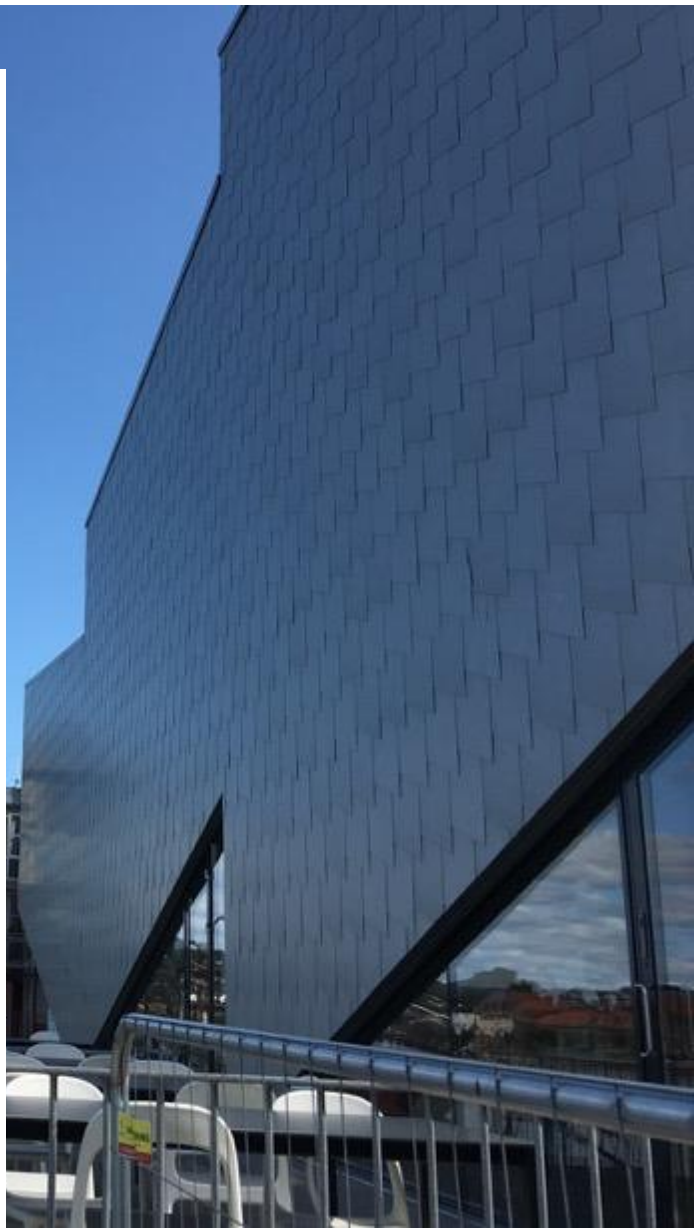
SecREEts Citizen Lab

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



PUBLIC

ZOOM, 1 September 2020.

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.

Due to the COVID19 pandemic, the second Citizen lab in Porsgrunn (Norway) took place virtually via ZOOM on 1st September 2020. Interpretation from/to English-Norwegian was available through the interpretation application Interactio. With the support of Prospex Institute, REEtec, SINTEF, Vekst i Grenland and Yara were invited to follow up on the 2019 Citizen Lab meeting to give an update on the recent development of the project at Herøya. The team used Q&A sessions based on explanatory presentations to help participants understand challenges related to REE supply in Europe along with the role and impact of SecREEts both at a European and local level.

For this event, Prospex Institute used the stakeholder mapping conducted in 2019. After consultation with REEtec, Vekst i Grenland and Yara, the 2019 mapping was completed. Categories and quotas remained the same as defined for the 2019 Citizen Lab. Overall, 59 relevant stakeholders were mapped based on those categories and quotas, 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	3	-1
Local media	2	7	5
Political life			
Local governance	2	12	9
Political Parties	2	8	4
GENDER			
Male	*8*	28	22
Female	*8*	13	6

Not specified	*0*	6	2
AGE GROUP			
16-29	*5*	0	-5
30-49	*5*	9	4
Over 49	*5*	6	1
Not specified	*0*	7	1

Prospex Institute received registrations from 24 stakeholders. As illustrated in the table below, all quotas were met, apart from local media – though there was one more registration than in 2019 -, REE end-users 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	2	2
Business organisations	1	9	12
Research, Academia Innovation	1	3	5
Civil Society			
Youth Education	1	2	1
REE end-users	2	1	1
Local media	2	1	-2
Political life			
Local governance	2	6	4
Political Parties	2	2	0
GENDER			
Male	*8*	15	10
Female	*8*	9	4
Not specified	*0*	0	1
AGE GROUP			
16-29	*5*	0	-5
30-49	*5*	9	6
Over 49	*5*	14	13
Not specified	*0*	1	2

However, the number of actual stakeholders participating in the meeting dropped to 11 – meaning that 13 registered participants dropped out. The actual participant numbers are as follows:

	Minimum Quota	Actual	Difference
Industry			
Trade Unions	**1**	0	-1
Business organisations	**1**	5	4
Research, Academia Innovation	**1**	3	2
Civil Society			
Youth Education	1	1	0
REE end-users	2	0	-2
Local media	2	0	-2
Political life			
Local governance	2	4	2
Political Parties	2	0	-2
GENDER			
Male	*8*	8	0
Female	*8*	4	-4
Not specified	*0*	0	0
AGE GROUP			
16-29	*5*	0	-5
30-49	*5*	4	-1
Over 49	*5*	7	2
Not specified	*0*	1	1

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. Participants received information by email on how to access interpretation and how to use Zoom prior to the event. Martin Watson, moderator from Prospex Institute, went through the basic functionalities of Zoom and Interactio at the start of the meeting.

Presentations

1 – Why run a project on REEs?

At the start of the meeting, participants were introduced to the basic functions of ZOOM and how to use Interactio for interpretations, as a reminder from the instructions they had received prior to the meeting. In this way, all members of the audience would be aware that they can freely speak in Norwegian. The moderator Martin Watson from Prospex Institute introduced himself and the different SecREEts partners present in the call.

The floor was then given to Anne Kristine Grøtting, Deputy Mayor, Porsgrunn Municipality, who welcomed the participants and expressed her interest and support to Yara, REEtec and SINTEF for the work carried out at the Herøya Industrial Park as part of SecREEts.

Martin Watson briefly recapped the purpose of the Citizen Lab, and invited all participants to introduce themselves, to ensure everyone in the call was fully aware of who the other participants are. After this round of introduction, he briefly reminded participants of the outcomes of the 2019 Citizen Lab. He also explains that, in 2020, the European Commission has released its plan for the implementation of the EU Green Deal, with the objective to make Europe a carbon-neutral continent by 2050. To foster the conversation, he asked the following question:

"What green technologies can you think off that need REEs?"

