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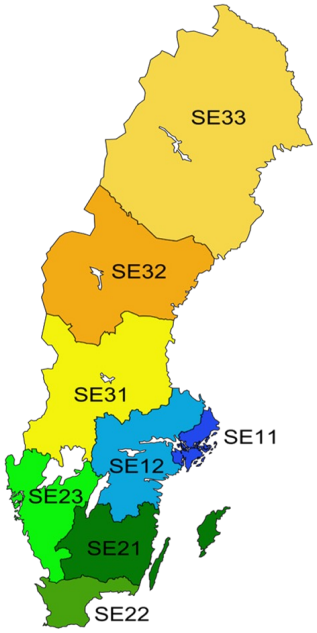

Middle Norrland, SE 32 2022-2023
by
Mid Sweden University

Karin Nygård Skalman
Mikael Gulliksson
Åsa Yderfält

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Middle Norrland Region:

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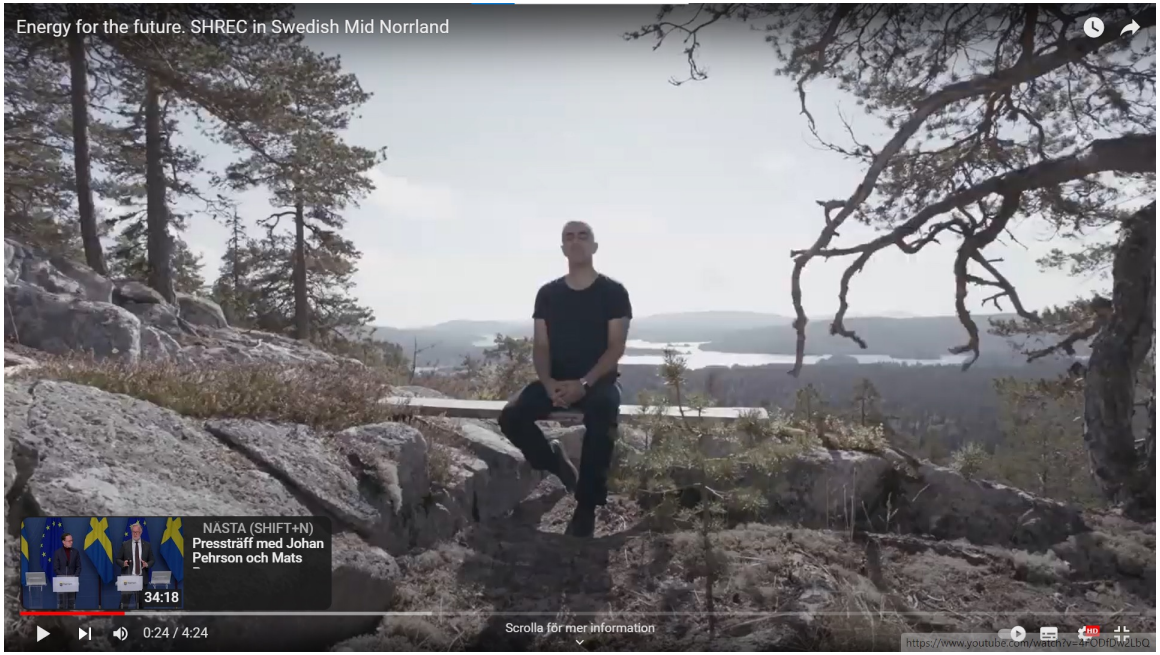

[Energy for the future. SHREC in Swedish Mid Norrland - YouTube]

Smart Specialisation in Middle Norrland:

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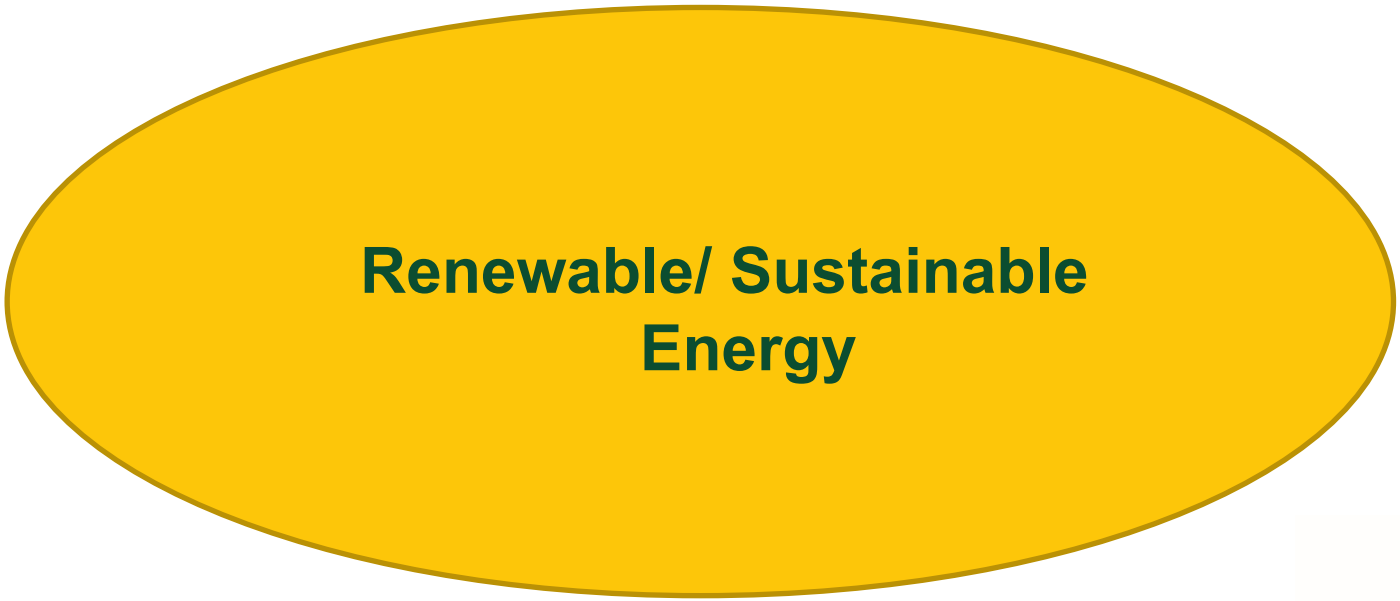
Investment for Growth and Jobs programme European Territorial Cooperation programme, ERDF program 2014 – 2020. Middle Norland.

Thematic area 4 supporting the shift towards a low-carbon economy in all sectors.



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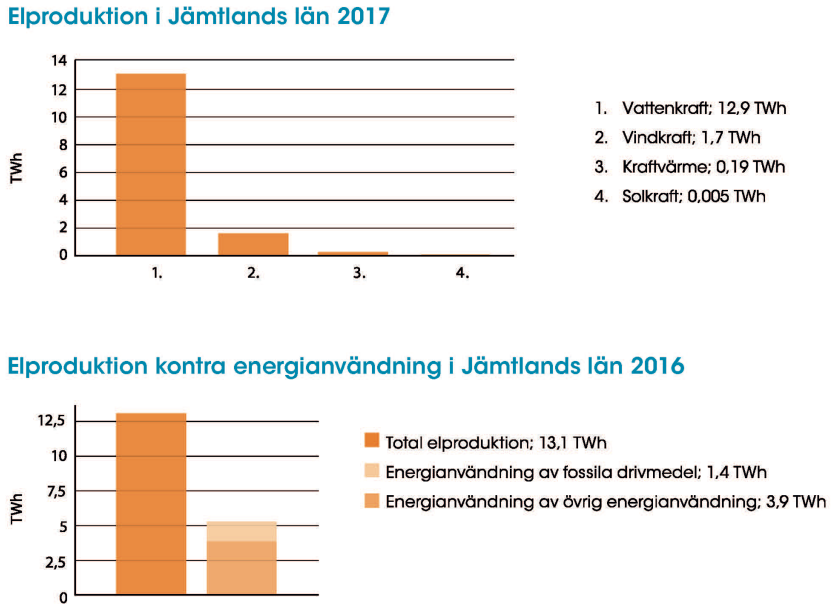
Energy balance in Middle Norrland:

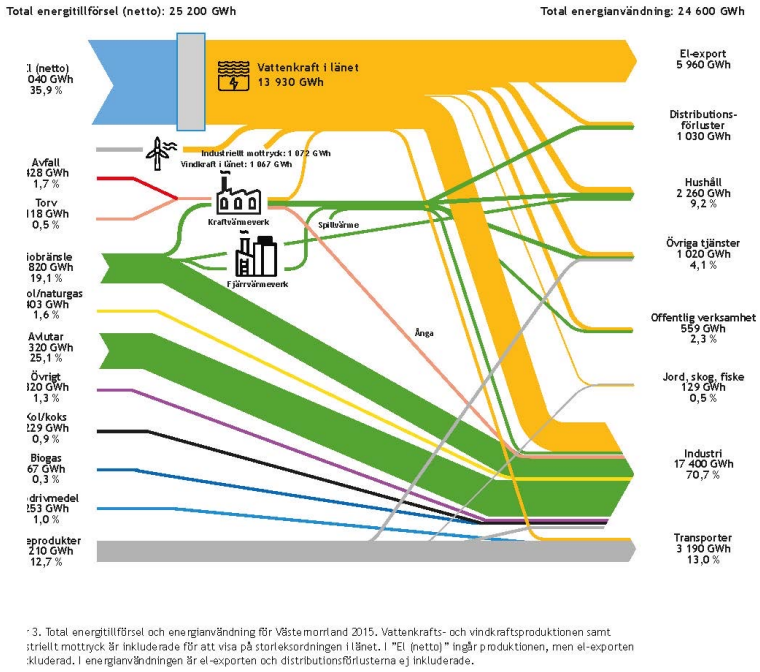
Total production of energy is based mainly on hydropower, wind, heat exchange solar,and biofuels: **38TWh**

Use of energy in the region: 30 TWh which we assume will double 2030!

Jämtland/Härjedalen (TWh 10^{12})



Västernorrland (GWh 10^{9})



3. Total energitillförsel och energianvändning för Västernorrland 2015. Vattenkrafts- och vindkraftsproduktionen samt industriellt mottryck är inkluderade för att visa på storleksordningen i länet. I "El (netto)" ingår produktionen, men el-exporten är inkluderad. I energianvändningen är el-exporten och distributionsförlusterna ej inkluderade.

Energy policy targets for Sweden and the region Middle Norrland

50 per cent more efficient use of energy in 2030, compared with 2005

70 per cent less emissions from transports 2030 compared with 2010

100 per cent renewable electricity to 2040

2012 = 50%

No net emissions of greenhouse gases to 2045

Middle Norrland (Jämtland/ Härjedalen) same targets, but have added two goals

- ***Fossil free transports by 2030***
- ***10% lowering of allowances of greenhouse gases annually between 2020-2030.***

What have the SHREC project contributed to?

Indirectly !

- Increased activities on ongoing projects and investment
  - Bioenergy, Biofuel and creative ideas how to use waste from paper and pulp industry some examples, ***Production av elektro-biofuel from wind and biomasswaste , many different projects***

Directly!

