



CITYCIRCLE

Training for regional stakeholder groups

Circular economy hubs

Example of Digipolis, Finland

Online meeting

April 15th, 2020 – 10:00-11:00 CEST

Hosted by BWCON GmbH



MINUTES

Greetings & Intro

Luc Schmerber, BWCON

KEY NOTES:

1. Introduction to the context of the webinar, as part of D.T2.2.4 Specific trainings for each of the regional stakeholder groups (2 trainings per region)
Topic: Circular economy hubs
2. Introduction of the speaker:
Tuomas Pussila, Mr.
Cluster Manager, M.Sc. (Tech.)
Arctic Industry and Circular Economy
Digipolis - Kemi Technology Park
Tietokatu 6, FI-94600, Kemi
www.digipolis.fi

PRESENTATION

Tuomas Pussila, Digipolis - Kemi Technology Park

KEY NOTES:

1. Presentation of the Circular Economy in Finland and industrial symbiosis as a regional driver,
www.digipolis.fi
2. Q&A with the audience

SUPPORTING DOCUMENTS

1. Presentation (Annex)
2. List of participants (Annex)
3. Recording of the webinar (available upon request)



ATTENDANCE LIST

CE1515 CITYCIRCLE

Event Name: CITY CIRCLE Webinar

Location: online

Date: 15.04.2020, from 10:00-11:00 CEST

No.	Name and Surname	Organisation	E-mail	Signature
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3.	Agnese Pressoto	Municipality of Udine	agnese.presotto@comune.udine.it	n.a.
4.	Stefano Treu	APE FVG	stefano.treu@ape.fvg.it	n.a.
5.	Robert Hanzen	TUKE	robert.hanzen@tuke.sk	n.a.

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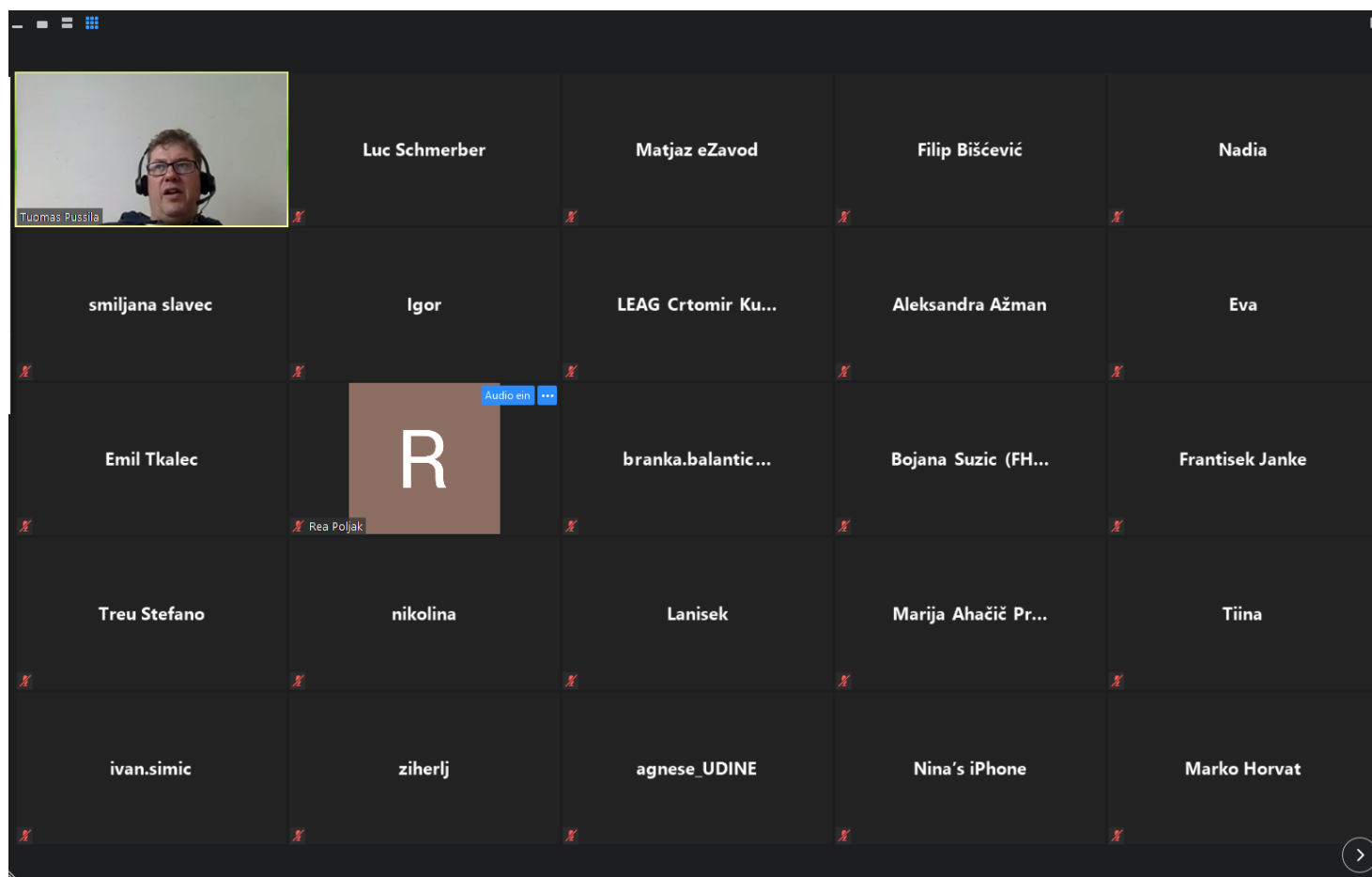


