

Critical Raw Material Value Chain Stability, Security and Sustainability

The Contribution of the Private Sector

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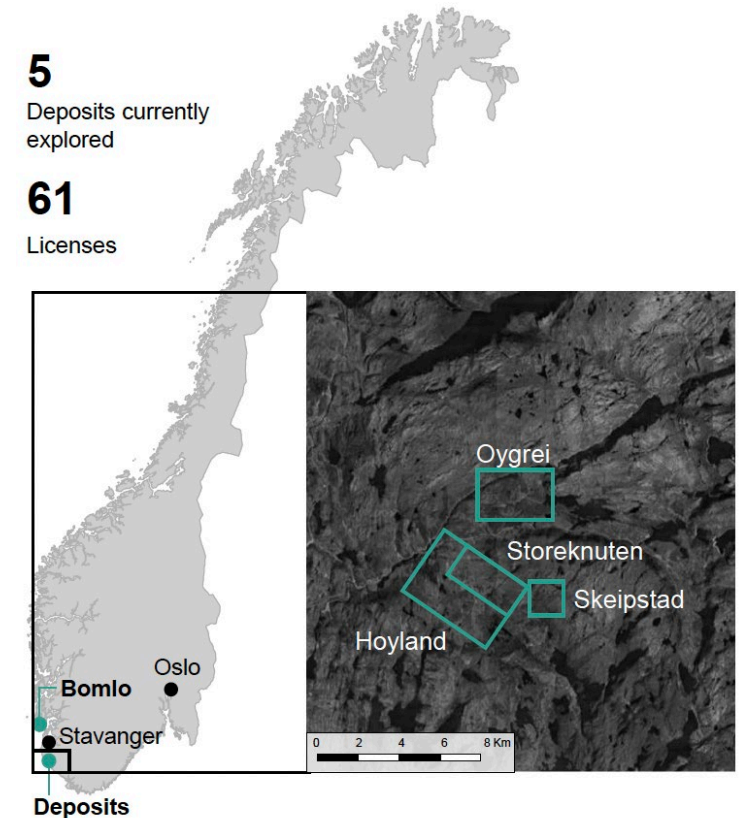
Status quo: Clean transition and vulnerability of CRM value chains

- **Green and digital transition**
 - Growth of critical raw material (CRM) demand for clean technologies - increase by 500% by 2050 (WB)
- **Current CRM value chains – Highly vulnerable**
 - **Concentration**
 - Handful of countries dominate mining and processing
 - **China:** Mining of Vanadium (62%), Phosphate (43.6%), Titanium (25.4%)
 - **Processing - 90%** of all material for clean technologies
 - **Unsustainable**
 - Low ESG standards in mining and processing
 - Transport across the world - inefficiency, emissions and lost value for local economies

Need to diversify supply and processing of critical raw materials from countries that are stable, reliable and uphold the highest ESG standards

Norge Mining: Contribution to sustainable development

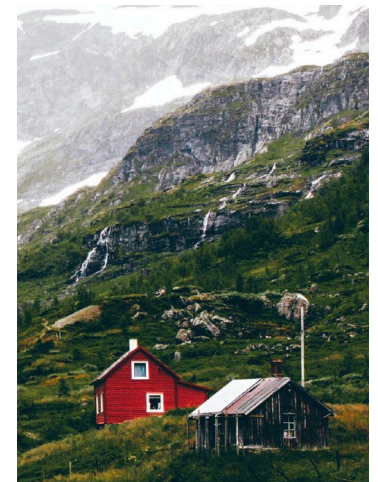
- Anglo-Norwegian exploration company (2018)
- **Deposits:** 70 billion tons of phosphate rock in South-West of Norway (Bjerkreim-Sokndal valley) = the largest phosphate rock reserves in the world
- **Phosphate rock, Phosphorus, Vanadium, and Titanium**
 - EU CRM list
 - Food security - phosphate fertilizers
 - Green energy transition - storage technology – lithium-ion batteries / lithium iron phosphate (LFP) and vanadium redox-flow (VRFB) batteries
 - High tech applications - aerospace, medicine - titanium



Minerals for sustainable development

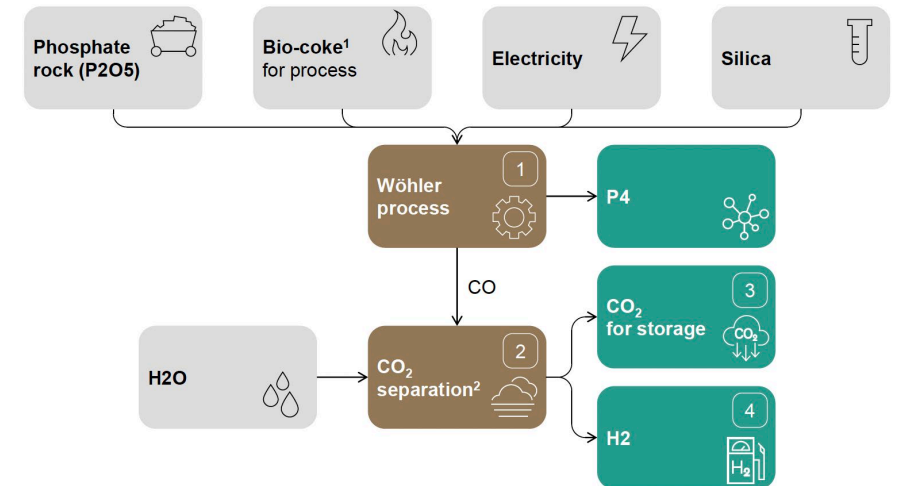
Norge Mining: Adhering to the highest ESG standards

- **Norway – the highest ESG standards**
 - New legislation with higher mining standards under preparation
- **Norge Mining – the highest standards internally and externally:**
 - **Exploration**
 - Newest technologies (airborne electromagnetic geological survey), avoidance of protected areas and natural reserves
 - **Community engagement**
 - Regular discussions and meetings with local communities
 - **Internal operations**
 - Transparency - Responsible Business Report
 - ESG Committee and Working Group, equal representation



Responsible mining and processing – Verticalization of the value chain

- Mining activity
 - Renewable energy - limitation of emissions of all operations
 - Re-use of residues from mining to restore land and for further use
 - Details about the mining activity and business plan a subject of the pre-feasibility and feasibility study
- Processing - Verticalization of phosphate supply chain
 - Production of **yellow phosphorus (P₄)** in a carbon negative way
 - By-products - green hydrogen and CO₂ - to be captured and stored (CCS)



Conclusion

- **Private sector** is an important actor and can substantially contribute to sustainable resource management
- **Norge Mining** - responsible resource management company
 - Highest ESG standards from the inception
 - Aiming to proceed downstream to maximize its potential
 - Carbon negative production of P₄
- **To maximize the potential of the private sector**
 - The highest ESG standards required within national and international legislation
 - Support critical mineral value chain - mining and processing - within countries with the highest ESG standards - Europe
 - Direct financial subsidies and stable regulatory environment - accelerated permitting process



N1 Norge Mining