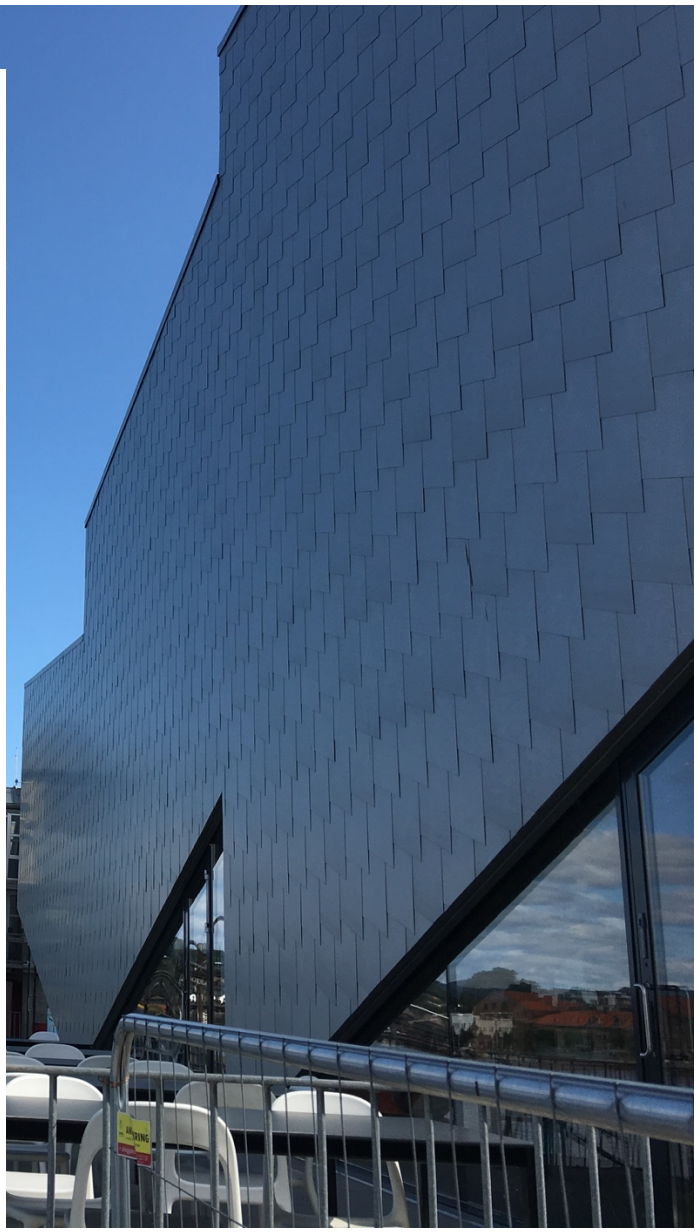
SecREEts Citizen Lab



SecREEts

Secure European Critical Rare Earth Elements

This project has received funding from the European Union's horizon 2020 Research and Innovation Programme under Grant Agreement No 776559

CONFIDENTIAL – for SecREEts partners and European Commission only

Porsgrunn, 21 August 2019.

Led by Prospex Institute
With REEtec, SINTEF, Vekst i Grenland, Yara.

About SecREEts

SecREEts is a project receiving funding from the European Commission Horizon 2020 programme for research & innovation. It aims to establish a secure and stable supply of Rare Earth Elements (REEs) in Europe, using sustainable extraction methods from European apatite sources used in the production of NPK fertilisers. SecREEts partners are developing pilot processes for a sustainable extraction, separation and manufacturing of REEs to create permanent magnets for application to areas such as electric vehicles, industrial motors, wind turbines, with replication potential in consumer products or medical equipment. The main objective of SecREEts is to set up a new integrated European value chain for extraction, refining and production of REEs.

SecREEts partners are:
SINTEF AS – Norway – Coordinator
Yara International ASA – Norway – Industrial pilot
REEtec AS – Norway – Industrial Pilot
Less Common Metals Ltd – UK – Industrial Pilot
Vacuumschmelze GMBH & Co kg – Germany
Quantis – Switzerland
Institut National de l'Environnement et des Risques INERIS – France
Prospex Institute asbl – Belgium

Please find all relevant information and latest updates on the project website: www.secreets.eu

Citizen Engagement in SecREEts

As part of the SecREEts Public Engagement strategy, Prospex Institute organises yearly Citizen Labs, to consult local communities in areas where industrial partners are established. Through identifying civil society organisations, media groups, political parties and public authorities, Prospex Institute facilitates discussions between local communities and industrial partners to highlight challenges and opportunities related to SecREEts throughout the whole duration of the project. The outputs of these consultations will allow SecREEts to co-create a level of social awareness around the project and incorporate local stakeholders' feedback into future developments.

The first Citizen lab in Porsgrunn (Norway) took place on 21st August 2019, at the DuVerden Sjøfartsmuseum and Vitensenter. Interpretation from/to English-Norwegian was available. This event was organised in parallel to the opening of a new exhibition on Rare Earth Elements (REE) at the museum, in collaboration with Vekst i Grenland. Together with REEtec, SINTEF, Vekst i Grenland and Yara, Prospex Institute introduce SecREEts to a group of local stakeholders. The team used interactive exercises based on explanatory presentations to help participants understand challenges related to REE supply in European along with the role and impact of SecREEts both at a European and local level.

For this event, Prospex Institute worked with REEtec, Vekst i Grenland and Yara to map the relevant stakeholders. Overall, 54 stakeholders were mapped based on categories and quotas defined together with Yara and REEtec, for a balanced group of stakeholders as illustrated in the table below.

	Reference Quota	Mapped quotas	Difference
Industry			
Trade Unions	**1**	4	3
Business organisations	**1**	12	11
Research, Academia Innovation	**1**	7	6
Civil Society			
Youth Education	1	3	2
REE end-users	2	1	-1
Local media	2	7	5
Political life			
Local governance	2	11	9
Political Parties	2	6	4

GENDER			
Male	*8*	30	22
Female	*8*	14	6
Not specified	*0*	2	2
AGE GROUP			
16-29	*5*	0	-5
30-49	*5*	9	4
Over 49	*5*	6	1
Not specified	*0*	1	1

Prospex Institute received registrations from 31 stakeholders. As illustrated in the table below, all quotas were met, apart from the presence of local media and stakeholders aged 16-29, an absence which was compensated by the presence of youth education professionals in the meeting. Due to the nature of the local demography, a wide range of business stakeholders registered.

	Reference Quota	Registered Quotas	Difference
Industry			
Trade Unions	**1**	3	2
Business organisations	**1**	13	12
Research, Academia Innovation	**1**	6	5
Civil Society			
Youth Education	1	2	1
REE end-users	2	3	1
Local media	2	0	-2
Political life			
Local governance	2	6	4
Political Parties	2	2	0
GENDER			
Male	*8*	18	10
Female	*8*	12	4
Not specified	*0*	1	1
AGE GROUP			
16-29	*5*	0	-5
30-49	*5*	11	6
Over 49	*5*	18	13
Not specified	*0*	2	2

In accordance with the European General Data Protection Regulation, participants were requested to fill in a registration form online ahead of the event, with personal information and consent for the sharing of their personal data among SecREEts partners and permission for us to take pictures and us them as part of SecREEts communication activities. To ensure transparency, participants were explained at the start of the Citizen Lab that the meeting is public and information presented by the SecREEts team during the event can be shared externally.