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LC LEAG Crtomir Kurnik  	
MA Marija Ahačič Premrl  	
ME Matjaz eZavod  	
N Nadia  	
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R Rea Poljak  	
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Z ziherlj  	
MD Martin Dobler (FHV) 	
BK Barbora Kovacova 	

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CENTRE FOR CIRCULAR ECONOMY

Circular Economy in Finland and industrial symbiosis as a regional driver

Digipolis – Kemi Technology Park

Circular Economy presentation

Tuomas Pussila, Program Manager, Circular Economy

Finland becomes a world leader in the circular economy by 2025

Roadmap's ambition:



Increased exports and growth for companies from scalable and comprehensive circular economy solutions.



Functional **domestic market**.



Circular economy into the mainstream through **actions** and **concrete pilots**.

Economy, environment & society:



Circular economy as a new cornerstone for the Finnish economy.



Finland as a model country for the challenge of scarcity.



From adapter to pioneer.

ECOSYSTEM OF ARCTIC INDUSTRY

Kemi-Tornio`s circular economy innovation platform

- World's northernmost hub of bio-, mining -, metal industry and services
- 1,7 Mt of by-products and residues (excluding waste rock)
- Responsible for 80% of Lapland's industrial production, with over 5 billion EUR of exports annually (7-8 % of the total export value of Finland)
- Industrial symbiosis estimated at 700 million EUR annually



MAIN INDUSTRY SITES IN KEMI-TORNIO REGION

Metsä Board and Metsä Fibre Kemi mills

- World's northernmost linerboard production site
- World's northernmost pulp mill (re-build coming)



Outokumpu Chrome Kemi mine

- Europe's biggest chromium mine



Outokumpu Tornio stainless steel mill and ferrochrome smelter

- Outokumpu's site in Tornio is the most integrated stainless steel mill in the world combining chromium mine, ferrochrome works and stainless steel mill
- Europe's biggest user of recycled steel

Stora Enso Veitsiluoto Mill in Kemi

- World's 2nd northernmost **pulp mill**
- World's northernmost paper producer with **three paper machines**, and 4th biggest paper production integrate in Europe
- Oldest **sawmill** in production in Northern Finland



Manga LNG liquid natural gas terminal in Tornio 2018

ETC...





FURTHERING THE CIRCULAR ECONOMY AND BIOECONOMY IN LAPLAND IN 2012–2016

Industry byproducts utilised

Where did it all begin?

11/2012

The key players of Kemi–Tornio industries and industrial services were interviewed in the side-stream evaluation of needs.

