Critical Resources and Circular Economy,

Case of the Region of Lapland

International Days in Critical Raw Materials,
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-Putting Smart Specialisation Into the Practice-
Lapland - today

- The northernmost region of Finland and European Union
- Border with Russian, Norway and Sweden
- Total area is 100 369 km²
- 182 856 inhabitants, density 1,8 people/km²
- 200 000 reindeers
- Largest residential centres: Rovaniemi (60 944 inhabitants), Tornio (22 399), Kemi (22 172)
- Six sub-regions: Rovaniemi, Kemi-Tornio, Eastern Lapland, Northern Lapland, Fell Lapland and Torne Valley
- Employment: municipal sector 27.8%, state and state-owned companies 10.8% and private sector 49.2%
- Only chrome mine and largest gold mine of EU
- Largest refining industrial concentration in EU
- 8 500 SMEs
- Annual turnover in total 9 900 M€
- About 10 % of Finland export
- Two universities; University of Lapland and Lapland University of Applied Sciences
- Diverse sectorial research institutes
- Strong vocational education
- 2014-2020 ESI funds over 300M€ including co-financing
- 3 Interreg programs and ENI CBC program
”We should not be reinventing the wheel, admittedly, but what use is it if it has stopped turning properly?”
In future Lapland would like to …

... Enjoy a leading position in the sustainable utilisation of Arctic natural resources and conditions.
...Commercialise its Arctic expertise and makes sustainable use of Arctic business opportunities.
...Be an active Arctic player and an important international centre of Arctic transport and knowledge.
...Link the Arctic Region with the European Union.
....Offer Lapland’s inhabitants an original, attractive place for living and running a business.

Remaining societal sustainable Lapland

future-oriented
active player
Coexistence of the different livelihoods
does not want to be a mere onlooker
originality
arctic expertise

Industry based on natural resources and conditions
Integration between economic sectors
grows by nature

Economic sustainability
Development of service economy

arctic knowledge
knowledgeable
environmental diversity
ownership
attractive

Secure future
Social and cultural sustainability

Sustaining the diversity of the nature
- Ecosystems typical for the Lapland
- Balanced utilisation and preservation

recognising the originality and characteristics
- Lappish rural villages
- Sami people – arctic experts
- Lappish identity

Fragile nature
Viable knowledge and skills

Sustainable development
Social capital

People’s Lapland

Managing the environmental stress
Sustaining the vitality of the region

Industrial Lapland
Social licensing

Future-orientated

Future-oriented
In Lapland we are looking for the functional spearheads supporting the development diversely strengthening and sustaining the basic industries, initiation of the new industries. Education, research and development better integrated in the refining new products and services.
Putting S3 into the practise …where are the truffles…

- During last decades support directed towards refining industry, tourism, creative industries, learning and testing environments, rural development, wood processing, resource efficiency, natural product and food, internationalisation, natural resources and land use… analyses over 650 project funded during previous program period in Lapland…finding the best ground for the cross-fertilisation
- Potential for the modern clusters which are regional, looking beyond the boundaries, cross-fertilisation…kind of regional knowledge and innovation communities

Arctic industries – Cleantech

Arctic Smart Rural Communities

Arctic design

Arctic safety and security

Arctic innovation and testing environments
Arctic Industries – Sustainable Mining

- Lapland’s vision is to become a model region for the ecoefficient mining industry
- Sustainable industrial growth in Lapland relies on refining of Lapland’s own natural resources into high-quality products that attract demand in global markets
- Mining industry’s effects on other branches of industry are substantial: each job in mining generates 3-4 jobs in other branches of industry
- Income 360M€, generating influence is about 1 400M€
- The mining industry’s effect on employment, including subcontracted work
- In Lapland has in total 5 operating mines and 3(-5) new projects on the way
- Lapland has significant mineral deposits including EU critical minerals like Platinum group metals, Phosphate rock, Niobioum, Berellium, Chromium etc.
- Focus on sustainable development – positive cumulative impacts
- Strategic approach towards EU funding → ESI used for the capacity building → active seeking on partnership on H2020→ERASMUS
- Presence in Brussels, use of Smart Specialisation platform, participation on EU seminars and conferences
Arctic Industries - Sustainable Mining