Presentations

1 – Introducing Rare Earth Elements

The meeting started with an introduction to the interpreters in the room, to ensure all members of the audience would be aware that they can freely speak in Norwegian. The moderator Martin Watson from Prospex Institute introduced himself. Then, after presentation of the agenda and before talking about SecREEts itself, all partners were given the opportunity to briefly introduce themselves and their organisation. These welcome words were then followed by a quick introduction to what Rare Earth Elements are, to ensure that non-scientific members of the audience would be able to follow the presentations.

Sven Røst led the presentation on Rare Earth Elements, starting by briefly talking about REEtec:

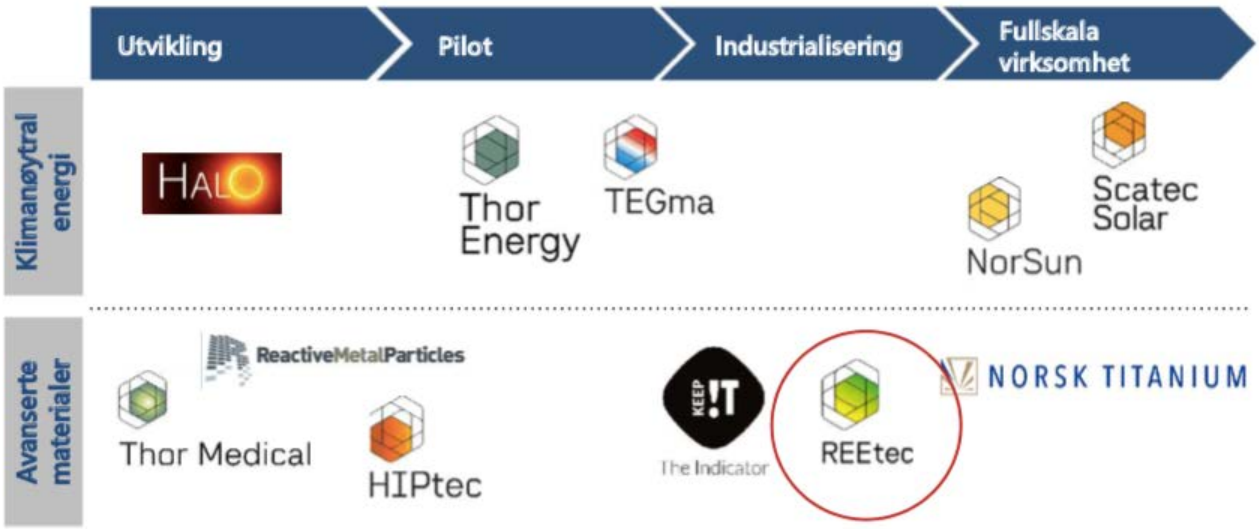
Tre børsnoteringer...

Scatec er etablert av Alf Bjørseth og eies av hans familie.
Så langt har selskapet vært sentralt i etableringen av tre selskap som nå er børsnotert:

- PhotoCure etablert i 1993, notert på Oslo Børs i 2000
- Renewable Energy Corp (REC) - 2000, notert på Oslo Børs i 2006
- Scatec Solar – 2007 notert på Oslo Børs, oktober 2014

Scatec

Vårt porteføljе



SecREEts
Secure European Critical Rare Earth Elements

Hva er sjeldne jordarter?

Hva brukes de til?

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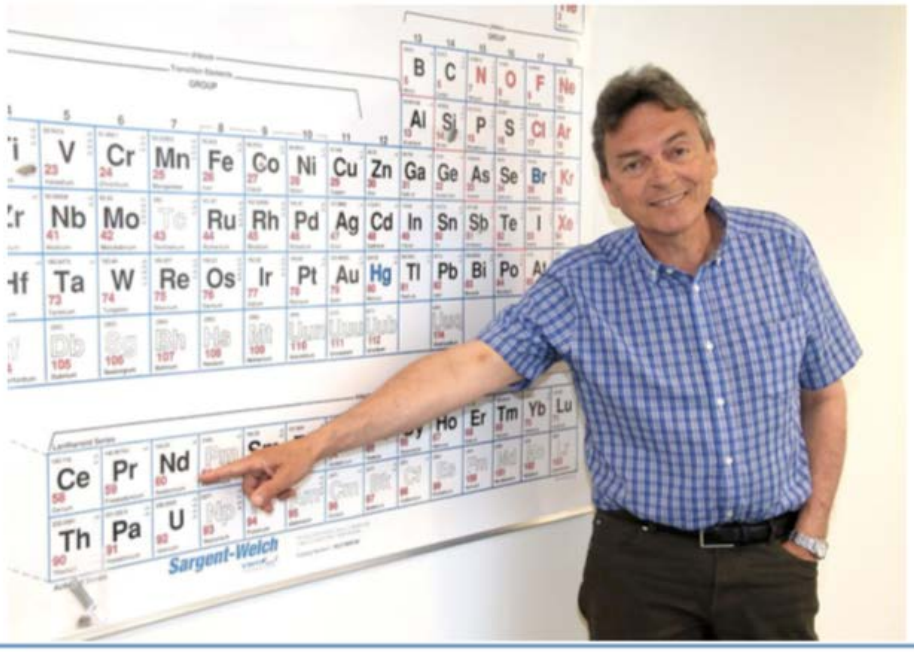
REEtec