Lapland EU's model region

7/2014 

European Commission's selection: Lapland EU's model region in sustainable processing of natural resources

The FISS model

10/2014

FISS workshops, Finland benchmarking, business potential

Recognition for work

21 September 2016

Work carried out by the Kemi–Tornio region & Lapland and Digipolis and partners: Key project of Sitra's Finnish circular economy action plan

Development of operations

2014

Side-stream recognition tool development together with industries across sectoral boundaries. Development of measures furthering the systematic process and taking the matter forward

27 side-stream recognition, total volume:

1.4 million tonnes annually =  Over 100 trucks daily

Prioritisation of development tasks

4/2013

Prioritisation of development tasks with key players of industries and industrial services

Expansion of operations

2015-2016

Entire Lapland's big industries involved in development. Synergies between mines and the processing industry, and entry of new service businesses. Expanding the process to northern Finland, northern Sweden and northern Norway.

2017 

Implementation of Sitra's action plan

THE FUTURE OF THE CIRCULAR AND BIOECONOMY IN LAPLAND

DIGIPOLIS



4,000

The Kemi-Tornio industries currently employ 4,000 people in the region. With future investments in the bio- and circular economy (such as Boreal Bioref, Kaidi), the employment effects in northern Finland are estimated at 2,000 persons.



1.7 million

Annually the Kemi-Tornio industries produce tonnes of industrial byproducts

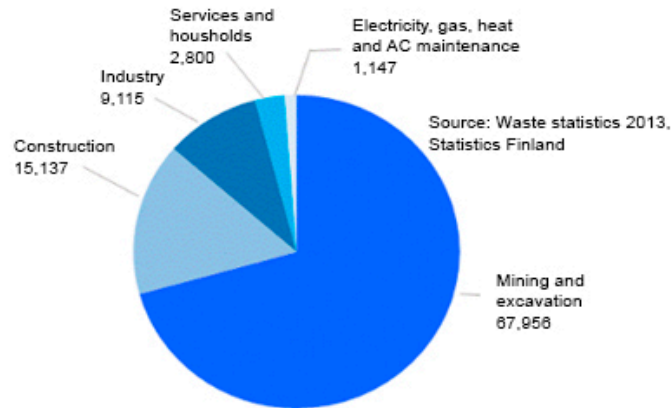
Utilisation categories include neutralisation, circulation of nutrients, excavation, landscaping, soil enrichment, building products, water treatment.



From waste into profitable business



Finland has great potential to utilise industrial side streams (94 million t/a), which are currently classified as waste.



Source: Waste statistics 2013, Statistics Finland

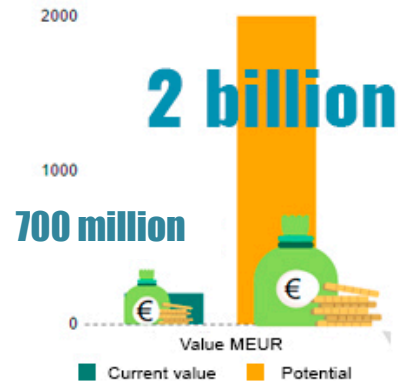
96% of waste is non-household generated.

VISION

Lapland world's leading arctic bio- and circular economy region

Business potential

The current value of Lapland's industrial symbiosis and the potential of the bio- and circular economy



CE-approved recycled materials from industrial side streams:

The annual use of ferrochromium slag in road construction (400,000 tonnes) saves 600,000 tonnes of virgin gravel and rock aggregate and reduces road construction carbon dioxide emissions by 200,000 tonnes.