- The co-occurrence between industries using natural resources has been amicable... so far...
- ...expectations but also fair...number of preconceived opinions
- Most of the cases the livelihoods are interested in the same nature areas
- Environmental sustainability is a key on gaining SLO
- Emphases of ecoefficient technology development
  - Waste treatment, selective mining, recovery of by-products, effective use of the materials etc.
- Research on cumulative impacts
  - http://www.ulaapland.fi/InEnglish/Units/Faculty-of-Law/Research/Research-Projects/GovAda
- Development of social licencing practises
  - http://www.ulaapland.fi/InEnglish/Units/Faculty-of-Law/Research/Research-Projects/SUMILCERE
- Active on Responsible mining initiative http://www.sitra.fi/en/ekologia/responsible-mining
- Arctic Smartness Portfolio Initiative – internal and external image building
- Unmanned Aerial Vehicles in Mineral Exploration and Mining Operations in the Arctic Areas of Finland – exploration, monitoring environment
Arctic Industries - Sustainable Mining

An integrated circular economy action plans

• In the regional S3, the sustainable refining of the natural resources is in the core
• Pointing out the importance to manage all resources more efficiently throughout their life cycle and value chains.
• For the Lapland the circular economy starts from the beginning: The pumping of resources back into use has to begin in the early stages of the production value chain.
• That is particularly important for the regions and countries rich with natural resources.
• In practice we stress the implementation of the GREEN ACTION PLAN FOR SMEs - Enabling SMEs to turn environmental challenges into business
• In practice projects, which are implemented in the topics important for the Lapland
• The focus is in the beginning of the industrial value chain until manufacturing the natural resources, both minerals and forest. For example following:
  • To enhance the use of industrial waste
  • Arctic Industries - Circular economy through industrial symbiosis
  • Closed mines as “new” mineral resources – tailings and wastes
  • Using the KETs enhancing the resource efficiency
  • Integration of the work with the regional network of mining service industry
Modern Cluster of Arctic industry – Sustainable utilisation of the arctic natural resources

Model region to demonstrate EC new wave cluster policy:

• Lapland was selected among five other regions to be the test beds for EC new cluster policy and advisory services

• Lapland has potential to become one of the leading regions in the world in the sustainable exploitation of natural resources

• The region should focus on refining of Arctic natural resources in a socially and ecologically sustainable manner, combined with high value added generation from natural resources in the region

• Emphasis on maintaining the balance in the sustainable development

• The strong focus on circular economy and to accumulate the development of the emerging industries.
Modern Cluster of Arctic Industry – Sustainable utilisation of the arctic natural resources

- Circular economy through industrial symbiosis

- Eco-innovative, resource efficient and competitive solutions with high extent of value addition to modernise Arctic industries
- Will be a mix of large-, medium-, and small scale industries and other actors, platforms and living lab arrangements with real-life pilot experiments
- The clustering concept will also utilise efficiently the international and global pipelines and will be a tool for the SMEs in Lapland to improve their performance.
- Cluster is led by the technology center Digipolis Oy
- Partners all mining companies operating in Lapland, over 200 SMEs, research and education
- CBC activities to Sweden, Norway and Russia
- Looking for the international partnership, H2020 partnership, developing SME instrument proposals, Fast Track to Innovation
Resource efficient production of the raw materials and increasing the self-sufficient in the critical minerals production are important to enhance the competitiveness of the EU’s industry. To implement the actions in this field, the regions with mineral resources in EU will have a strategically important role. European Innovation Partnership on Raw Materials is seeking a systematic approach to support the development of the mining sector, which contributes to the sustainable development of the mining regions and creating growth, jobs and generates new SME industries.

European regions will have a vital importance in the implementation of the European Innovation partnership on Raw materials, as the key players in the raw material policy and best places to address raw materials challenges. Synergic approaches involving the regional development policies and objectives of the European Innovation partnership on Raw Materials will provide benefit for the different stakeholders involved in the mining industry. In this context, the role of the universities is essential as they make available multidisciplinary skills, knowledge and research activities needed for the sustainable development.

Research has proven that raw material industry is lacking skilled and environmentally consciousness younger employees. The challenges between the education and labour market will be narrowed by promoting anticipation of future skills related to sustainable raw material industry in the regions. Universities and regions will need to work together, to match the skills and labour market needs.

