleys as economically vulnerable areas:**

- Low populated
- Few large, often export oriented enterprises (forestry, fishing)
- Service oriented economies
- Small scale but highly mechanised reindeer herding (Saami in Norway and Sweden, Saami and Finnish in Finland)



# Methodology

- Literature studies (especially projected climate change)
- 60 semi-structured interviews with stakeholders – those affected by change in the sectors
  - Small- and large scale enterprises in forestry and fishing (sawmills, pulp- and paper mills)
  - Private, public and sectorial interest organisations (unions, employers' and private forest owners' organisations)
  - Local and regional administration
  - Individual practitioners: forestry machine drivers, reindeer herders, fishers
- Focus group interviews for feedback/triangulation
- Comparative survey of newspapers in the areas (for politicised issues)

# Interview Structure

Semi-structured interviews on the themes:

1. “Describe your work, groups and organisations that impact it, problems, possibilities and trends”
2. “What would happen if these trends continue – how could you adapt?”
3. “How would it impact you if... [specific projected climatic change, i.e., spring arrives earlier?]”
4. “How would you be able to adapt to this?”

# Empirical Results: Organisation

- Economic changes – comparison with economic globalisation:
  - Internationalisation of production and trade in MNCs and SMEs
  - Changes in to which level the localisation of production locally is competitive (de-coupling)
  - Impacts on employment
- Political changes – comparison with political globalisation:
  - External impact on decision-making
  - Level of external impact (level and type of organisation, such as international and market)
- Climate change

# Results: Economic changes and adaptations

Marked economic changes, including restructuring, internationalisation of production and de-coupling from local level.

## *Forestry:*

SCA, Stora Enso. Concerns over local industry (Kemijärvi, Piteå). Surviving local enterprises export oriented.

## Adaptations:

- Access to financing of development, increased focus on production side
- Resource competition with environmental protection as a limiting factor.

# Results: Economic changes and adaptations

## *Reindeer herding:*

Integrated in the market system, largest problem meat price, competition with New Zealand red deer meat. Oversupply of meat on the market, few buyers and needs for increased marketing.

Adaptations:

- Supplementary feeding – moving towards reindeer farming? Decoupling from natural environment.
- Increased or decreased slaughter (depending on culture)
- Adaptation limited by access to areas and especially old forest with tree lichen.

## *Fishing:*

Successively more large scale and regulated.

Adaptations:

- Different types of fish “refinement” (fresh fish production, fish farming, new markets (Japan and Russia).

# Results: Political changes and adaptations

Most important decisions made nationally (status quo), but impacted by crucial international processes:

The ILO Convention No. 169 (indigenous rights to land and water), FSC forest certification (market based), and EU Natura 2000.

## *Forestry:*

Less cushioned by the state than previously, limited support possibilities from local and regional administration. Small communities with limited scale advantages, implications for employment.

Environmental protection criticised, esp. Natura 2000.

Relatively limited possibilities for adaptation:

- Lobbying, retaining service level through attracting residents and enterprises.

# Results: Political changes and adaptations

*Reindeer herding:* Increased regulation but fewer active herders – pressed for administration. Competition with other forest uses. Adaptations:

- ILO Convention No. 169 as international level impact on regulation
- State support for meat sales? Comparisons with agriculture.

*Fishing:* Quota system since 1990, seen by interviewees as unfairly organised. Support for small scale fishing from local- and regional level, limited from national level. Adaptations:

- ILO Convention No. 169, changes in regulation regarding quota?