Source: Outokumpu plant in Tornio

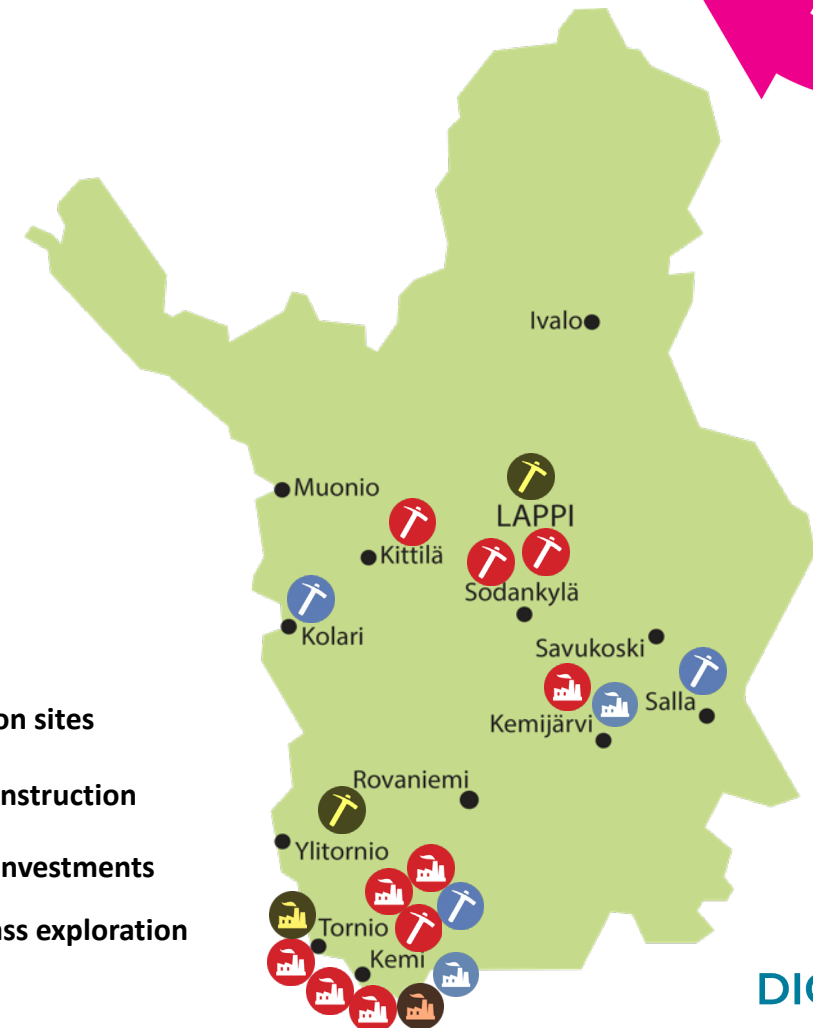
Kemi-Tornio circular economy Ecosystem



Utilisation of the arctic natural resources – Lapland's Arctic Industry

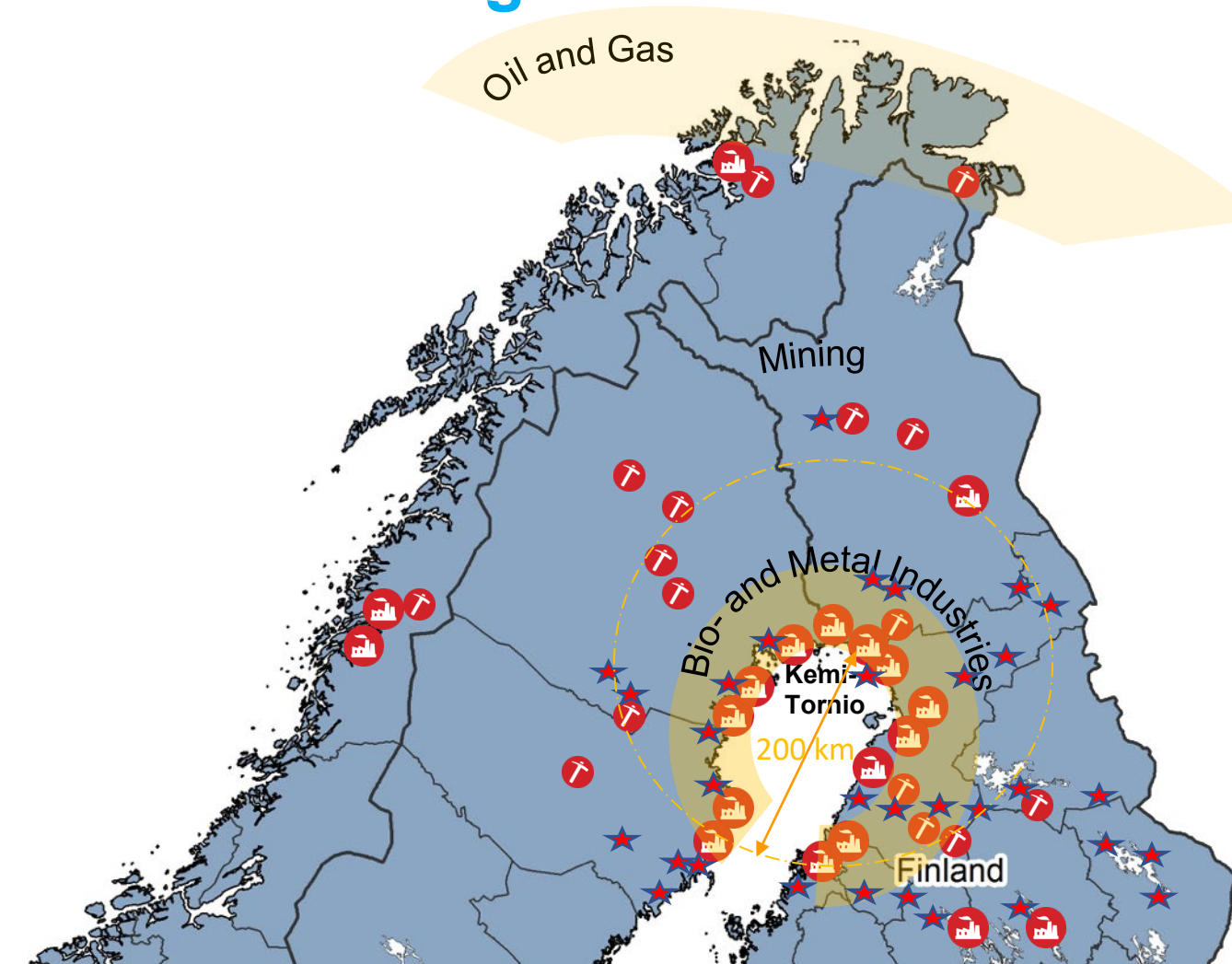
- Arctic Spring, Investment boom in Arctic regions
- Industrial- and mining service companies receive orders worth of hundreds of millions.
- International-industry standards, HSEQ
- Cleantech – growing need of sustainable solutions
- Enhancing Circular Economy
- Internationalization in home market, glocalization
- Internationalization in the surrounding countries
- Own products and services