- increase in actions toward more usage of solar energy

Biorefinery and biojet

SCA Renewable Energy
Anders Edling Hultgren

With the force of the forest, we contribute to a sustainable future

SCA

Östrand Biorefinery

- 300,000 tonnes/year
- 2 technologies
- 20 % of the energy
- Permitting process ongoing

Three main biorefinery projects

- Hydrocarbons from crude tall oil
- Hydrocarbons from solid biomass residues
- Hydrocarbons from black liquor/lignin

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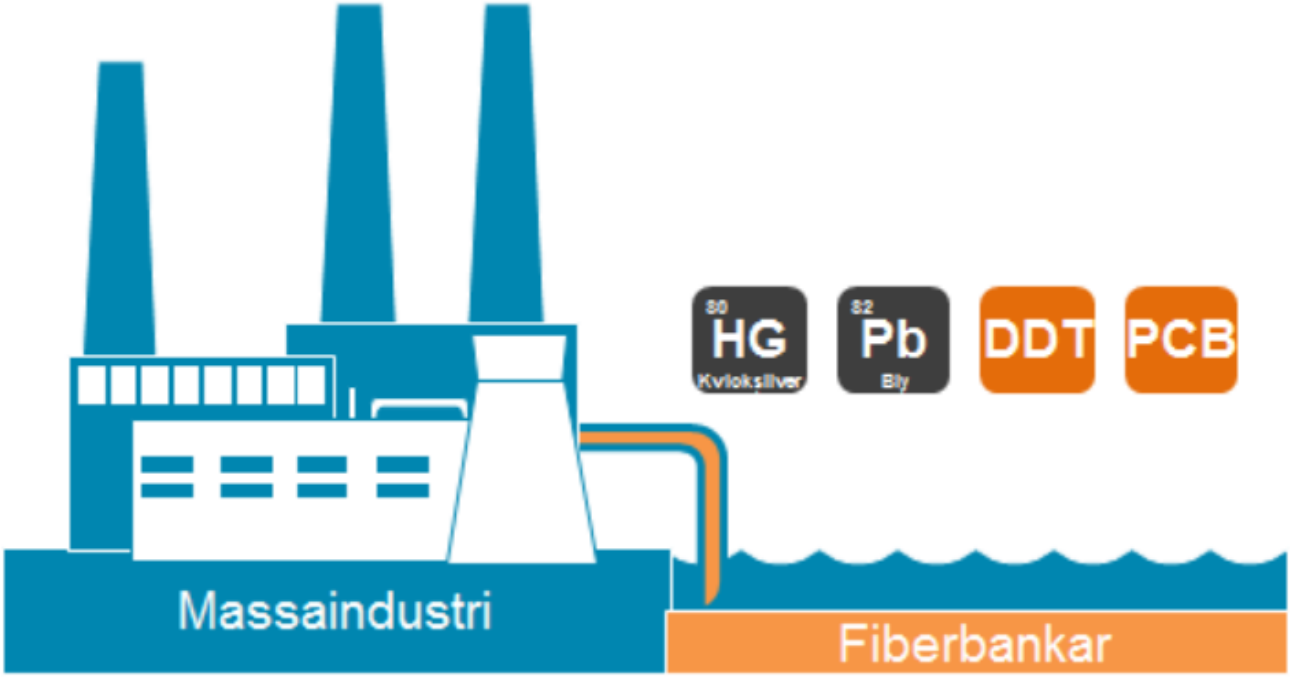
BioRem Fiber

Within the BioRem Fiber research project, the goal is to develop market-adapted environmental technology to clean up fiber banks along the coast of Västernorrland with the help of fungi, plants and bacteria, so-called bioremediation.

BioRem Fiber

- The fiber banks have been formed through emissions of contaminated process water from the wood and pulp industry and contain environmentally hazardous heavy metals and organic pollutants.