SecREEts

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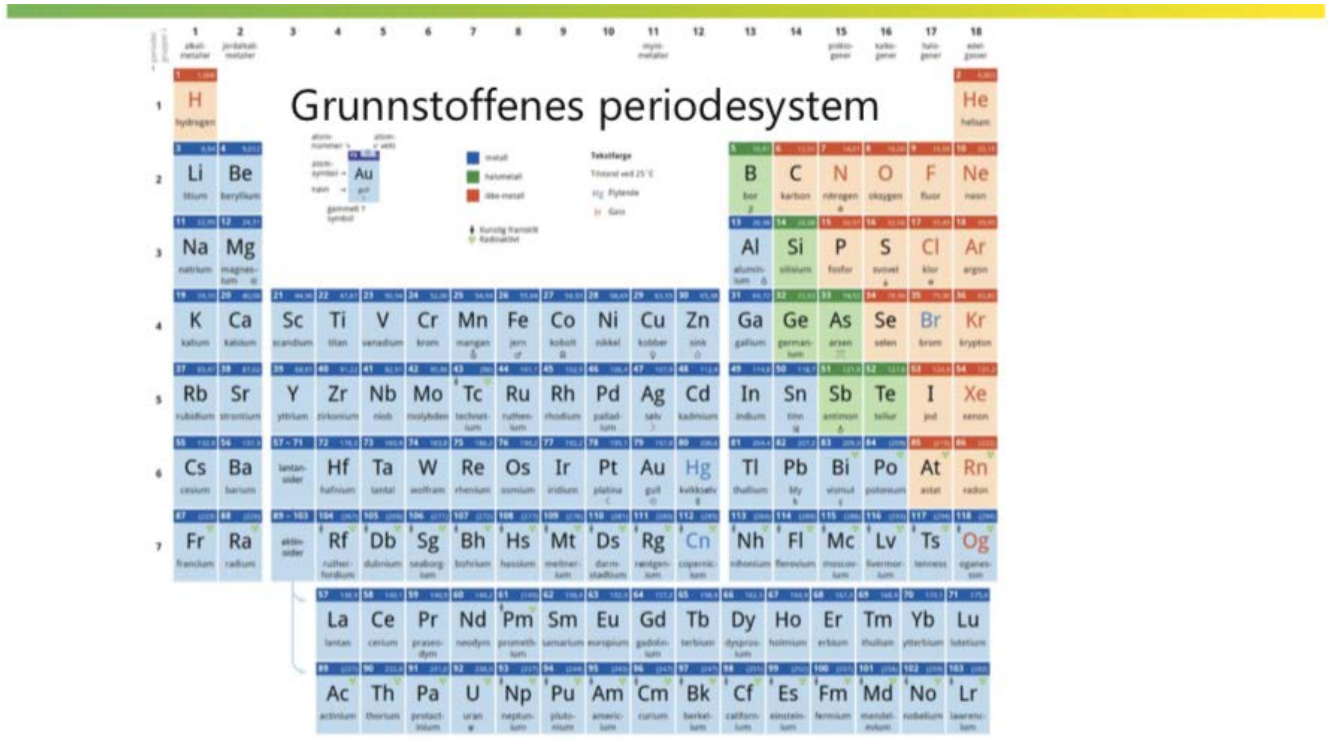
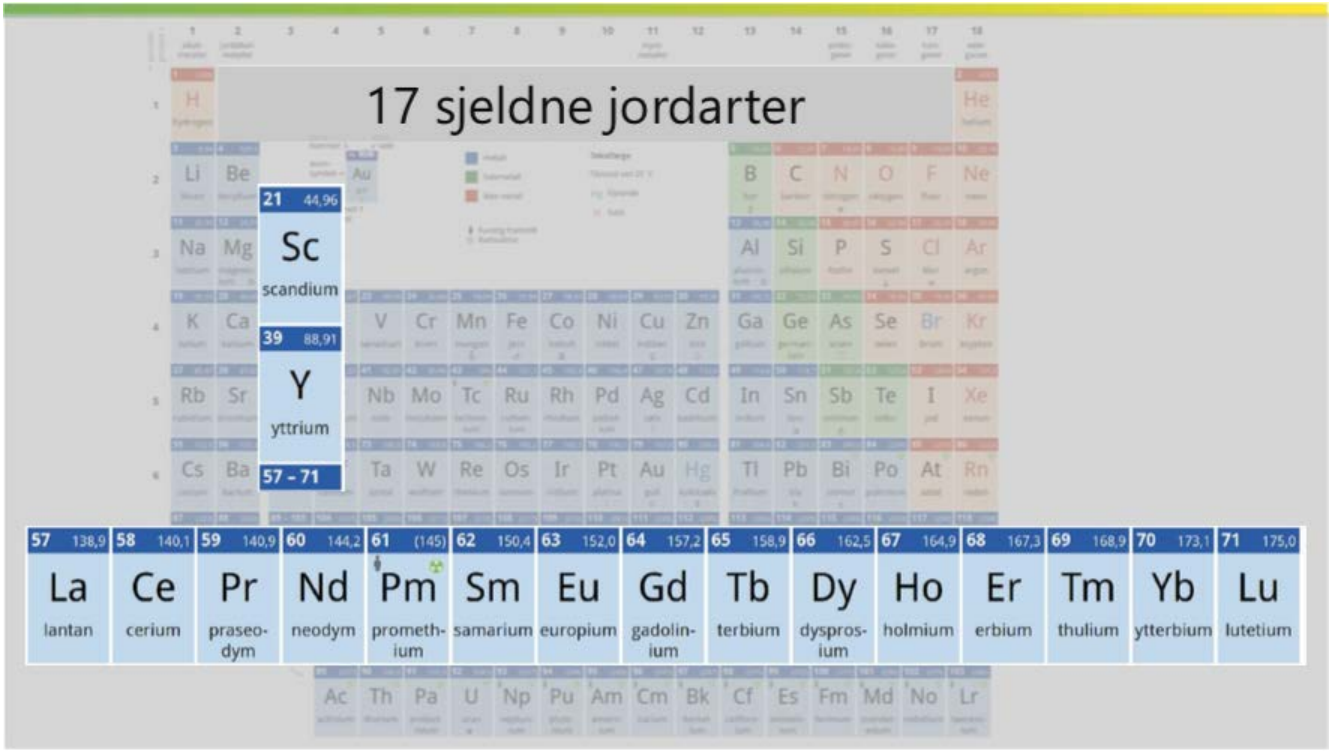
REEtec


Grunnstoffenes periodesystem


17 sjeldne jordarter
21 44,96 Sc scandium
39 88,91 Y yttrium
57 - 71
57 138,9 La lantan
58 140,1 Ce cerium
59 140,9 Pr praseo-dym
60 144,2 Nd neodym
61 (145) Pm prometh-ium
62 150,4 Sm samarium
63 152,0 Eu europium
64 157,2 Gd gadolin-ium
65 158,9 Tb terbium
66 162,5 Dy dyspros-ium
67 164,9 Ho holmium
68 167,3 Er erbium
69 168,9 Tm thulium
70 173,1 Yb ytterbium
71 175,0 Lu lutetium

Sjeldne jordarter er ikke så sjeldne…

- Kunne vært kalt: «sjeldent vanskelig å separere-metaller»
- Elementene opptrer som regel samlet – og egenskapene er veldige like
- Slett ikke sjeldne!
  - Mer cerium (lantanoiden med høyest forekomst) i jordskorpa enn det er kopper
  - Finnes mer av den sjeldneste lantanoiden thulium i jordskorpa enn det finnes sølv
- Det tok lang tid å oppdage grunnstoffene som ligger mellom Barium (Ba nr. 56) og Tantal (Ta nr. 73).
- Først i 1913 forsto man at det skulle være 14 grunnstoff mellom Lantan (La nr. 57) og Hafnium (Hf nr. 72) – og ikke kun to som man hadde trodd

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Hvorfor er sjeldne jordarter interessante?

- Mange og varierte bruksområder – i mange ulike industrier
- Essensielle i mange ting vi benytter daglig
  - Elektronikk og annen high-tech
  - Fra poleringsmidler og lyspærer til avanserte medisinske lasere
  - Bidra til å gi vanlige metaller «super-egenskaper»
- Nye, klimavennlige løsninger – i stor grad avhengige av sjeldne jordarter
  - Spesielt magneter er viktige – mindre og sterkere

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2 – How do we use Rare Earth Elements?

After this brief introduction, participants, including the organisers and presenters, were asked to introduce themselves and to mention an object they own which they think contains Rare Earth Elements.

