NATURE VALUES, NATURE-BASED LIVELIHOODS AND MINING

BEST ENVIRONMENTAL PRACTICES IN THE MINING SECTOR IN THE BARENTS REGION

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Finnish Forest Research Institute METLA
Mining boom - projects in northern Finland

Some are located close to tourist destinations and national parks
NEED FOR RECONCILIATION

- Largest Finnish nature conservation areas are located in Lapland
- Both modern and traditional livelihoods are typically nature-dependent (tourism, forestry, reindeer herding etc.)
- Mining operations have great impacts on nature and natural landscape → possible negative effects to other nature users and objectives
- Great need for reconciliation of different objectives, great need for knowledge how to do it
RESEARCH PROJECT

• DILACOMI (Different Land-Uses and Local Communities in Mining Projects) research project studies the best practices for socially sustainable mining

• Joint project between Universities of Lapland, Oulu and Finnish Forest Research Institute METLA
RESEARCH PROJECT

• METLA focuses on reconciliation of different nature-based livelihoods, nature-uses and mining

• We have studied opinions of local people, leisure time real estate owners, tourists, reindeer herders and other relevant stakeholders concerning reconciliation

• Focus on Hannukainen iron-ore mine and Kittilä gold mine and Ylläs and Levi tourist destinations
SURVEY STUDY ON LOCALS AND CABIN OWNERS

• Data gathered in 2012 together with Marika Kunnari via survey questionnaire

• Stratified random sample, 18 to 75 year old:
  1. inhabitants of Kittilä, Kolari and Muonio
  2. leisure time real estate (cabin) owners in Kittilä and Muonio

• Totally 1923 persons

• 711 responses (response rate 38.0%)
  • Local people 436 responses
  • Cabin owners 275 responses
Agree? Kittilä/Hannukainen mine has negative effects on...

N=665-670

<table>
<thead>
<tr>
<th>Category</th>
<th>% Totally Agree</th>
<th>% Fairly Agree</th>
<th>% No Opinion</th>
<th>% Fairly Disagree</th>
<th>% Totally Disagree</th>
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<td>15.1</td>
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<td>26.5</td>
<td>22.3</td>
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<td>11.0</td>
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<td>animal &amp; plant species</td>
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<td>22.2</td>
<td>31.4</td>
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<tr>
<td>animal &amp; plant species</td>
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<td>26.1</td>
<td>35.2</td>
<td>13.4</td>
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<td>air quality</td>
<td>18.6</td>
<td>21.1</td>
<td>33.3</td>
<td>19.9</td>
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<tr>
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<td>32.1</td>
<td>28.7</td>
<td>16.6</td>
<td>6.8</td>
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</tbody>
</table>

Cabin owners recognize more negative effects than local people - $\chi^2 p=0.000-0.001$
Opinions on mining effects, N=687

STATEMENT

Pollution of water and air caused by mining hinders tourism
- totally agree: 7%
- fairly agree: 29%
- can't say: 26%
- fairly disagree: 15%
- totally disagree: 12%

Dust, noise and trembling have negative effects on tourism
- totally agree: 11%
- fairly agree: 22%
- can't say: 31%
- fairly disagree: 25%
- totally disagree: 11%

Mine does not hinder image of Levi/Ylläs tourist destination
- totally agree: 26%
- fairly agree: 29%
- can't say: 22%
- fairly disagree: 15%
- totally disagree: 9%

Reduction of pastures do not hinder reindeer economy significantly
- totally agree: 9%
- fairly agree: 26%
- can't say: 38%
- fairly disagree: 17%
- totally disagree: 8%
Data was gathered through interviews with questionnaire form in Ylläs-Levi district 2012

N=1703
springtime 1126
Autumn 577

<table>
<thead>
<tr>
<th>Location</th>
<th>N</th>
<th>%</th>
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<tbody>
<tr>
<td>Airport</td>
<td>738</td>
<td>43.3</td>
</tr>
<tr>
<td>Kellokas Nature Centre</td>
<td>530</td>
<td>31.1</td>
</tr>
<tr>
<td>Railroad station</td>
<td>16</td>
<td>0.9</td>
</tr>
<tr>
<td>Various cafes (N=13)</td>
<td>419</td>
<td>24.6</td>
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<tr>
<td><strong>Total</strong></td>
<td>1703</td>
<td>100.0</td>
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</tbody>
</table>
What does Lapland mean to you? N=1496

- **Beautiful landscape, pure nature**: 38.9%
- **Silence, peaceful, tranquillity**: 17.8%
- **Outdoor sports and activities**: 13.3%
- **Leasure time and rest**: 11.5%
- **Special, exotic, unique**: 9.8%
- **Intact wilderness**: 5.3%
- **Other**: 3.4%
- **Special, exotic, unique**: 5.3%
Important elements in destination

Means

Scale: 1= not important at all... 5= very important. N=1649-1670

*** beautiful natural landscape
*** opportunities to do sports
*** pristine wilderness
safety of the destination
*** good transportation connections
*** good food and restaurants
*** high-grade accommodation
*** local history and culture
*** wide range program services
opportunity for romance
*** pampering and wellness services
*** vibrant nightlife