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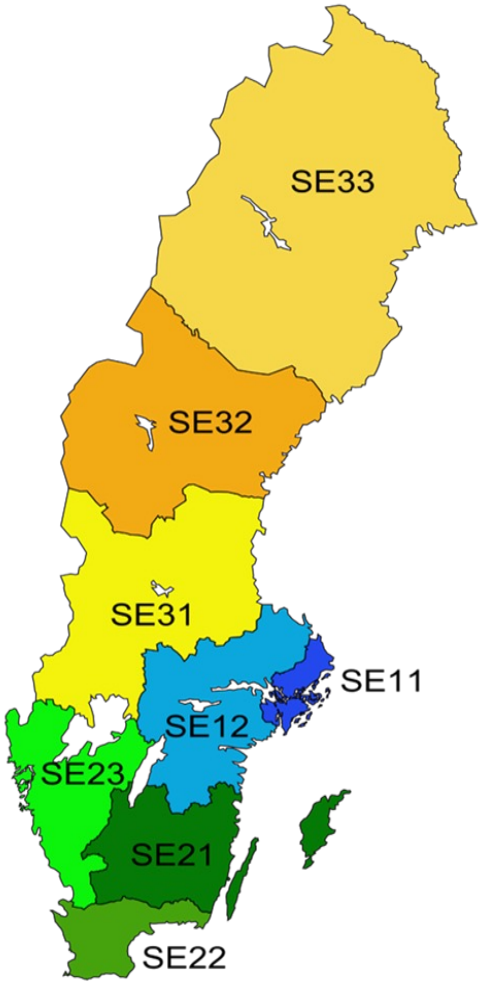
BioRem Fiber

- The toxic content of the fiber banks has been mapped by, among others, the County Administrative Board of Västernorrland and Sweden's geological survey and now the next step needs to take.
- The project target to contribute to a sustainable environment while developing processes for detoxification of the fiber bank material as well as production of value-added products from the detoxified material.
- Joint efforts between the Mid-Sweden University, municipalities, industrial partners and the county environmental authorities.

Gaps identified in Middle Norrland actionplan

- **Very few PV-prosumers exist in the region**
- **Lack of good business models for PV-prosumers.**
- **Non-existing energy communities due to law restrictions**
- **SMEs do not use green energy, sun, wind as much as wanted**

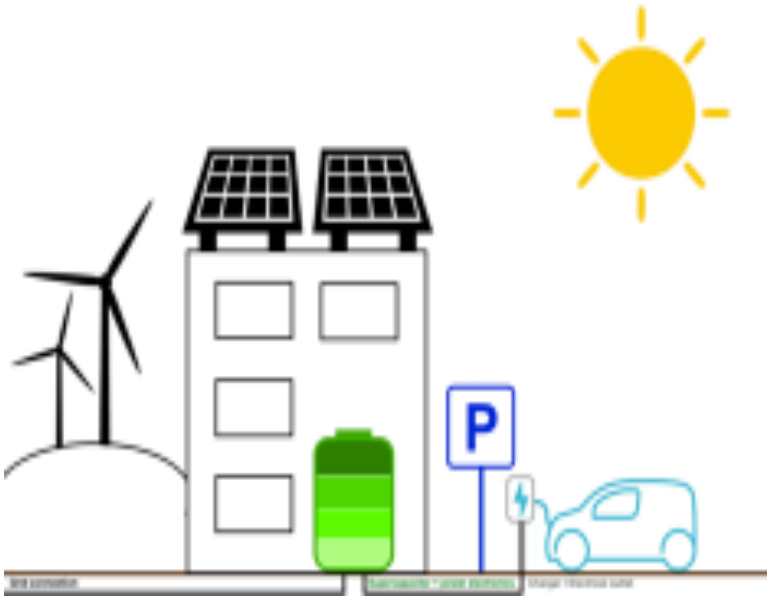


What good example from SHREC is the inspiration source?

Lithuania:

Their business model of how to implement photovoltage usage in the country of Lithuania and how they by this policy action could increase the usage by at least 20 times than before..

Study financed by ERDF on the possibility to increase the amount of prosumers in Middle Norrland



- **Suggestion** : Increase the amount of photovoltage in the energy mix .
- In five years increase the amount **five times** which will give middle Norrland approximately 2TWh of solar energy and **5% of the energymix in the region**