What do you own that contains REE?

- Hybrid car (mentioned 3 times)
- Mobile phones (mentioned 3 times)
- I-Phone or I-Pad
- Electric cars (mentioned 4 times)
- Wind power
- Catalyser
- Electrical equipment at home
- Surrounded by REE at home
- Involved in research around REE element, always surrounded by them
- Electric lift for the car
- Headphones
- Watch
- Sensors of LED
- No other example (mentioned 3 times)

Sven Røst from REEtec followed up on this question to introduce a list of REE applications for industrial and general consumption:

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Hvor benyttes sjeldne jordarter?

Hva brukes de til?

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REEtec

Industri og produkter der sjeldne jordarter er viktige

SecREEts

Flyindustri
- Kabintrykk, aircondition
- Varmebestandige motordeler
- Kommunikasjon

Bilindustri
- El-motor / hybrid
- Sensorer
- Katalysator
- UV-glass
- Polering

Kraftproduksjon
- Vindturbiner
- Hydrogenlagring

Kjemisk industri
- Pumper og koplinger
- Petroleumspalting

Forsvarsindustri

Medisinsk industri
- Scannere/MRI
- Kontrastvæske
- Lasere

Data / IT
- Lagringsmedia
- Fiberoptikk
- Høyttalere / LCD-skjermer
- Signalprosessering

Hus og hjem
- Hvitevarer
- Varmepumper
- Aircondition
- TV-skjermer
- Høytalere
- Farget glass
- Sparepærer

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REEtec

Kilde: Teknisk ukeblad

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3 – Why run a project on Rare Earth Elements?

At that point, the whole audience was fully aware of the omnipresence of REE in their daily life, and how they are used. They were then introduced to reflect on where REE come from with the following question:

Which countries in the world have the largest deposits of REE?
Answers from the audience:

- China
- Australia
- Africa
- Cornwall
- Sweden
- Russia
- Canada
- South America

Responses were collected on a map using yellow stickers. Then, Mohan Menon from Yara was then invited to comment the answers, and asked:

Which countries in the world manufacture REEs?
Answers from the audience:

- La Rochelle, France
- Malaysia
- China
- Estonia
- US (someone commented that it wasn't the case yet)

Mohan put red dots on the yellow stickers corresponding to the right answers, emphasising that China was manufacturing more than **90%** of the world REE. Then, the audience was asked the following questions:

Which countries in the world are the largest consumer of REEs?
Answers from the audience:

- Europe
- USA
- China

- Japan

Responses were collected on a map using blue sticker notes. Looking at the results on the map, the audience could clearly see the strategic geopolitical importance of REE, and the imbalance between manufacturing countries and consumers.

Once the global context of REE and their strategic importance was made clear to everyone, Arne Petter Ratvik from SINTEF was invited to make a general presentation of the SecREEts project:

SecREEts Samfunnsmøte Du Verden - Porsgrunn

SecREEts

Secure European Critical Rare Earth Elements

Arne Petter Ratvik

2019-08-21

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SINTEF

Sikre Europa kritiske sjeldne jordarter

Secure European Critical Rare Earth Elements

SecREEts

- Sjeldne jordarter (REE) er kritiske elementer for høyteknologibedrifter i Europa
- Europa er i dag 100 % avhengig av import
- Stans i eller redusert tilgang til sjeldne jordarter vil gi svært negative utslag for europeisk produksjon av avanserte produkter, i tillegg til de negative effektene dette vil ha for sysselsetting
- SecREEts løser noen av disse utfordringene

http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_nl

Average 2010-2014

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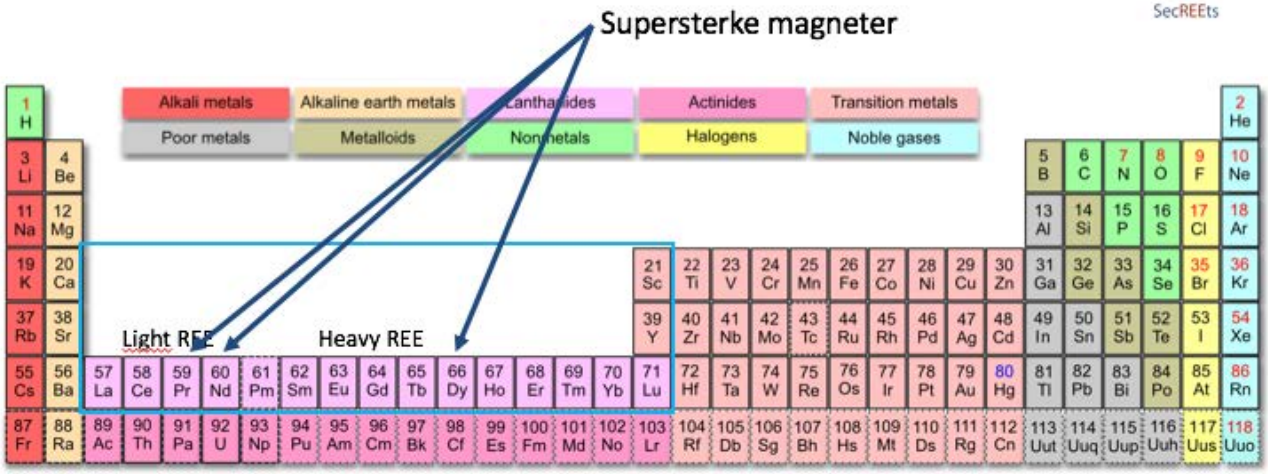
SINTEF

Sjeldne jordarter



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SINTEF

SecREEts – Målsetninger

- Etablere en stabil og uavhengig produksjon av kritiske sjeldne jordarter i Europa
- Utgangspunkt i utvinning fra fosfatstein som benyttes i produksjon av fosfatgjødsel
- Pilotprosesser basert på nyskapende ekstraksjon og separasjon av de sjeldne jordartselementene etterfulgt av produksjon av sjeldne jordartsmetaller for spesialmagneter
  - Hovedfokus på Pr (praseodym), Nd (neodym) and Dy (dysprosium) metaller som benyttes i sterke, permanente magneter
  - De andre sjeldne jordartene vil bli tilgjengelig for andre anvendelser – f.eks. medisinsk diagnostikk (Ga), katalysatorer (La, Ce) og forbrukerelektronikk (lyspærer, LED-skjermer, etc.)