Conference on 2-3 November 2015, Lapland Finland is aiming:

- To increase the awareness of the importance of the mining industry for the European economy
- To support the development of the coherent and synergic implementation of the European mining sector
- To integrate the European Raw Material EIP implementation within regional development objectives
- To open the platform for dialogue to enhance comprehensive and sustainable development practices at the regional level, in relation with the mining sector
- To initiate joint schemes to mobilise EU funding instruments in line with the S3 synergic approach
- Enhancing the implementation of the sustainable mining and networking between the regions and the universities
- To strengthen the role of the university collaboration in the regional development and to enhance the establishment of regional knowledge alliances

Organising team:
- Unit for Raw Materials., DG Grow, Covenant2022
- Finland: The Ministry of Employment and the Economy, Regional Council of Lapland, East and North Finland EU office and University of Lapland
- Sweden: County of Norrbotten, Luleå University of Technology
10th Fennoscandian Exploration and Mining, FEM 2015 on 3 - 5 November 2015, in Levi, Lapland Finland

The biannual Fennoscandian Exploration and Mining (FEM) has grown to be one of Europe's largest mineral industry events, with its focus on exploration and mining development in Fennoscandia. The Fennoscandian Shield offers great potential for new discoveries!

The FEM 2015 conference highlights exploration and mining in Fennoscandia. FEM includes world-class presentations by invited speakers, pre-conference short courses and a trade show. The conference venue, Congress & Exhibition Centre Levi Summit, is located in the most active mining area in Europe and you will be able to visit one of the operating mines during FEM excursions.

Official language
• The official language of the conference is English.

Main Topics
• Exploration Projects
• Mine Development
• Licence to Operate

More information http://fem.lappi.fi/en
Introduction

The vision of the EC is to increase the self-sufficient in the production of the critical minerals by the 2050. At the same time, it is essential to implement the resource efficiency agenda in order to reply to major societal challenges. Resource efficient production of the raw materials and increasing the self-sufficient in the critical minerals production are pointed out to be one of the main policies to support the competitiveness of the EU’s industry. To implement the policy into the practice, the regions with the mineral resources in EU will have a strategically important role in Europe. To reach the vision of self-sufficiency by the 2050, needs a systematic approach to support the adaption of the circular economy, to facilitate the use of secondary materials and to develop sustainable mining industry from the regions point of view it is also essential to find cumulative positive impact to sustainable development, Growth and Jobs, new SME industries. The aspects of environmental sustainability remains important. In generally it is crucial to sustain the balance in the sustainable development.

Objective of the “Smart and Green Mining Regions of EU” is to bring together EU regions with the raw materials (minerals) production and common S3 objectives to exploit synergies and jointly:

- advancing the sustainability of the mining sector
- improving the cumulative impact to the regional development
- Increasing the regional SME growth and innovation capacity development
- Involving regional RDI

The network should to:

- Develop the synergetic approach where the needs and responsibility of each players are clear in the development of the sustainable (resource efficient) mining in Europe.
- Improve the translation of the industrial needs into regional planning, policy and decision-making and vice versa will promote the improvement of the environment for the industry in the EU and to support the coherent regional development providing breeding ground for SMEs on eco-innovations (should be mentioned in S3 strategy).
- Learn from the best practices and support the development of the favourable framework conditions implementing the sound regional mining diplomacy on:
  - Regulatory framework for the mining sector
  - Technical barriers in the development processes of the raw material sector:
  - Land use planning, investment conditions,
  - Building social acceptance and trust,
  - Training and attracting skilled workforce;
- Explore and promote the regions potential synergies between raw materials, value chains, market and societal players in order to create new business opportunities and economic growth
- Plan and establish operational synergies between R&I investments (public and private) and to strengthen competitiveness of the industry, identify synergies and collaborate closely with the relevant
The exercise, hosted by Finland, is based on a scenario where the resources of the Lapland Rescue Department and other rescue services in northern Finland are not sufficient to deal with the situation in the region but assistance has to be requested from the neighbouring countries.

The exercise in Kittilä will involve warning and alarming, requesting assistance, dealing with border crossing formalities, managing rescue operations, sharing and communicating information and handling the media. The main focus will be on Host Nation Support, which refers to functions needed to ensure the smooth and effective reception of assistance in the country which has requested assistance.

**Flooding and mine accident**

The exercise scenarios in Finland involve a series of heavy rainfalls in Kittilä and a simultaneous mine accident. Flooding and the raising water level cause serious damage to the road system in the region, leaving some areas without land connections and hindering food supply and power distribution. The flood scenario is based on a real incident in Kittilä about ten years ago.

The mine accident exercise will take place at the largest gold mine in Europe, Agnico Eagle Finland in Kittilä. It is difficult to operate in mines in the first place and, in case of accidents, special skills and knowledge of the mine network are crucial.

A number of small accidents and other incidents will be built around the two main scenarios. When dealing with these situations, the authorities and other actors involved have to test both their professional skills and collaboration with experts arriving from neighbouring countries.

More information

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Despite remarkable industrial development Lapland will remain its position as region with the cleanest water in the world and the cleanest air in the European Union.

Kiitos
Thank you
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