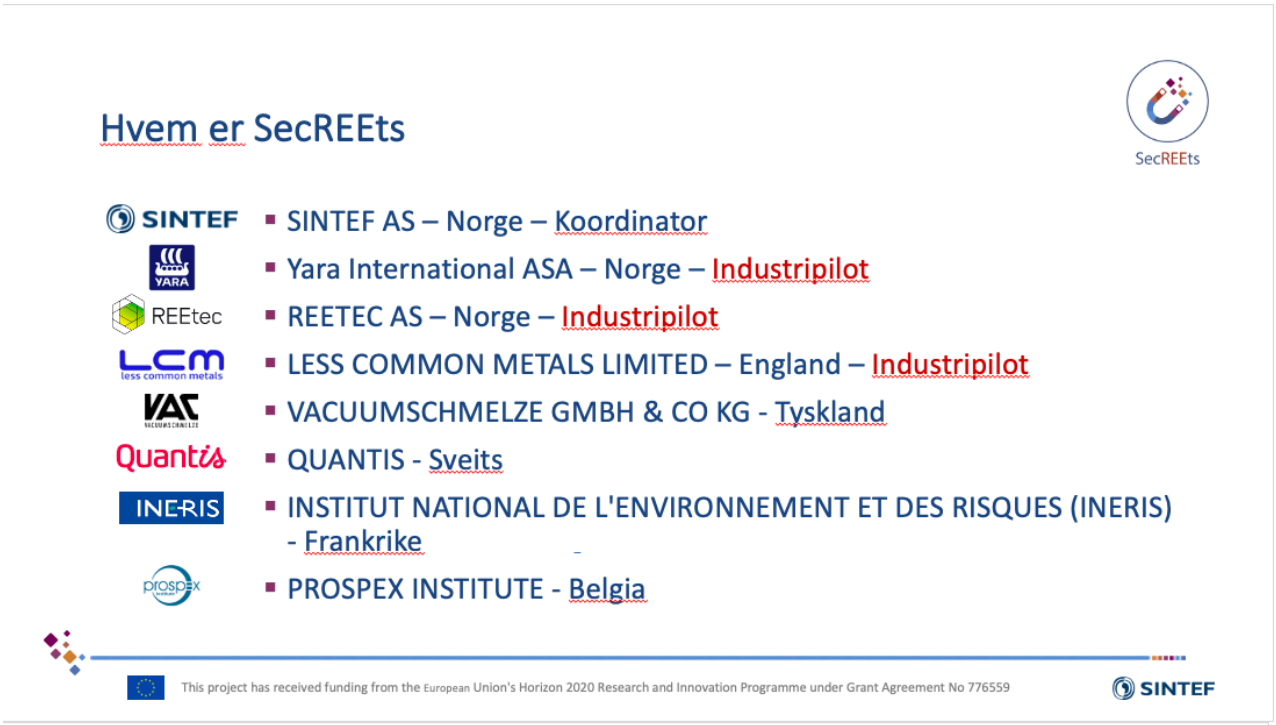
Answers from the audience:

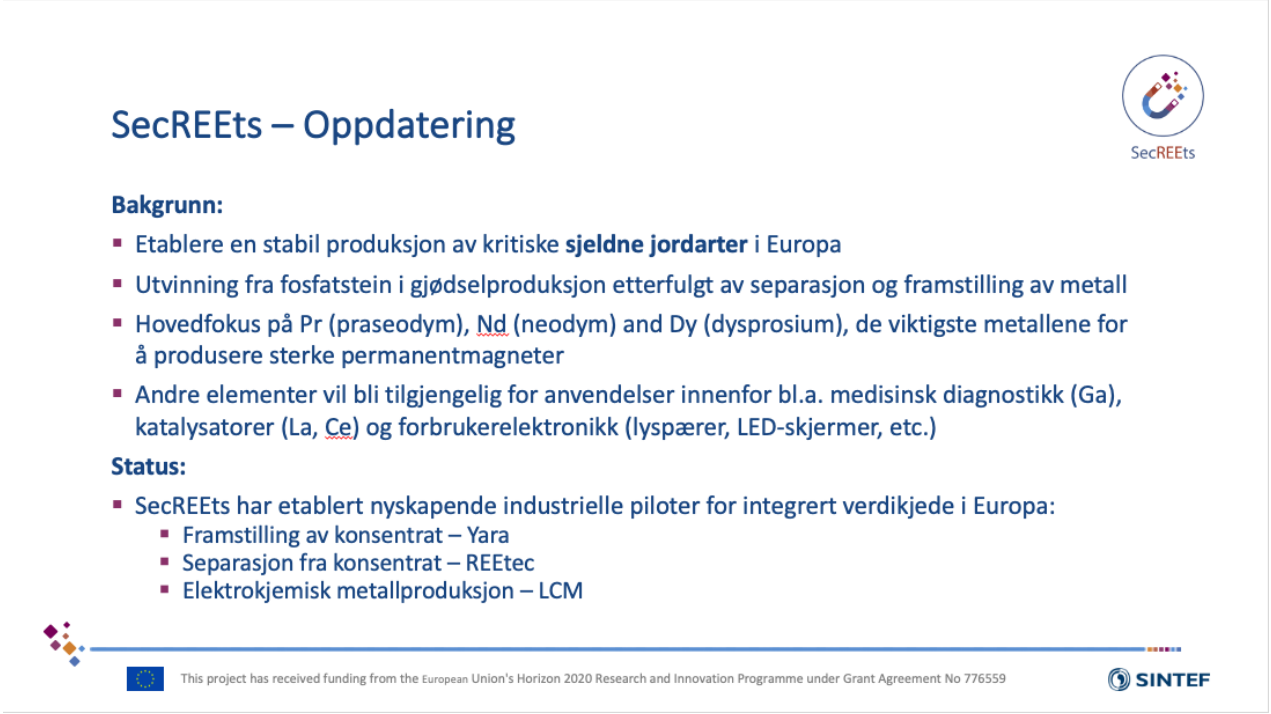
- Windmills
- Electric cars
- Mobile phones
- Power efficiency
- Electronics

Then, Martin Watson pointed out that the deployment of these technologies is dependent on the supply of REEs from China. He explained that the purpose of the SecREEts project is to provide alternative supply of REEs for such technologies in Europe.