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SINTEF

Deltakere

SecREEts

- SINTEF AS – Norge – Koordinator
- Yara International ASA – Norge – Industripilot
- REETEC AS – Norge – Industripilot
- LESS COMMON METALS LIMITED – England – Industripilot
- VACUUMSCHMELZE GMBH & CO KG - Tyskland
- QUANTIS - Sveits
- INSTITUT NATIONAL DE L'ENVIRONNEMENT ET DES RISQUES (INERIS) - Frankrike
- PROSPEX INSTITUTE - Belgia

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SINTEF

Fosfor i gjødselprodukter

SecREEts

- Viktigste fosforkilde for gjødsel er apatitt, $Ca_{10}(PO_4)_6(OH,F,Cl)_2$, også kalt fosfatstein
- Utvinnes både fra vulkanske og sedimentære bergarter
  - Årlig produksjon er i området **150 millioner tonn**
- Alle apatittforekomster inneholder sjeldne jordarter
  - Vulkanske bergarter inneholder betraktelig høyere konsentrasjoner av sjeldne jordarter enn sedimentære bergarter
- Vulkanske bergarter er gunstigst for produksjon av fosfatgjødsel da de inneholder lite tungmetaller og radioaktive elementer sammenliknet med sedimentære bergarter

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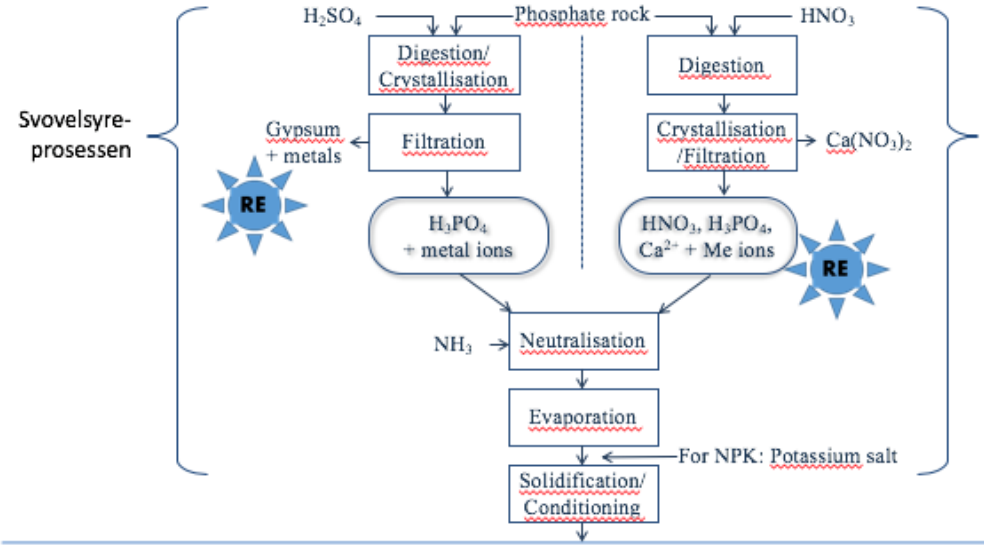
SINTEF

NPK Gjødselproduksjon



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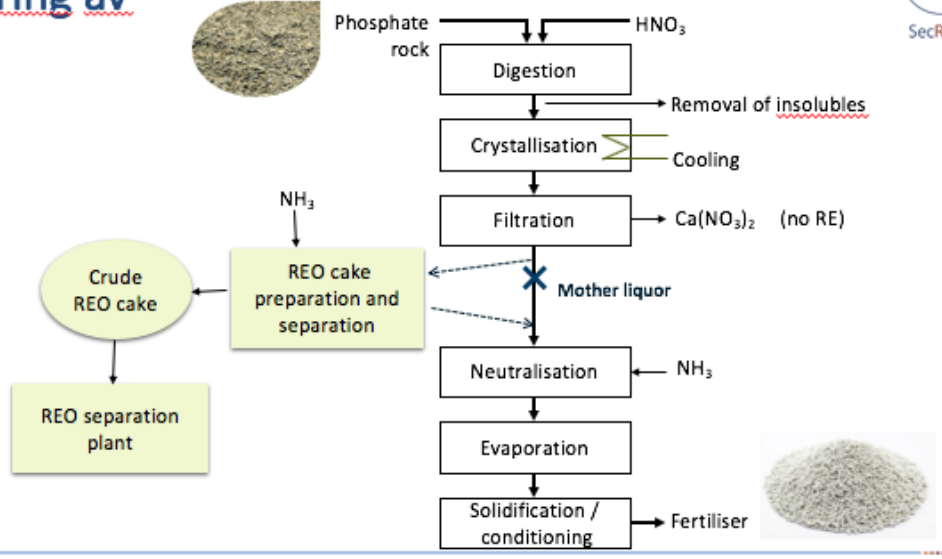
Ekstrahering av REE



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Separasjon av REE – Nyskapende, utprøvd teknologi

SecREEts

Utstyr

- Beskyttet separasjonsmetode
- Enklere enn tradisjonell væske-væske-ekstraksjon

Prosess

- Høy renhet etter ett separasjonstrinn
- Kostnadseffektiv

Robust – ingen utslipp – standard tilgjengelig utstyr

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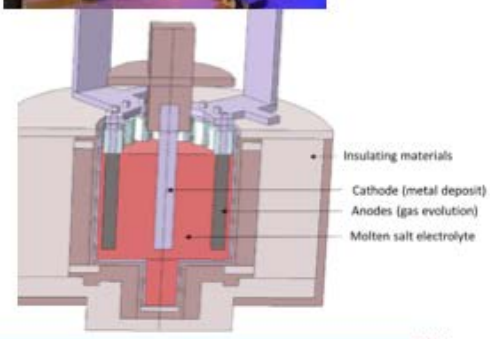
SINTEF

Elektrolyse for produksjon av metallene

SecREEts

- NdPr og DyFe legeringer
- Nyeste elektrolyseteknologi
  - Industriell størrelse
  - Automatisert
  - Høy energieffektivitet
  - Lave utslipp
- Flytende metal blir båndstøpt i tynne flak
- Hydrogen bryter opp flakene til partikkelstørrelse som er egnet for magnetfabrikkering



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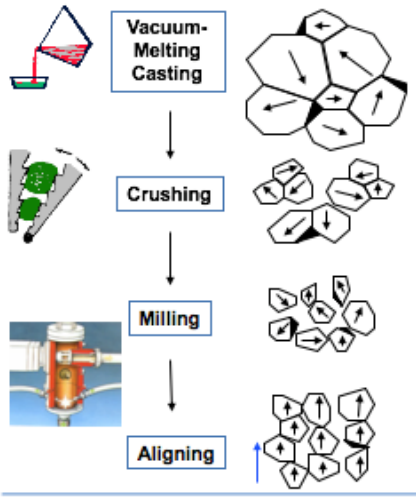
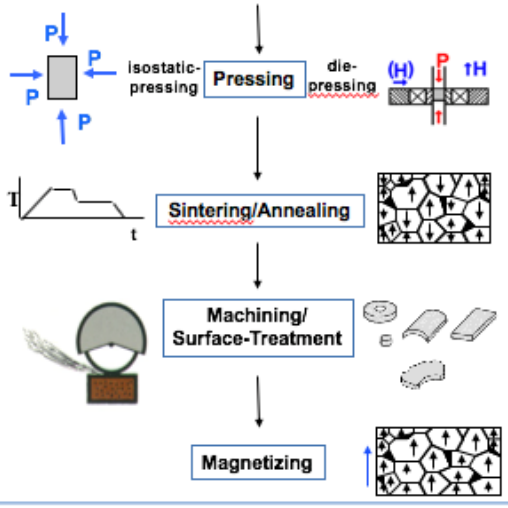
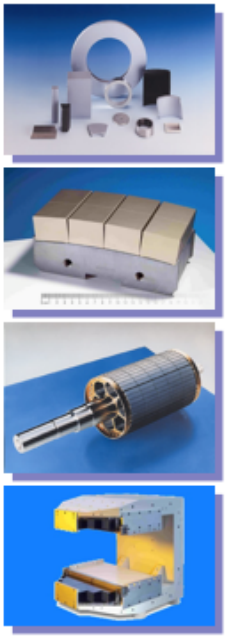
SINTEF

