Social License to Operate Conference
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OPENING SESSION

KEYNOTE: SLO-SLE & ESG – Setting the Scene
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Affiliation: Geological Survey of Finland

In the 1990s, mining-related conflicts increased across the Global South, prompting the emergence of the term social license to operate (SLO) to describe the relationship between companies and communities. In response, mining industry associations launched voluntary corporate social responsibility (CSR) programs aimed at enhancing economic, social, and environmental performance. To obtain SLO, practices such as benefit sharing, effective communication, stakeholder engagement, and mitigation of environmental impacts were recommended. However, the conceptualization and academic study of SLO only gained momentum in the 2010s, coinciding with China's rapid economic growth and the global surge in mineral-related conflicts. CSR initiatives proved insufficient in preventing these disputes.

Between 2005 and 2008, uranium exploration in Finland sparked public opposition, followed by environmental issues at the Talvivaara polymetallic mine between 2010 and 2012, which broadened criticism to other mineral commodities. In response, the Finnish government enhanced national mineral governance and funded social science research on sustainable mining. These studies have primarily focused on local mining and mineral exploration disputes (MMEDs). A national survey revealed that such disputes often arise in sensitive land-use contexts, including the indigenous Sámi homeland, areas of nature protection, reindeer herding, groundwater, and second homes, tourism destinations, and association with uranium.

While earlier research emphasized the role of corporate conduct (procedural and distributive fairness), project location has emerged as a fundamental factor influencing SLO. Poor corporate conduct with inadequate communication and stakeholder engagement, often exacerbate tensions, especially in mineral exploration. Communities are frequently surprised by license applications, and the absence of information from companies creates a vacuum that is easily filled by third parties, often with narratives unfavorable to the project.

Research also indicates that opposition is not limited to local groups but has evolved into a national movement comprising social movements (SMs) and environmental non-governmental organizations (ENGOs) connected to European counterparts. This trend has intensified during the green transition, which has expanded mineral exploration into lake areas. In this context, the concept of social license to explore (SLE) was introduced to address the distinct challenges of exploration compared to mining.

The rise in exploration-related disputes in lake areas, particularly those with second homes and summer tourism, highlights the phenomenon known as not in my leisure area (NIMLA). It is

characterized by resistance from tourism entrepreneurs, tourists, and second homeowners, and was already known from tourist destinations of Kolari and Kuusamo.

SLO can also be examined through the lens of environmental, social, and governance (ESG)criteria, which have replaced CSR and are now required by investors. ESG encompasses not only environmental and social concerns but also the entirety of corporate strategy. Achieving SLO/SLE necessitates responsible operations that account for land use and local community interests.

Given the geological nature of these sensitive contexts, the concept of geosystem services, i.e., societal benefits derived from geology such as water, groundwater, landscapes, soils, rocks, and minerals, is particularly relevant. Features like lakes, mineral deposits, and

tourism-friendly landscapes represent geosystem services that may “communicate” and “interact” due to competing human interests. This interplay involves social and political dimensions in which rocks and minerals can be political actors, suggesting that SLO can also be analyzed from the perspective of social and political geology. In fact, spatial studies informed by this approach may enable the prediction of MMEDs.

SESSION 1: Experiences in Europe, Estonia and the Nordics

KEYNOTE: Public Attitudes Toward Phosphorite Exploration and Mining in Estonia
Author: Erki Peegel
Affiliation: Geological Survey of Estonia

Estonia contains some of Europe’s largest phosphorite deposits, mainly in the northeastern region. While these reserves are of strategic economic interest, proposals for their exploration and mining have repeatedly sparked strong public debate. Concerns over environmental impacts, land use, and community well-being have made phosphorite a sensitive topic in Estonian society. This presentation examines the multidimensional nature of public perceptions, drawing on the affective, cognitive, and behavioural components of attitudes. Survey results and stakeholder engagement show that recognition of the economic potential of phosphorite is tempered by persistent worries about ecological risks, water quality, and social consequences. Public responses are shaped not only by factual knowledge but also by historical experiences, trust in institutions, and deeply held values regarding environmental protection and regional development.