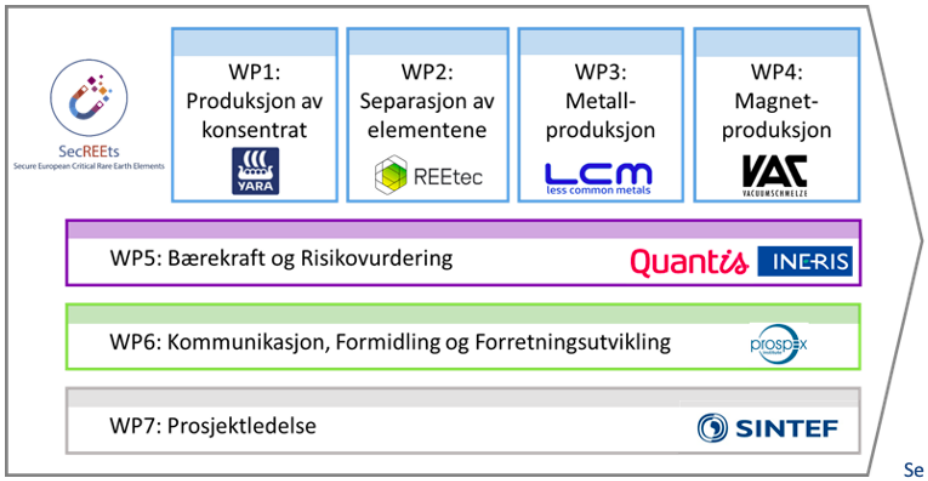
2 – Update on the SecREEts project

After this introduction, Martin Watson gave the floor to Arne Petter Ratvik, from SINTEF. As coordinator of the SecREEts project, Arne gave an update on progress made in SecREEts over the past 12 months. For participants who were new to the Citizen Lab, he also briefly summed up the objectives of the SecREEts project. Questions received in the Citizen Lab are address later in the report.





Oversikt over aktiviteter



Se også: www.secreets.eu

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SINTEF

SecREEts – Resultater

Yara og REEtec presenteres senere

- LCM har kjørt flere kampanjer med ny elektrolyseteknologi og verifisert svært lave utslipp. De er også i ferd med å etablere nedstrøms aktiviteter tilpasset magnetproduksjon hos VAC
- Quantis jobber med første versjon der SecREEts miljø- og ressurspåvirkninger blir vurdert (LCA: Life Cycle Assessment) i tillegg til en lønnsomhetsvurdering av prosessene (LCC: Life Cycle Costs)
- INERIS har laget første versjon med oversikt over de teknologiske risiko i prosessene
- Prospex har arrangert mange aktiviteter både lokalt (f.eks. Citizen Labs) og andre EU-relaterte møter der SecREEts har vært presentert og fått tilbakemelding
- SINTEF er involvert i mange av aktivitetene i tillegg til prosjektkoordinering

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SINTEF

Oppsummering

SecREEts

- Industrielle pilotprosesser basert på nyskapende ekstraksjon, separasjon og framstilling av metaller til supermagneter
- Effektiv og livskraftig bruk av europeiske råmaterialer
- Helhetlig verdikjede i Europa

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

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SINTEF

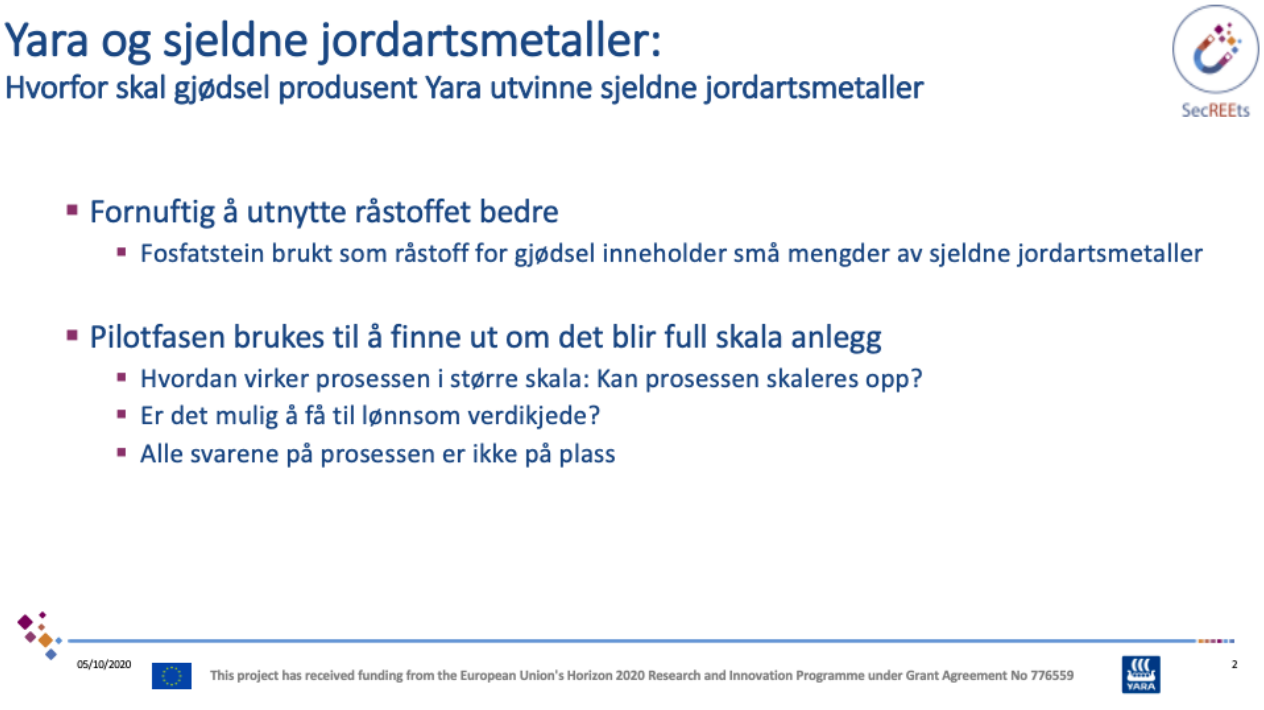
3 – Recent progress at a local level

Before inviting Yara and REEtec to present recent progress, Martin Watson invited participants to think about the following two questions while listening to the presentations:

- *Do I need more information to understand what is happening?*
- *Are there any issues or concerns that need to be addressed?*

Yara

Martin Watson gave the floor to Mohan Menon from Yara. Mohan gave an update on the progress made by Yara in developing their pilot as part of SecREEts:



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
  - Blanding av sjeldne jordartsmetaller sendes til REEtec for videre prosessering og separasjon

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Status

Lab skala prosess → Pilot skala test → Teknisk og økonomisk vurdering → Beslutning om investering i Full skala anlegg

- Produksjon i piloten har startet
- Tett samarbeide med REEtec
  - For å levere riktig kvalitet konsentrat
- Plan er å optimalisere prosessen i piloten utover året
  - Lage grunnlag for beslutning