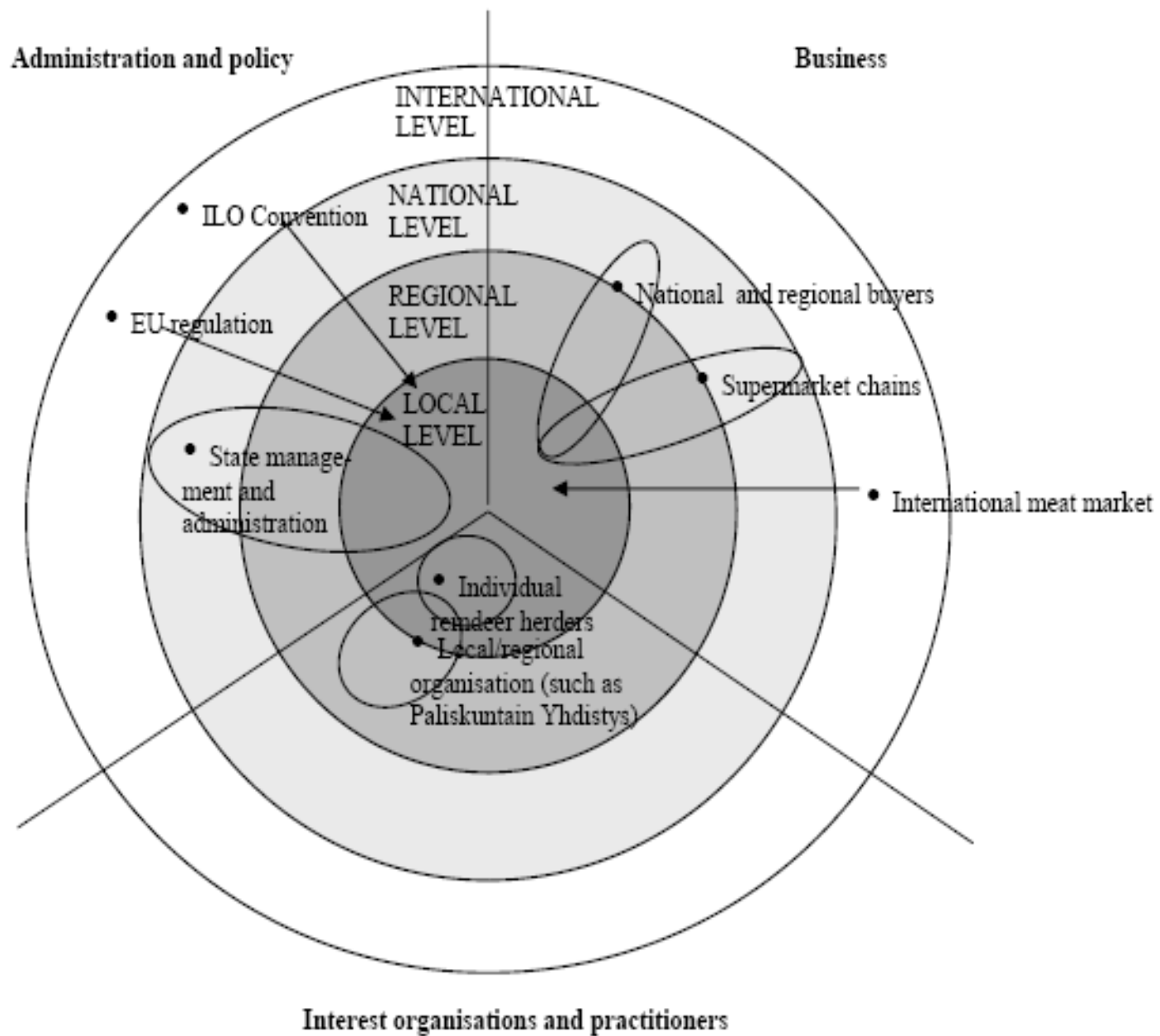


Figure 4.1. Multi-level governance of reindeer herding

# Climate Change

*Interviewees asked to relate to statements derived from impacts- and scenario literature, expressed in lay terms:*

General to all sectors:

How would these changes affect you?

- Earlier or variable start of spring
- Warmer and drier summers
- Later autumn
- Warmer winters including periods with thaw

# Climate Change and Forestry

For each sector have also sector specific changes been studied:

*For forestry:*

How would these changes impact you?

- Increased forest growth
- Longer growth season
- Possible thaw and refreezing during spring
- Possible increasing snowfall during winter/spring
- Changes in tree species and their spread

# Climate Change: Reindeer Herding and Fishing

*For reindeer herding:* How would these changes impact you?

- Increased thawing and refreezing during winter and spring
- Warmer and drier summers
- Changes in lichen and other grazing access and spread

*For fishing:* How would these changes impact you?

- Warmer water temperatures
- Possible increased variation in weather
- Changes in fish species and spread (northwards)
- Increased fish quantity and growth

# Results: Climate Change and Adaptation

*In general:* interviewees in administration less aware of and concerned about climate change than practitioners, who were already perceiving some changes. Especially crucial are changes between frozen and thawing conditions (0°C).

## *Forestry:*

- decreasing accessibility in forest and on roads
- + increased growth and seedability

### Adaptations:

- Gravelling, ice removal, new customers for changing timber qualities
- Selection of seeds and plants on climate change basis
  - limited on account of costs and limited awareness

# Results: Climate Change and Adaptation

## *Reindeer herding:*

Affected by day to day changes, especially by changes in seasons, summer heat or change across the freeze-thaw threshold (0°C), which may lock grazing or demand supplementary feeding.

Adaptations:

- Increased supplementary feeding or farming, technological adaptations (helicopter use).

## *Fishing:*

Current strong impact from king crab invasion and high natural variability. Impacted by species distribution and to a lesser degree storms. Highly socially regulated system.

Adaptations:

- Foremost political regulatory changes, changes in seasonal fishing.

# Discussion and Conclusions

Large similarities between sectors, indicating trends and structural changes related to globalisation.

Politically and economically:

- Increased adaptation to international market competition.
- Financing crucial and limiting to small scale fishing and forestry
- Fewer employed in administration, fewer active in the sectors (often entrepreneurs)
- Focus on employment, problems of recruitment into the sectors
- Local areas losing much of decision making capacity, through company mergers and decision making capacity centred outside locality.

# Discussion and Conclusions, cont.

## Environmentally:

- Changes from relatively open resource access to increased regulation (quota, certification), higher amounts of interests and higher competition (such as environmental protection).
- Focus on increased revenue per unit, as resource access is limited. Taking place through increased control of the natural resource through de-coupling from the natural environment (fish and reindeer farming).
- Concerns over resource access (limited local forest resources, king crab impacts on fishing, overgrazing/overuse of pastures through competition between sectors)

*Large difference between small- and large-scale actors: smaller scale actors most vulnerable and least able to adapt.*

# Conclusions

In general:

- Limited local level impact on decision making network.
- Adaptations take place in relation to resource situation as a whole (economic, political and environmental).
- Economic situation is focal, and determines interpretation of climate changes (costs or benefits, adaptation).
- Historical adaptations limit present possibilities. Final “adaptation”: leaving the sector.

# Implications on studies of climate

Complex interactions between economic, political and environmental factors:

- Beneficiary weather-induced production conditions for reindeer herding → increased meat production → price fall → sectoral crisis

→ Vulnerability and adaptive capacity must be seen within complex socio-economic, political and legal systems on several levels, including international level.

- Implications on scenario focus in climate change work?
- Implications on focus on environmental system?