The framework of Social License to Operate (SLO) helps to interpret these dynamics, highlighting that legitimacy and trust are essential alongside formal regulation. Situating public attitudes within the Estonian context underscores the need for transparent communication, participatory processes, and evidence-based environmental management.

The Estonian case illustrates both the challenges and opportunities of reconciling economic development with environmental sustainability and societal expectations, offering insights into how geoscientists, policymakers, and industry actors can support responsible mineral resource governance.

Social Licence to Operate and International Standards
Author: Gregory Poelzer
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Standardisation of exploration and mining activities is increasingly prevalent. Voluntary sustainability initiatives (VSIs) in the mining sector, with particular emphasis on their social dimensions, are looked upon as guides for developing state legislation and corporate policy. VSIs are nongovernmental, market-driven mechanisms through which companies and individual mine sites commit to sustainability standards aimed at mitigating negative impacts while fostering socioeconomic benefits. Typically developed through multistakeholder collaboration, VSIs differ in their scope of supply chain coverage, formulation of requirements, and involvement of societal actors in governance and monitoring. Over the past three decades, sector-specific initiatives such as Towards Sustainable Mining (TSM), the Initiative for Responsible Mining Assurance (IRMA), and the Consolidated Mining Standard Initiative (CMSI) have emerged alongside cross-sectoral frameworks like the Global Reporting Initiative (GRI) and the UN Global Compact. However, they also risk functioning as privatised governance, potentially displacing democratic regulatory processes. As such, VSIs must be understood in relation to, yet distinct from, both state regulation and international soft law instruments.

Does Societal Acceptance Really Matter?
Author: Pamela Lesser
Affiliation: University of Lapland, Finland

What began as an enquiry into SLO as a two-tiered concept of community scale and societal scale, where the broad-gauge public acceptance of the mining industry in Europe was thought to be important for the local acceptance of mining projects, has resulted in several surprising findings. The first is that societal and community SLO are each comprised of preconditions and drivers with good governance and strong legal frameworks being the preconditions at the societal scale. It is not clear what the preconditions for the community scale are precisely as the research focuses on the functioning of societal SLO, but it is clear they exist and are related to governance. Fulfilment of these preconditions is necessary before the trust-building work industry must subsequently undertake with society, based on the drivers, can begin. The second finding is that SLO at the societal scale is not important for the local acceptance of a project. What matters for acceptance is the community-company relationship and the ability to negotiate issues that happen at the site level. Societal acceptance plays a supportive role in community acceptance and is dependent on it. The third finding is that because the preconditions are so important at the societal level, there is little room for the mining industry to build relationships with the general citizenry because there are fewer benefits that industry has the power to negotiate. This could change over time, for example, if the public feels the preconditions are adequate and they demand more from industry. For now, however, the space for relationship-building in Europe is minimal.

From Past Experiences to Future Skills: Towards a Just and Sustainable Labour Market
Author: Bogdana Androsjuk
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Regions undergoing major economic and social transitions face not only structural labour market shifts but also questions of community trust and legitimacy. North-East Estonia (Ida-Virumaa) provides a striking example. For decades, the region's economy was built around oil shale mining and heavy industry, shaping livelihoods, identities, and expectations of stability. Today, European climate policies, automation, and demographic decline are driving deep changes, creating uncertainty about the region's economic and social future.

While the European Union's Just Transition Mechanism seeks to support affected areas, the challenges in Ida-Virumaa extend beyond energy policy. They are rooted in long-standing economic decline, persistent out-migration, and a linguistically segmented labour market between Estonian- and Russian-speaking populations. These dynamics complicate how new policies and strategies are received and accepted locally.

This presentation explores how continuing education—particularly vocational training and upskilling—can contribute to rebuilding confidence and providing credible pathways for adaptation. Drawing on the perspectives of adult learners, employers, and educators, the analysis highlights the roles of Ida-Viru County Vocational Education Centre and the University of Tartu Narva College. Their experiences illustrate how education initiatives can serve as both a practical tool for labour market adjustment and a means of strengthening social resilience and community acceptance in a historically industrial region facing profound transformation.