Significance T-test

Levi Ylläs
What do you think are the mining impacts in Levi and Ylläs area? N=1610-1637

<table>
<thead>
<tr>
<th>Category</th>
<th>Very Negative</th>
<th>Fairly Negative</th>
<th>No Impact</th>
<th>Fairly Positive</th>
<th>Very Positive</th>
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<tbody>
<tr>
<td>Environment</td>
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<td>44,5</td>
<td>13,2</td>
<td></td>
<td></td>
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<tr>
<td>Wilderness close to Ylläs and Levi</td>
<td>35,2</td>
<td>40,6</td>
<td>20,1</td>
<td></td>
<td></td>
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<tr>
<td>Nature experience</td>
<td>30,5</td>
<td>35,2</td>
<td>29,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image of Ylläs and Levi</td>
<td>25,2</td>
<td>38,5</td>
<td>27,7</td>
<td>6,7</td>
<td></td>
</tr>
<tr>
<td>Tourism business</td>
<td>22,4</td>
<td>32,9</td>
<td>29,9</td>
<td>11,4</td>
<td></td>
</tr>
<tr>
<td>Nature use of local people</td>
<td>21,4</td>
<td>43,9</td>
<td>26,1</td>
<td>7,3</td>
<td></td>
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<tr>
<td>Business and local economics</td>
<td>5,0</td>
<td>49,4</td>
<td></td>
<td>24,8</td>
<td></td>
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<tr>
<td>National economy</td>
<td>4,4</td>
<td>47,8</td>
<td></td>
<td>26,6</td>
<td></td>
</tr>
</tbody>
</table>

Tourists in Ylläs see more negative and less positive impacts than tourists in Levi - significance $\chi^2$, p=0.000-0.001
How do you feel about present mining activities taking place near Levi and Ylläs? \(N=1499\)

### Levi tourists
- Very negative: 9.7%
- Fairly negative: 20.6%
- Neutral: 50.7%
- Fairly positive: 11.6%
- Very positive: 7.3%

### Ylläs tourists
- Very negative: 19.6%
- Fairly negative: 24.3%
- Neutral: 41.7%
- Fairly positive: 10.1%
- Very positive: 4.3%

Ylläs tourists, women and older people feel more negative. Significance: \(\chi^2, p=0.000\)
Did you know prior to your trip about...?

**Hannukainen project**
- No: 49.8%
- I have heard about it: 41.7%
- I have familiarized myself with it: 8.6%

**Kittilä operating mine**
- No: 29.5%
- I have heard about it: 59.2%
- I have familiarized myself with it: 11.3%

Tourists of Ylläs are more aware about mining projects ($\chi^2$, p=0.000)
How do you feel about present mining activities taking place near Levi and Ylläs? N=1499

**KNOWLEDGE BASE ON HANNUKAINEN PROJECT**

- **I have familiarized myself with it**
  - Negative: 31.8%
  - Neutral: 23.5%
  - Positive: 44.7%

- **I have heard about the mining project**
  - Negative: 40.4%
  - Neutral: 42.0%
  - Positive: 17.6%

- **Never heard about the mining project**
  - Negative: 38.0%
  - Neutral: 51.7%
  - Positive: 10.3%

**significance - \( \chi^2, p=0.000 \)**
How would the possible expansion of mining affect the image of Levi and Ylläskuja as nature tourism destinations? (N=1640)

- **Foreign tourists**
  - Weaken significantly: 32.4%
  - Weaken a little: 37.0%
  - No affection: 21.9%
  - Improve a little: 6.4%

- **Domestic tourists**
  - Weaken significantly: 24.8%
  - Weaken a little: 49.9%
  - No affection: 22.2%
  - Improve a little: 6.4%

The chi-square test (χ²) shows significant differences in the responses, with a p-value of 0.000.
How would the possible expansion of mining affect your willingness to revisit Levi and Ylläs area? N=1457

Ylläs tourists
- Reduces significantly: 16.9%
- Reduces a little: 26.6%
- No affection: 54.4%

Levi tourists
- Reduces significantly: 5.9%
- Reduces a little: 26.4%
- No affection: 64.8%

Significance $\chi^2$, p=0.000
How would the possible expansion of mining affect your willingness to revisit Levi and Ylläs area? N=1646

- **Foreign tourists**
  - Reduces significantly: 17.2%
  - Reduces a little: 32.1%
  - No affection: 43.9%
  - Increases a little: 5.0%
  - Increases significantly: 0.0%

- **Domestic tourists**
  - Reduces significantly: 12.1%
  - Reduces a little: 25.7%
  - No affection: 59.9%
  - Increases a little: 0.0%
  - Increases significantly: 0.0%

Significance $\chi^2$, $p=0.000$
CONCLUSIONS

• The negative impacts of mines are supposed to be on nature values
• Nature is main pulling force in tourism (nature-based tourism)
• Especially in Hannukainen case, it is obvious that there are possible risks for tourism
• For reconciliation and social sustainability it is important to
  ➢ assess possible risks to other livelihoods as well as possible
  ➢ keep planning and decision-making open and transparent
  ➢ define best & worst case scenarios for public
  ➢ seek best techniques to minimize negative impacts
  ➢ that allocation of costs and benefits overlaps