-  **Production sites**
-  **Under construction**
-  **Planned investments**
-  **World class exploration projects**



Nordic Industries Story of Natural Resources Refining

- Global Markets
- Good Connections
- Arctic Solutions
- Cleantech Solutions
- 5 Bio Refineries
- 32 Sawmills
- 16 Mines
- 5 Metal Refineries
- 2 Aluminium Smelters
- 1 LNG Refinery
- 2 Chemical Plants



Opportunities and plans

Potential utilisation sites in Northern Finland area

Infrastructure Projects (incl. landfills and recovery sites)

- Mining Projects
- Other industrial projects
- Other projects

Mine projects in Northern Finland

- The cooperation has started with mines that are different stages of the life cycle
- Applications examples: construction, landfills, mine fillings, neutralization etc.

Investment potential and job creation in Kemi-Tornio and Lapland

- 16 different IS investment projects
- Biggest ones:
 - Metsä (in Kemi) and
 - Boreal Bioref (in Kemijärvi) biorefineries are CE and IS cases,
 - Total Investments Apr. 2 billion €
- Over 2000 new employees in potentially circular value chains - ecosystems

Digipolis key actor in Finland's Circular Economy roadmap



THIS IS HOW WE BUILD CIRCULAR ECONOMY IN FINLAND

Technical loops

Competitive advantage from the decreased use of virgin raw materials and long lifecycle of materials and products.

Key projects:

- **The Arctic industries ecosystem and Kemi-Tornio circular economy innovation platform. (Digipolis Oy)**
- Circular economy demo plant for waste electrical and electronic equipment. (Technology Industries of Finland)

Plans

- Making pilots, scale-ups and investments to happen, process of cluster funding
- Tighter cooperation and benchmarking through Scandic & European networks
- More resources through strategic alliance with Lapland UAS and growing capacity
- Modern cluster approach and cooperation
- Efficient development/funding tools
- Establishment of Centre for industrial circular economy
- Lapland UAS: CE curricula starts on 2018
- EU Alliance