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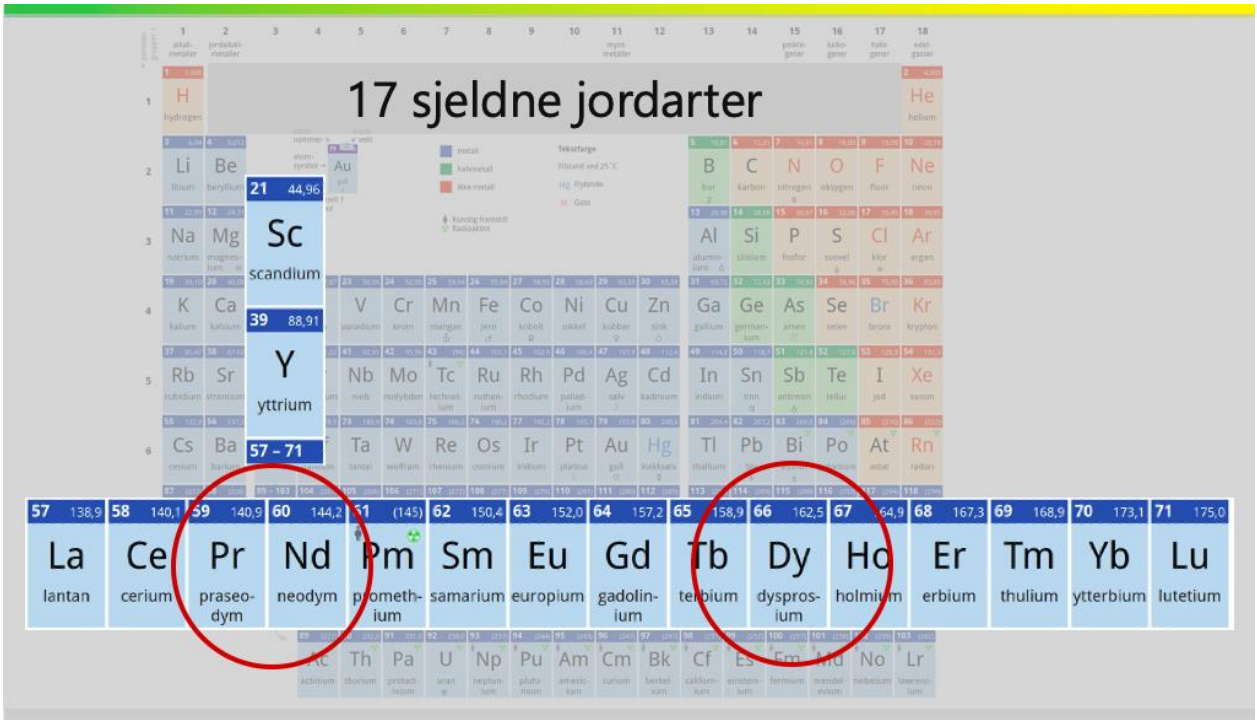
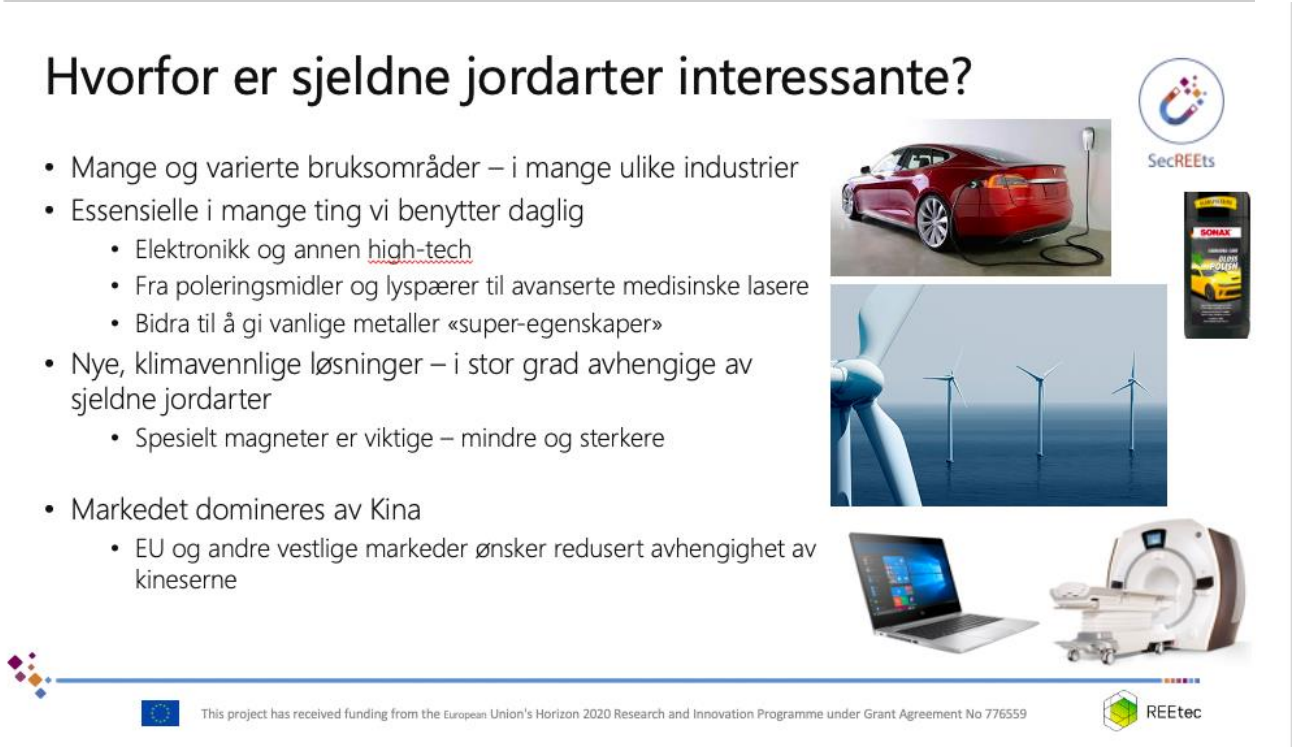
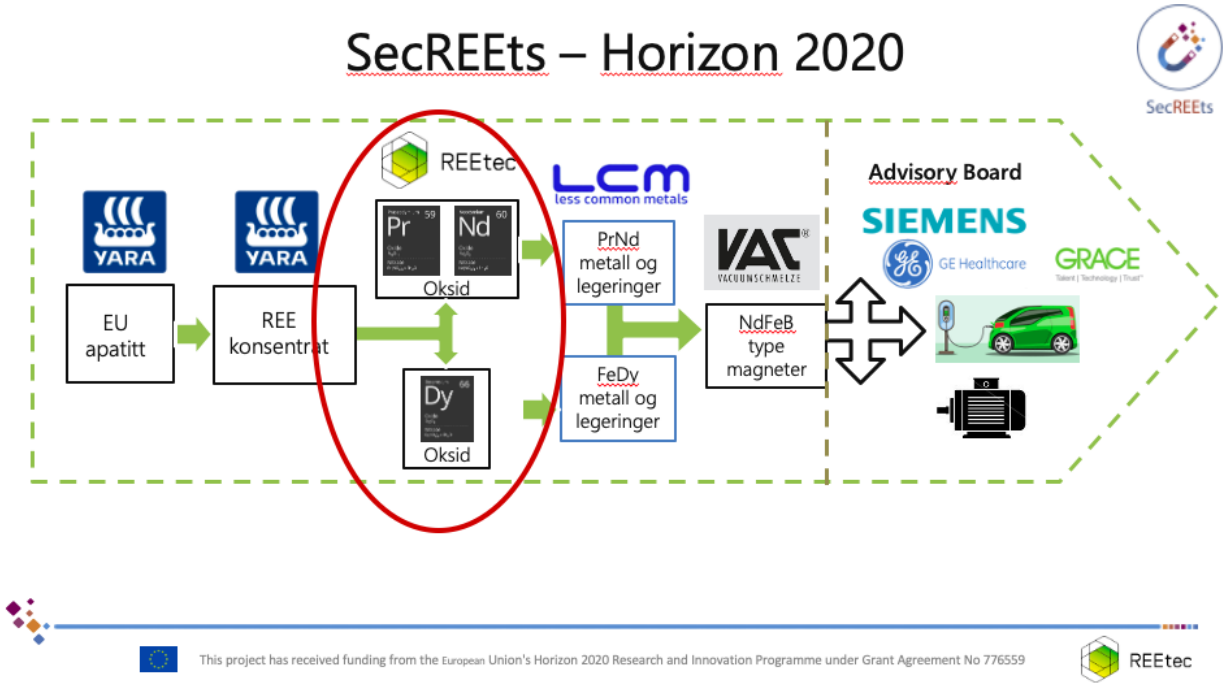
Martin Watson invited the audience to react to the presentation. Robin Kåss expressed his pride as Mayor of Porsgrunn to see what is being achieved at Herøya, highlighting that the local public is interested in what is happening and that he can see a very positive impact.