Prosesstrinn for å lage REE magneter







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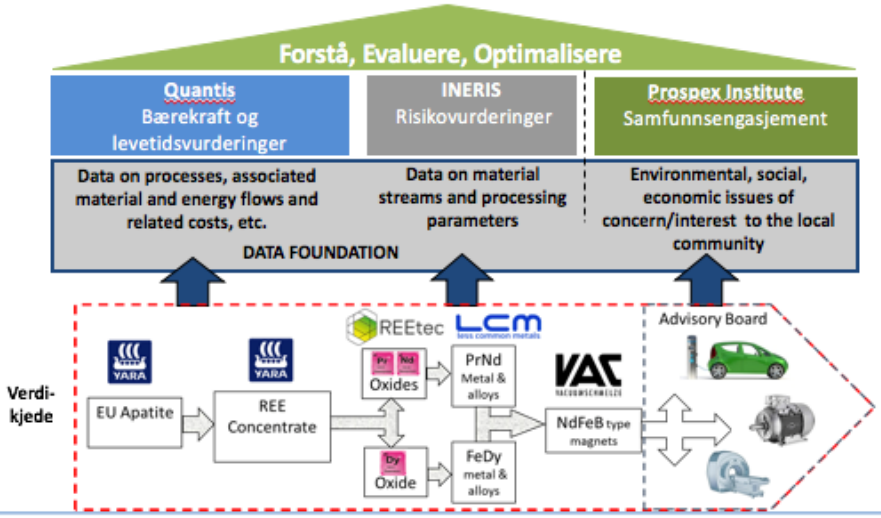
SINTEF

Bærekraft, risiko og samfunnsengasjement

SecREEts



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SINTEF

Oppsummering

- Industrielle pilotprosesser basert på nyskapende ekstraksjon, separasjon og framstilling av magnetmetaller
- Effektiv og livskraftig bruk av europeiske råmaterialer
- Helhetlig verdikjede i Europa
- Industrialisering har et potensial til å produsere 3000 tonn sjeldne jordarter per år

- **Budsett**: € 19,388,750
  EC Bidrag: € 12,880,031
- **Varighet**: 4 år
  (Juni, 2018 – Juni, 2022)

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SINTEF

3 – What will happen in Herøya?

After a general presentation of SecREEts, the audience was introduced to the different steps of the SecREEts value chain happening in Porsgrunn, with Yara and REEtec. Both Yara and REEtec's pilots are based at the Herøya industrial park and their work forms the first two stages of SecREEts. Mohan Menon was invited to open this session with a presentation of Yara's work:

Yara og sjeldne jordartsmetaller:
Hvorfor skal gjødsel produsent Yara utvinne sjeldne jordartsmetaller

- Fosfatstein brukt som råstoff for gjødsel inneholder små mengder av sjeldne jordartsmetaller
  - Maksimal utnyttelse av råvarene og utvinne stoff som er strategisk viktig for Europa
  - Inert materiale i gjødsel
- Krav til utvinning prosess
  - Ingen innvirkning på gjødselproduksjon og gjødselkvalitet
  - Må være lønnsom for Yara
- Bli det full skala anlegg ?

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Yara pilot i SecREEts

- Mål: Bygge underlag for teknisk og økonomisk vurdering av investering i og drift av full skala anlegg
- Prosessen utviklet i lab skala og er klar for pilot testing
  - Forenklet prosess basert på 25 år gammel prosess brukt i Glomfjord
- Pilot anlegg i FGJ3
  - Sidestrøm fra gjødselproduksjon
  - Alt unntatt sjeldne jordartsmetaller sendes tilbake til gjødselproduksjon
    - Alle metaller separeres sammen
  - Prosessen inneholder et par ekstra trinn i eksiterende gjødselproduksjonsprosess
  - Skal driftes i ett år
  - Blanding av sjeldne jordartsmetaller sendes til REEtec for videre prosessering og separasjon

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Innvirkninger på nærmiljø

SecREEts

- God forutsetning for ny industri på Herøya
- Ikke forventet stor endringer for Yara Porsgrunn
  - Ingen økning i utslipp og støy
  - Liten eller ingen endringer i arbeidsplasser

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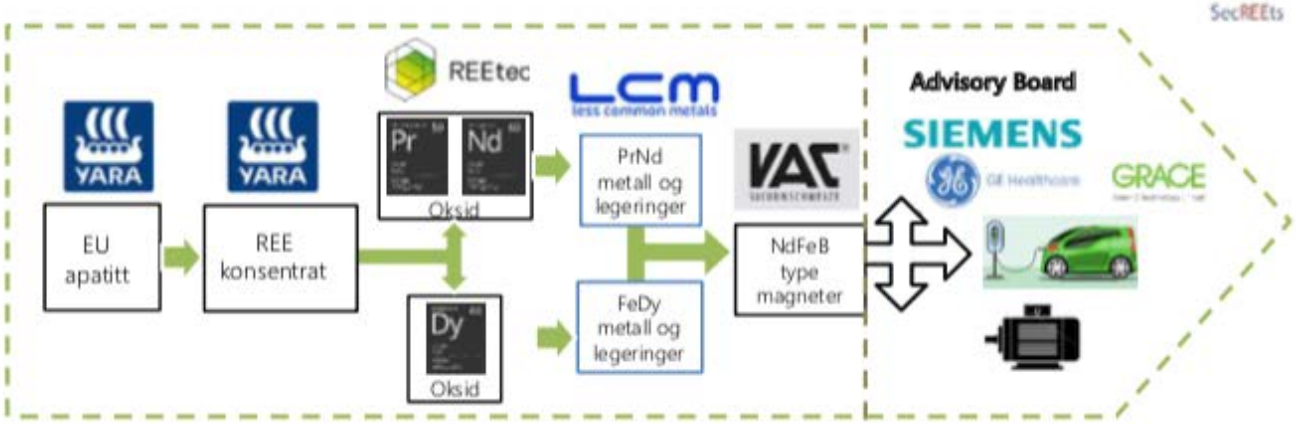
Then, Toril Roberg gave a presentation of REEtec's work in SecREEts:

SecREEts – Horizon 2020



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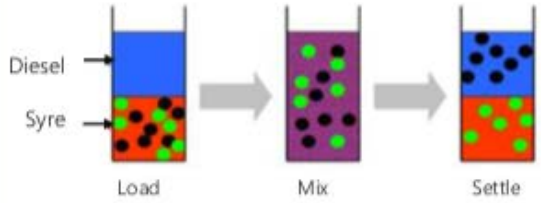
REEtec