Finnish industrial circular economy centre to be established in Kemi

- Focus is in the circular economy and the bioeconomy
- In partnership with the Finnish Innovation Fund Sitra, City of Kemi, Digipolis – Kemi Technology Park and Lapland University of Applied Sciences
- First industrial circular economy centre in Finland with national level mandate
- Virtual network of industry, university and development experts
- **Aims of the centre:**
 - National level
 - To promote education and competence in the industrial circular economy across the whole of Finland
 - To spread operating models of the Kemi region's industrial circular economy throughout Finland
 - To boost the successful circular economy development work that Digipolis – Kemi Technology Park has carried out and to generate vitality for the city of Kemi and for the whole of Finland
 - City of Kemi and Lapland level
 - To create new investments and jobs – Industry modernization
 - Help investments to be more sustainable and efficient
 - Lapland is Europe's model region for the sustainability: modern cluster development in the sustainable refinement of natural resources
 - Establishing common systematic operational culture → Activation and cooperation of authorities, municipalities, industry, industrial services etc.

Kemi CE Centre Advisory Board

1. Martti Sassi, Senior Vice President – Head of Operations, Outokumpu Tornio Works
2. Juha Mäkimattila, Mill Director, Stora Enso Veitsiluoto Mill
3. Kari Ala-Kaila, Vice President – Technology , Metsä Fibre
4. Mikko Korteniemi, General Manager, Agnico Eagle Finland Kittilä Mine
5. Jukka Jokela, General Manager/Project Manager, Anglo American - Finland AA Sakatti Mining
6. Jari Hietala, National Division Leader, Eurofins Environment Testing
7. Juha Koskinen, R&D Manager, Tapojärvi Oy/ Hannukainen Mining Oy
8. Tuula Sivonen, Regional Manager, The Federation of Finnish Technology Industries
9. Kimmo Heikka, Managing Director, Kemin Digipolis Oy
10. Heino Vasara, Sector Manager, Centre for Economic Development, Transport and the Environment
11. Eija Virtasalo, Head of Financial Unit, Centre for Economic Development, Transport and the Environment
12. Eira Luokkanen, Head of Unit – Environmental Protection, Centre for Economic Development, Transport and the Environment
13. Jyri Seppälä, Director – Centre for Sustainable Consumption and Production, Finnish Environment Institute (SYKE)
14. Eero Yrjö-Koskinen, Secretary General, Finnish Network for Sustainable Mining and Director, Green Budget Europe
15. Riikka Aaltonen, Senior Adviser – Mineral Policy, Enterprise and Innovation Department, Ministry of Economic Affairs and Employment
16. Kari Herlevi, Project Manager – Circular Economy, Sitra
17. Nani Pajunen, Leading Specialist – Circular Economy, Sitra
18. Olli Dahl, Professor, Aalto University, Clean technologies research group
19. Riitta Rissanen, Managing Director, Lapland University of Applied Sciences
20. Tero Nissinen, Chair, Mayor, City of Kemi

Arctic Industry & Circular Economy Cluster

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SPINVERSE Manga Lng KAIDI
EIGENOR
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Korkkälä Kemi Shipping Hannukainen Mining
NORR HYDRO akkoy TAPOJÄRVI KEITELE group
SAVATERRA SAVA GROUP BOREAL BIOREF BIOJALOSTAMO
aromtech PALSATECH SANGEN NTH service AHMA
KEMIJOKI KEMIJÄRVI Agria Lappi
Forest of Lapland STYRUD HAVATORGO
eventum DEKRA KAIVOSVASTUU SITRA Motiva Teknologiateollisuus