REEtec

Martin Watson gave the floor to Sven Røst from Scatec, for an update on the recent progress at the REEtec pilot. Sven took this opportunity for a short reminder on what REEs are and how they are used. The questions asked during this presentation are transcribed later in this report.






SecREEts – Horizon 2020
SecREEts
REEtec
YARA
YARA
EU apatitt
REE konsentrat
Pr
Nd
Oksid
Dy
Oksid
LCM
less common metals
PrNd metall og legeringer
FeDy metall og legeringer
VAC
VACUUMSCHMELZE
NdFeB type magneter
Advisory Board
SIEMENS
GE Healthcare
GRACE
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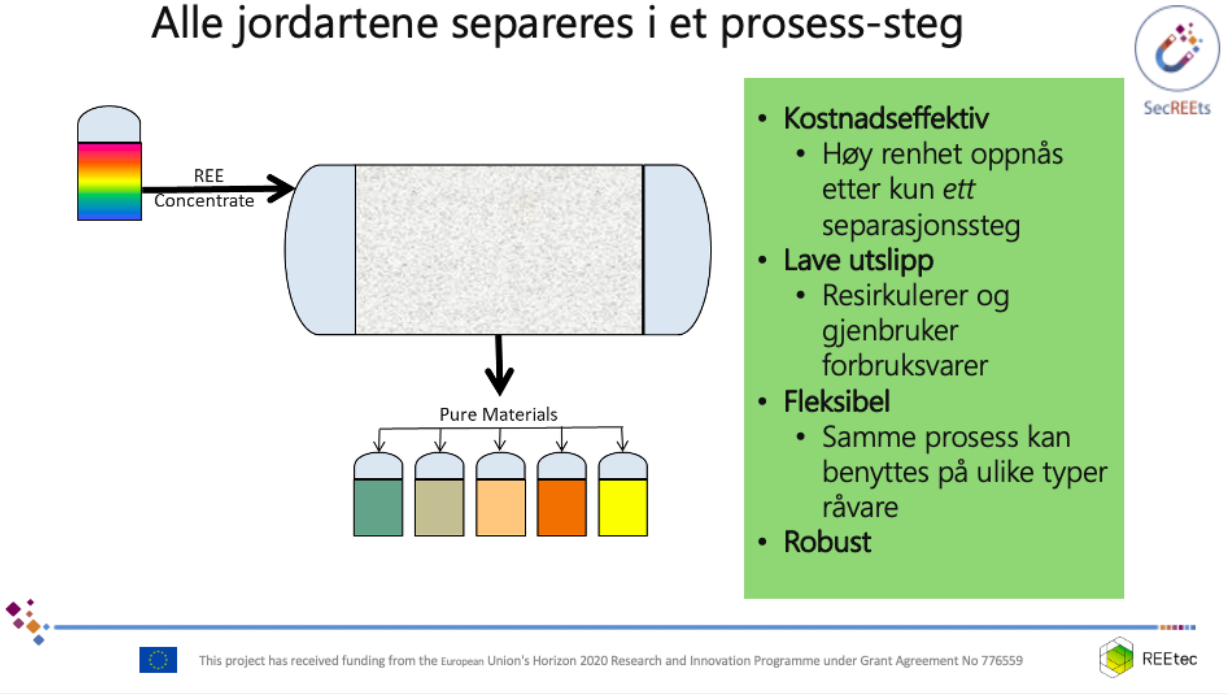
REEtec


Alle jordartene separeres i et prosess-steg
SecREEts
REE Concentrate
Pure Materials
• Kostnadseffektiv
• Høy renhet oppnås etter kun *ett* separasjonssteg
• Lave utslipp
• Resirkulerer og gjenbruker forbruksvarer
• Fleksibel
• Samme prosess kan benyttes på ulike typer råvare
• Robust
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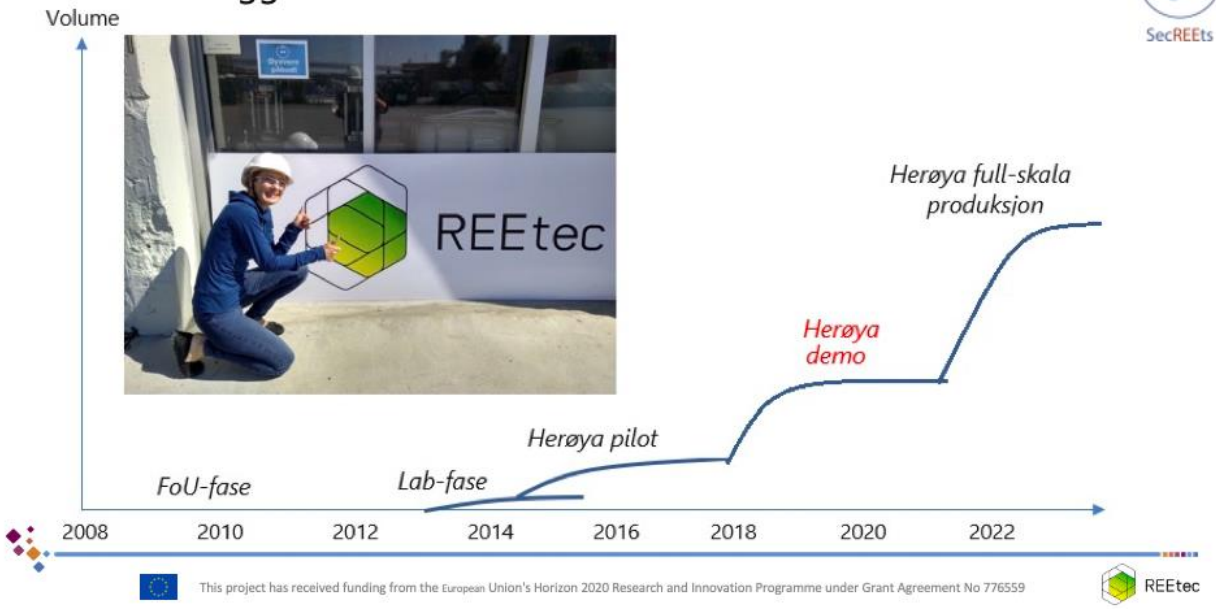
REEtec