Betydelige utfordringer med den konvensjonelle teknologien

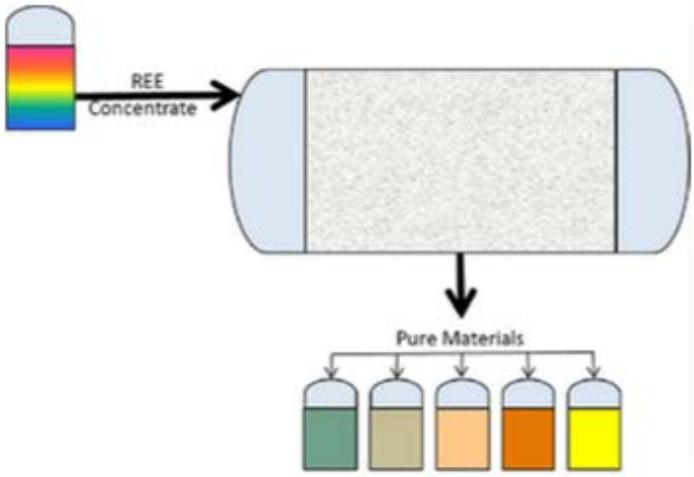
Veske-veske-ekstraksjon (LLE) utviklet på 1960-tallet:



- Bruker to vesker som ikke blander seg:
  - Diesel + organiske væsker
  - Syre og vann
- Et metall trekkes mer mot diesel + organisk væske enn andre metal
  - Gradvis separasjon av hvert av de 15 elementene ved å repetere prosessen (100'-1000')
- HMS-utfordringer med brann, fordampede gasser og avfall

- Separasjonsenhet og prosess skreddersydd det enkelte råmaterialet
- Separasjonsenhet og prosess dimensjonert for spesifikke renhetskrav
- Separasjonen oppnås ved bruk av hundrevis av enheter

Alle 15 jordartene separereres i et prosess-steg



- **Kostnadseffektiv**
  - Høy renhet oppnås etter kun *ett* separasjonssteg
- **Lave utslipp**
  - Resirkulerer og gjenbruker forbruksvarer
- **Fleksibel**
  - Samme prosess kan benyttes på ulike typer råvare
- **Robust**

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 776559

Våre produkter

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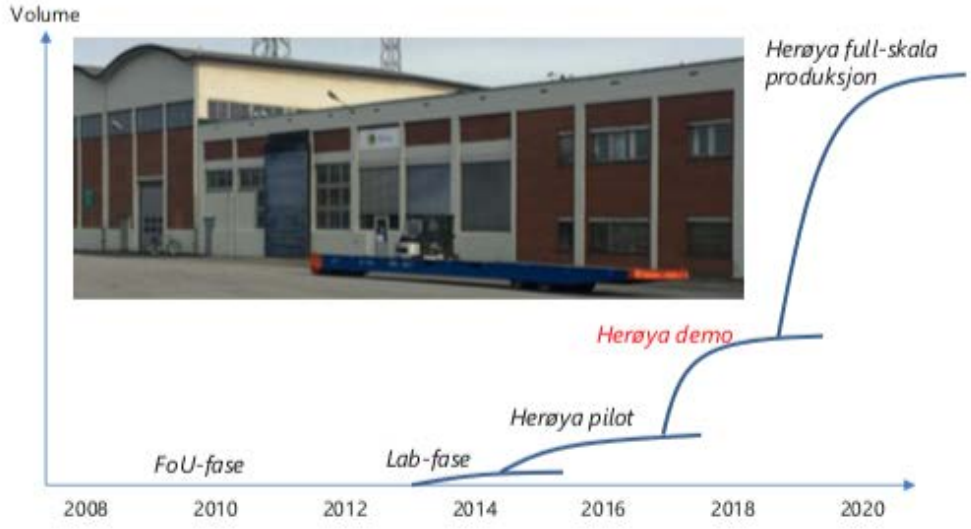
Stegvis industrialisering av prosessen



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Once the role of Yara and REEtec in SecREEts was clear, Helene Marion Norli, from Vekst i Grenland, gave a presentation outlining the work being done throughout the Telemark region on REE over the past years:

Vekst i Grenland er det regionale næringsutviklingsselskapet til grenlandskommunene (Skien, Porsgrunn, Siljan, Drangedal, Bamble og Kragerø).

Våre innsatsområder er:

- Nyskaping
- Bedriftsattrahering
- Koordinering og samarbeid

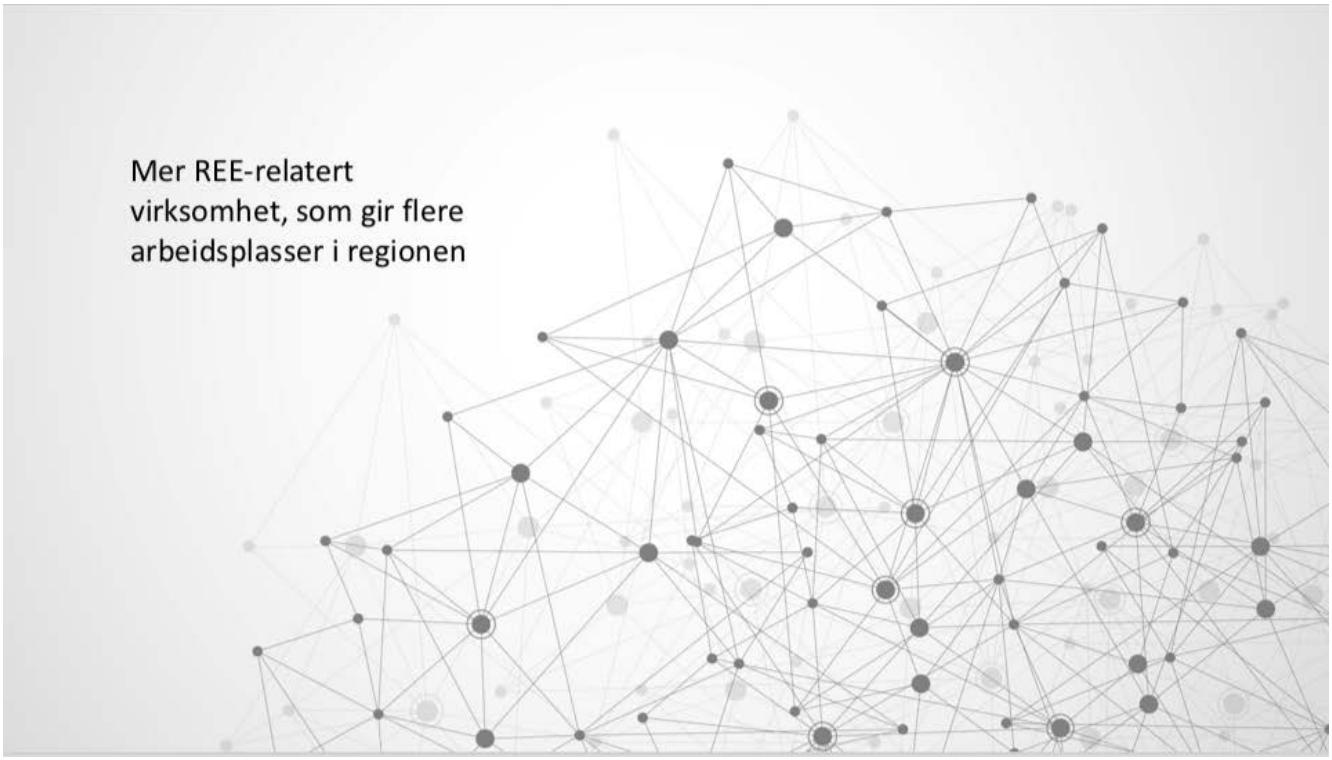
vekst i grenland

Telemark rommer flere aktører og aktivitet relatert til REE

Som bl.a.:

- REEtec
- EU-prosjektet SecREEts
- Sintef (Sintef Tel-Tek)
- Bergfald Miljørådgivere
- Fensfeltet – potensielt en av Europas største forekomster av REE
  - Regiongeologen og arbeidet med prøveboringene, samt den geologiske kartleggingen
  - REE Minerals, Fen Minerals, Norsk Mineral
- Tørdal i Drangedal
  - Regiongeologen og arbeidet med den berggrunnsgeologiske kartlegging
- Seram Coatings

vekst i grenland


Mer REE-relatert
virksomhet, som gir flere
arbeidsplasser i regionen


Utvikling av et målrettet næringsarbeid knyttet til REE:
Forstudie 1
Forstudie 2
Forprosjekt
Hovedprosjekt
(2år)
2016
2017
2018
2019
2020
vekst i grønland

Forprosjekt: Telemark som attraktivt etableringssted for bedrifter i verdikjeden for REE

Mål:

- Økt kjennskap regionalt og nasjonalt om betydningen av pågående aktivitet i Telemark og utviklingsmuligheter
- Dialog og informasjonsutveksling med 5-10 utvalgte bedrifter om Telemark som etableringssted

I samarbeid med:

vekst i grenland | SINTEF | MidtTelemark Næringsutvikling | HERØYA INDUSTRIPARK

vekst i grenland

Hva har vi gjort i forprosjektet?

Forankringsarbeid

- Dialog med relevante aktører
  - REE på agendaen på viktige møteplasser
  - Orienteringer/presentasjoner
  - En rekke mindre en til en møter
- Ulike egne arrangementer som workshops og utstilling på DuVerden
- Markedsføringsaktiviteter som kampanje i SoMe, nettsider, medieoppslag, videosnutter

Hva har vi gjort i forprosjektet?

Invest in-arbeid

- Oppsøkende aktivitet
  - Utviklet investeringsmuligheter/case
  - Oppsøkende aktivitet mot målbedrifter
  - Oppfølging
- Håndtert mottatte henvendelser om etableringsmuligheter
- Samarbeid med Invest in Norway

Hovedprosjekt: REE-regionen Telemark

Mandat under utforming

Hovedfokus:

- **Invest in-arbeid** med mål om etablering/investering av ny REE-virksomhet
- Utvikle nye case knyttet til REE og tilrettelegge for **etablering av prosjekter**
- Støtte opp om aktiviteter omkring **Fensfeltet**

I samarbeid med:

vekst i grenland | SINTEF | MidtTelemark Næringsutvikling | HERØYA INDUSTRIPARK

The floor was then open for participants to comment or ask questions. Participants were informed that questions would not be answered on the spot, but that they would all be recorded and brought back to the full SecREEts consortium to collect detailed accurate

answers in a public report later. Answers to the questions are available in Questions & Answers this report.

Engaging with Porsgrunn community

In the last session of the meeting, the audience was invited to team up in small groups of two or three to discuss the best ways to engage the local community in the future. They were handed suggestion forms with the three following questions:

What activities would you like to see from SecREEts in Porsgrunn/Telemark over the next years?

Answers from the audience:

- Establish research- and student projects.
- New jobs/companies based on circular economy.
- Attract new companies in the value chain.
- Good dialogue with local-/regional community and politicians.
- We need a marketing strategy of Grenland/Telemark as a “green” region (mentioned twice).

- Wealth creation and jobs.
- Contribute in building local suppliers.
- Strengthen the competence of the region.
- Knowledge sharing.
- EU-projects.
- Make REEtec's equipment accessible to other REE-projects. For example, urban mining.
- Establish operations at Herøya.
- Inform the local community about activities.
- Establish refining companies.
- Contribute to a better understanding of the market potential.
- Financial aid to extract/refine because of very high investment costs and high risk.
- Clarify the possibility of receiving raw material from Fensfeltet.

How can we best update you on developments of SecREEts?

Answers from the audience:

- Update the homepage (mentioned two times).
- E-mail (mentioned 5 times).
- Events like this/information meetings (mentioned 5 times).
- Briefing of the Council Senate and of mayors in context of the Grenlandssamarbeidet. It would be useful for the project with a good involvement of these actors.
- Media.
- Political arenas/foras.
- Through existing agglomerations/networks and tools.
- Trough Vekst Grenland (mentioned 2 times).
- Trough the municipality.
- Newsletters (mentioned two times).
- Facebook-site.

Who else should we engage in Porsgrunn/Telemark?

Answers from the audience:

- Relevant agglomerations.
- Innovation Norway.
- Industrial Green Tech.
- Norsk Mineral.
- REE Minerals Holding AS.
- Investors (mentioned 2 times).

Evaluations

At the end of the meeting, participants were handed evaluation forms. These forms are designed to help the SecREEts team get feedback on their public engagement strategy and the Citizen Labs more specifically, in order to improve future engagement activities. The participants were asked the following questions:

1. How do you rate the Citizen Lab in general?

Please mark:	Very good	Good	OK	Bad	Very bad	No opinion
Number of answers	9	8	2	0	0	0

Comments:

- Unnecessary with interpreter.
- English language is not a problem for communication in a group like this.
- Could have been more discussions about the challenges in the project and experiences so far. Nice review on Rare Earth Elements and regarding actors in the project.

2. Did this lab help you understand challenges related to Rare Earth Elements?

Please mark:	Very much	Much	Somewhat	Little	Very little	No opinion
Number of answers	3	4	8	0	0	0

Comments:

- I have been busy with this topic over some time, and therefore know about the general perspectives.
- As a politician the chemical processes are not the most important ones.

3. Did this lab help you understand what the SecREEts project will do in Porsgrunn?

Please mark:	Very much	Much	Somewhat	Little	Very little	No opinion
Number of answers	5	6	3	1	0	0

Comments:

- I already knew much about this.

4. How much were you enabled to contribute to the discussion?

Please mark:	Very much	Much	Somewhat	Little	Very little	No opinion
Number of answers	2	8	5	0	0	1

Comments:

- Sufficiently.

5. Would you sign up again for a similar event?

Please mark:	Yes	Maybe	No
Number of answers	11	6	0

Comments:

- If I get the opportunity.

Do you have any other comments or remarks?

- I wish to focus more strongly on reuse/circular economy so that we can protect natural resources for the future.
- I think the project must receive much more national attention. This is important.