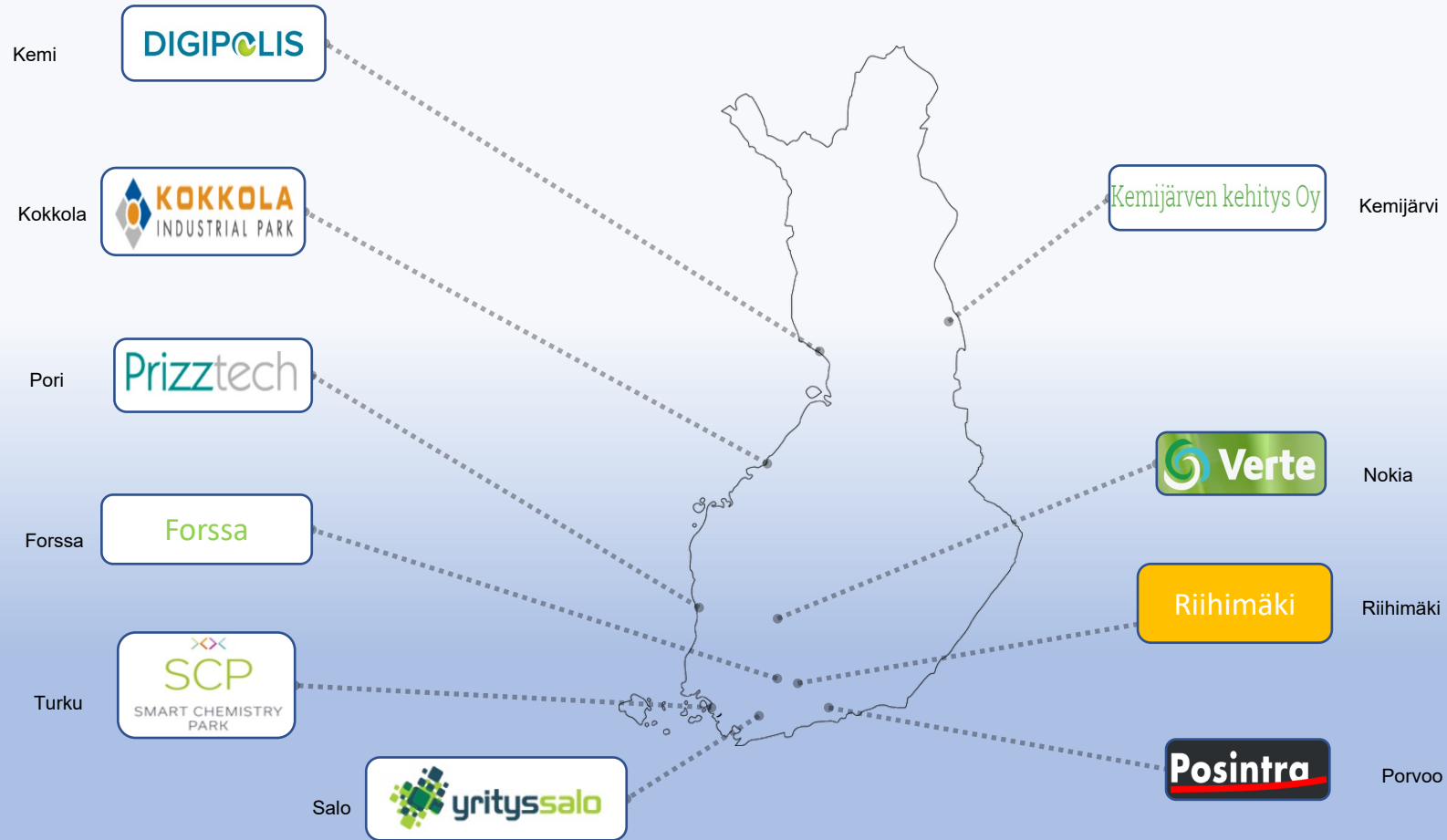
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Lapin AMK LAPPIA
DIGIPOLIS KEMI TEAM BOTNIA OY
Rovaniemen Kehitys REGIONAL COUNCIL OF LAPLAND
Tervola Kittilä YLITORNIO
Lapland Chamber of Commerce

LAPLAND Above Ordinary

SILVER Cluster Management Excellence
DEDICATED TO CLUSTER EXCELLENCE

Sustainable exploitation of arctic natural resources

The Finnish Network of Eco-Industrial Parks





EUROPE'S FIRST INTELLIGENT BICYCLE AND WALK PATH USING INDUSTRIAL RESIDUES



Alueelliset Innovaatiot ja kokeilut



Biofuelrefinery project in Kemi





CENTRE FOR CIRCULAR ECONOMY

LAPLAND
Above Ordinary



Saari / Stora Enso



Outokumpu



Lappeen Group

Thank You!

Interested in to do co-operation?

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SILVER



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DIGIPOLIS

Leverage from
the EU
2014-2020



European Union
European Regional
Development Fund