Stegvis industrialisering av prosessen – demo-anlegget er nå i drift



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Status - demoanlegg

- Demo-anlegget er ferdig
- Alt av utstyr er installert og i drift
- Råvaretesting planlegges og gjennomføres
  - behov for pre-prosessering vurderes
  - pre-prosesseringsrutiner utarbeides, spesielt for råvare fra Yara
- Milepæl:
  Første råvare-leveranse fra Yara er mottatt

Foto Siri Krohn-Fagervoll/Herøya Industripark: Sigve Sporstøl, REEtec, Mohan Menon og Vibeke Rasmussen, Yara Technology Center og Toril Roberg, REEtec

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Status - demoanlegg

Eksempel på forprosjekt

- Prosess for ceriumfjerning fra råvarekonsentratet
  - Stort volum – begrenset markedsverdi
- Prosjekt for energieffektiv inndamping
  - Store væskevolumer benyttes i prosessen – vann fjernes, syre gjenbrukes
  - Energibesparelser er viktig både for miljø og konkurransedyktighet / lønnsomhet

SecREEts

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REEtec

Status – videre utvikling

SecREEts

- Separasjonsprosessen videreutvikles og effektiviseres
- Test-produksjon av produkter vil starte basert på råvare fra Yara
- Produktene vil bli sendt til kunder for testing og godkjenning

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

REEtec

Våre produkter

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

REEtec

Industrielt anlegg planlegges nå

- Planlegging av et full-skala industrianlegg har startet
  - Plassbehov og plassering vurderes
  - Engineering
  - Kostnadsanalyser
  - Finansieringsbehov

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REEtec

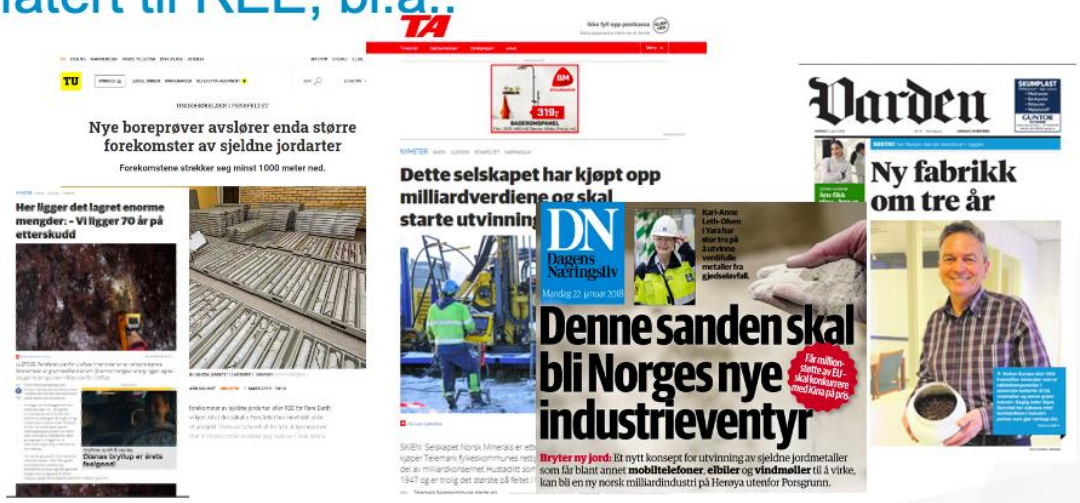
4 – What happens in Telemark?

After a short break, Martin invited Helene Marion Norli, from Vekst I Grenland, to take the floor. He asked her about recent developments in the Telemark region regarding REEs. She explained in more detail the potential for REE in the Telemark region and a related project conducted by Vekst I Grenland.


Invest in Grenland
Utvikle en attraktiv etableringsregion
Oppsøkende aktivitet med mål om nye etableringer/investeringer
Mottak og håndtering av henvendelser om etablering
Ulike aktiviteter knyttet til areal og infrastruktur, Arealguiden, dialog og samarbeid (kommunene, Invest in-Norway, klynger, næringsliv) markedsføringsmateriell, kunnskapsgrunnlag og statistikk, m.m.
Mot private virksomheter/investorer
Prosjekter:
- REE
- Legemiddelindustri
- Batteriindustri
- Næringsmiddelindustri
- Deltakelse i prosjekter i regi av andre
Motta og håndtere henvendelser om etablering
Via:
- Oppsøkende aktivitet
- Arealguiden
- Invest in Norway
- Powered by Telemark
- Andre kanaler
Powered by Telemark
INVEST IN-METODIKK
grenland


REE-regionen Telemark
Telemark som attraktivt etableringssted for bedrifter i verdikjeden for REE

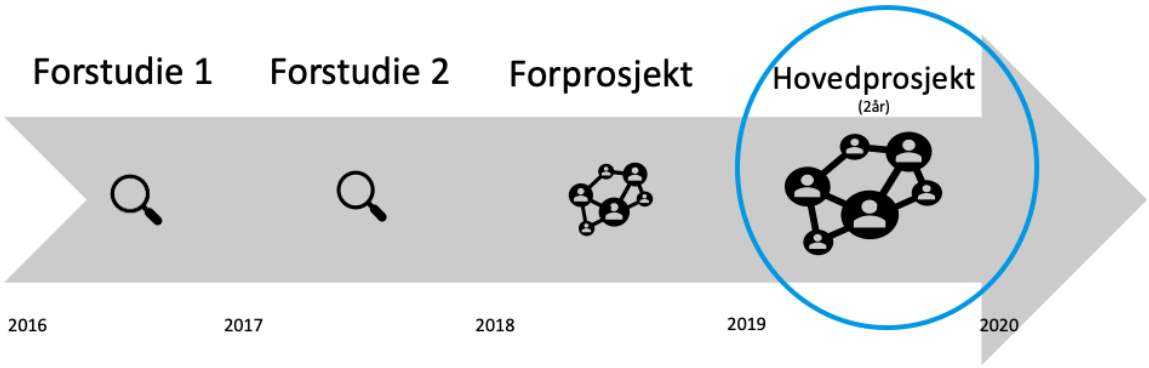
Telemark rommer nøkkelaktører og aktivitet relatert til REE, bl.a.:



Nå ønsker vi flere og mere, og vil utvikle en REE-klynge

vekst i grenland

Utvikling av et målrettet næringsarbeid knyttet til REE over tid:



Footer

Hovedprosjekt: REE-regionen Telemark

Effektmål:
Flere REE-relaterte arbeidsplasser i Telemark

Resultatmål:

1. Prosjektet skal gjennomføre **dialog/informasjonsutveksling med minst 25 målbedrifter om Telemark som etableringssted,** hvor det gjennomføres site visits fra minst 4 målbedrifter.
2. Prosjektet skal mobilisere til igangsetting av minst **3 utviklingsprosjekter** knyttet til REE i Telemark.
3. Prosjektet skal bistå aktører som vurderer utvikling og drift på Fensfeltet gjennom ulike aktiviteter.

Et samarbeid mellom:

vekst i grenland | SINTEF | MidtTelemark Næringsutvikling | HERØYA INDUSTRIPARK

Start: Nov. 2019 → Slutt: Nov. 2021

4 – Engaging with Porsgrunn community

In the last session of the meeting, the audience was invited to participate in a poll about how to engage with the Porsgrunn community in the future. Due to a technical issue, the poll did not work. As a result, the questions were added to the post-event evaluation form (see below). The questions and outcomes were as follows:

A list of 6 activities suggested in the 2019 Citizen Lab was displayed with the following question:

1 - Looking at the list below, which activities do you think we should prioritise in your local area?

Results:

- 1 - Establish research and student projects
- 2 - Contribute to a better understanding of the market
- 3 - EU projects (Equal to 2)
- 4 - Good dialogue with local/regional politicians (Equal to 2)
- 5 - Knowledge-sharing (Equal to 2)
- 6 - Inform the local community about activities

A list of 6 communication channels suggested in the 2019 Citizen Lab was displayed with the following question:

2 - Looking at the list below, which activities do you think we should prioritise in your local area?

Results:

- 1 - Meetings & interviews (E.g. media, politicians, Vekst I Grenland, Citizen Lab, local council)
- 2 - Email (Equal to 2)
- 3 - Social media (Equal to 2)
- 4 - Website (Equal to 2)

Participants did not show any interest for Events or for Newsletters.

Participants were invited to make a comment on activities and communication channels. One comment was made:

- *"Very important: talk to the customer industry (auto makers and wind turbines) in Europe how they will behave if an European RE producer is launched."*

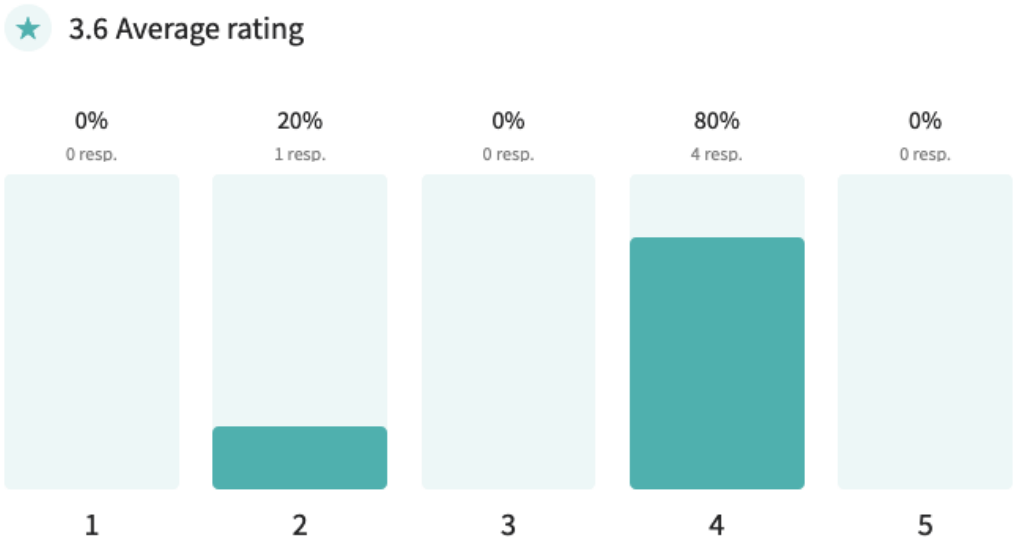
5 – End of the meeting

Martin Watson and Arne Petter Ratvik thanked all the participants for their time and their contribution. Martin explained that a report was going to be prepared with the slides and shared in the coming weeks. He also highlighted that an evaluation form was going to be shared by and invited participants to take some time to respond. He then closed the meeting.

Evaluation

The results of the evaluation can be found below. We received 5 responses in total.

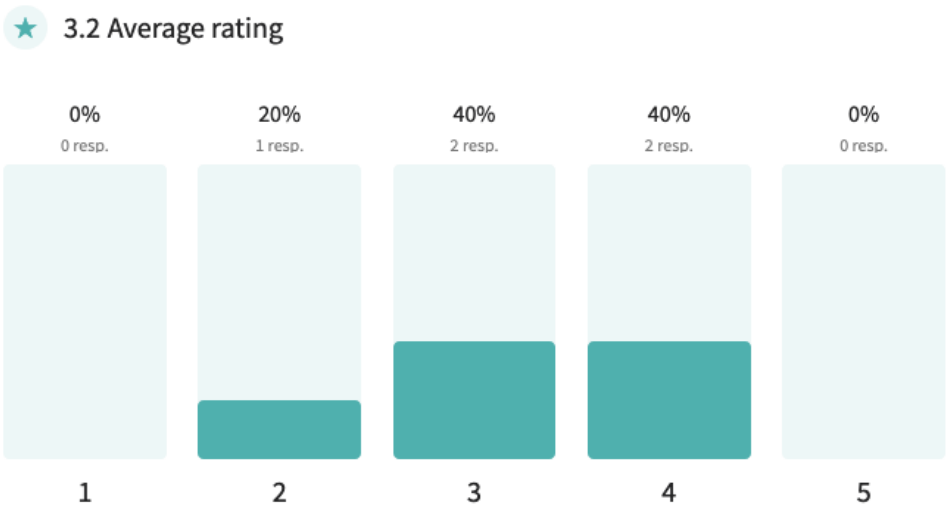
1. **How do you rate the Citizen Lab in general on a scale from 1 to 5?**
   (1 – very bad to 5 – very good)



Comments:

- "It worked quite poorly on zoom, technical problems and people ask little questions. I also think there were some repetitions from the previous meeting."

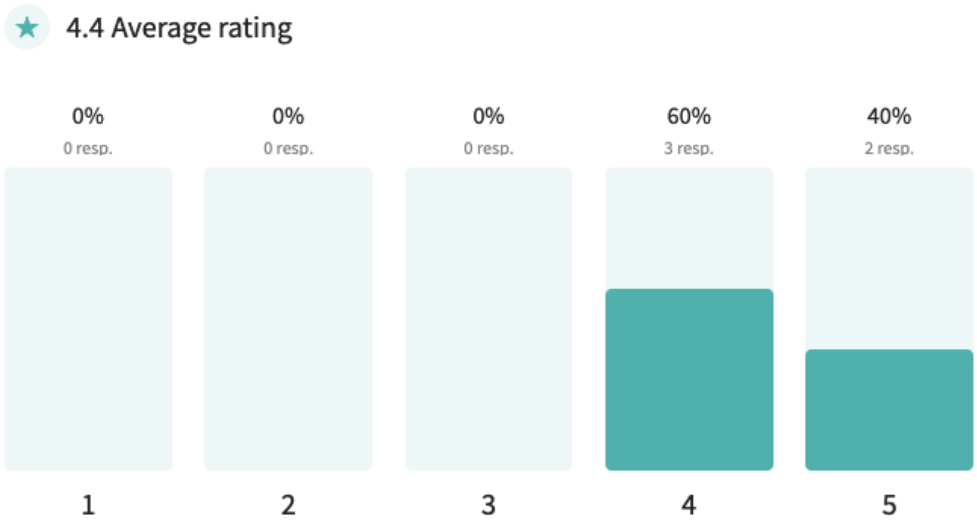
2. **Did this lab help you understand challenges related to REEs, on a scale from 1 to 5?**
   (1 – very little to 5 – very much)



Comments:

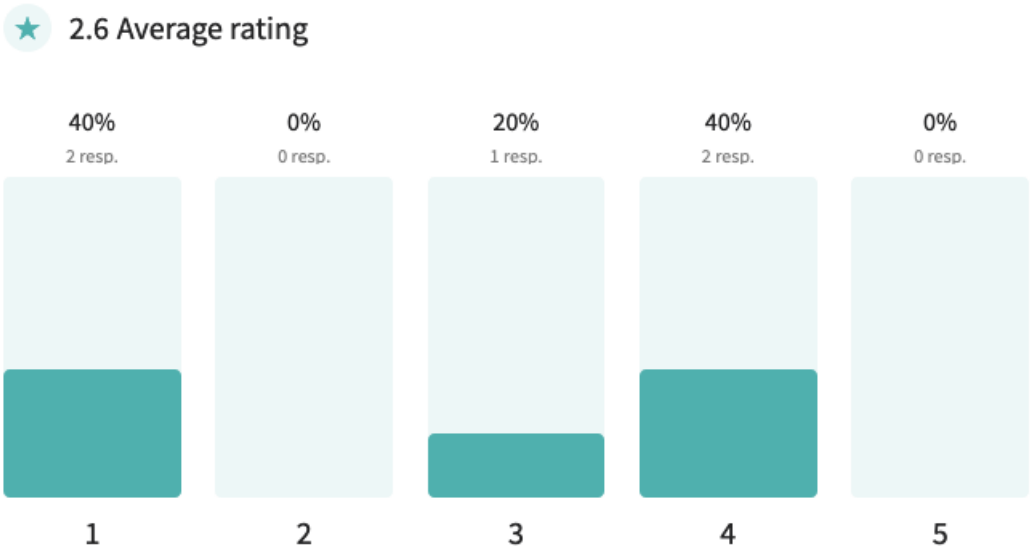
- *"Ref. The comment above, many repetitions from the previous meeting."*

3. **Did this lab help you understand what the SecREEts project has done in Porsgrunn so far, and what it will do next?**
   (1 – very little to 5 – very much)



No Comment.

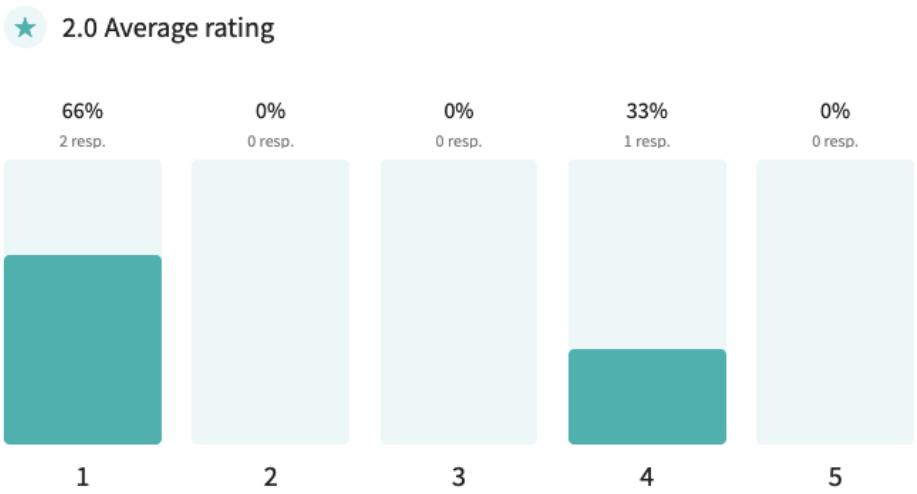
4. **How much were you enabled to contribute to the discussion, on a scale from 1 to 5?**
   (1 – very little to 5 – very much)



Comments:

- "Unfortunately I had to leave the meeting before the discussion"

5. **If you used Interactio for interpretation, how would you rate the interpretation process on a scale from 1 to 5?**
   (1 – very bad to 5 – very good)



Questions & Answers

In China, the mining and processing of REEs is not very environmentally friendly. Is SecREEts able to produce REEs with zero environmental footprint?

It is difficult to reach zero environmental impact in any industrial process. So far, the SecREEts approach shows unsurpassed lower environmental footprint than any comparable production of rare earth elements. We will also document the environmental impact and sustainability in a Life Cycle Assessment of the SecREEts value chain (carried out by partner Quantis). In addition, SecREEts pilots follow the highest European environmental and safety standards.

Is REEtec able to get the workforce they need, and can the University of South Norway contribute in any way?

REEtec has at present been able to hire the necessary workforce with the competencies and experience needed to get the pilot factory up and running, as well as to improve and make the production processes more efficient. There is a limited knowledge and experience base in Norway within the field we are operating, and hence, we have hired expertise from abroad.
When the industrial plant has been built and set in operation, the ongoing research and development work could potentially benefit from a cooperation with the University of South Norway.

What is the main challenge in the project for the next 12 months? For what part of the value chain?

The main challenges for the next 12 months are related to verifying and optimising pilot operations. This is valid for all pilots, e.g. optimising concentrate composition, best practise separation operations, high efficiency electrowinning and commissioning of the fluorination process. All of this is also related to design and production cost estimates for full scale rollout.