SESSION 2: Experiences in Finland

KEYNOTE: Factors Leading to Mining Resistance
Author: Leena Suopajärvi
Affiliation: University of Lapland, Finland

In my presentation, I discuss the factors that influence the acceptance or opposition of mineral exploration and mining projects: company performance, national political governance, local place attachment, and values. While company conduct is often cited as central to gaining project approval, our case studies suggest that political governance is at least equally important. A comparison of anti-mining movements globally reveals that opposition often targets national policies and regulatory frameworks perceived as overly pro-mining due to national emphasis on economic benefits.

Both corporate practices and political governance are subject to change. In contrast, more enduring foundations for resistance tend to lie in place attachment and the value systems of local communities. The local context is not merely composed of quantifiable factors such as employment statistics or demographic structure; rather, it is shaped by how residents are emotionally, cognitively, and practically attached to their living environment. Furthermore, when local

perspectives are grounded in ecological or nature-based values, resistance to mining activities becomes more likely.

Searching for Sustainability: Finnish Environmental NGOs and Mining Plans
Author: Tapani Veistola
Affiliation: The Finnish Association for Nature Conservation, Finland

The Finnish Association for Nature Conservation is the oldest and largest environmental organization in our country. We have 30,000 members and supporters, 15 regional branches with offices and 148 local associations. We participate in the preparation of laws concerning mines and in stakeholder work for most mining projects.

The Social Licence to Operate has become more important in a situation where statutory mining processes, with their hearings and statement periods, are short and narrow. These problems have been exacerbated by recent processes that aim to speed up projects, such as the EU's CRMA.

For this reason, even business community has become more interested in improving citizen consultation. Some progressive companies working with Green Deal want to do things better than the minimum required by law. This way, projects can be better planned and approved, time and money can be saved. There are many ongoing development processes by Akordi, SITRA and some foundations.

The Finnish Association for Nature Conservation supports better planning. Cooperation can also be developed in monitoring projects, as has been done in the Sodankylä watershed.

When developing better consultation with citizens, we have learned, among other things, the following:

- geographically, the areas of impact can be very extensive due to watersheds
- historically, many areas may have accumulated environmental anxiety and grief due to previous projects. For example, in Lapland, forests have been cut down, bogs have been drained and rivers have been dammed. There is no longer necessarily the resilience to take on new projects.
- especially in the area of the indigenous Sámi people, the burden of the history of colonialism is felt. In the Sámi homeland area, ores should not be searched for without the Sámi's permission.
- restarting projects that have been rejected by the courts is often perceived as unfair. It can bring anxiety that lasts for many generations.
- the operating period of a mine may be short, but the disadvantages can last for many generations and nature can change forever
- it would be wise to develop the sharing of project benefits, for example, through mining taxes
- the use of ecological compensation should be increased

- citizens no longer necessarily participate in all official processes if they do not believe that real results will come from it (”dialogue washing” cf. ”greenwashing”)
- nature conservation areas should be no-go areas. For example, in Viiankiaava, many families sold their land for nature conservation. They would not have done so if they had known that Sakatti mine would be planned in the area later.
- in addition to people, biodiversity and geodiversity should be taken into account.

How the Urgency Can Influence the Acceptance of Critical Raw Minerals Mining and Battery Industry Projects: Approaches from Governance Studies

Author: Rauno Sairinen
Affiliation: University of Eastern Finland

Urgency has become a key concept in framing the need for rapid governance action to address global sustainability challenges, green transition and also access to critical minerals. However, the impact of urgency on the multilevel governance and acceptance of large-scale green industrialization processes such as mining of critical minerals and the battery industry remains insufficiently explored. In our study, we have proposed a three-dimensional framework – encompassing multilevel reinforcement, power dynamics and societal tensions – to investigate these impacts, especially in the field of the battery industry.

The presentation will make also connections to the critical minerals mining in Finland. Urgency seems to influence multilevel power dynamics by intensifying competition and fostering new arrangements that appear to favor larger economies and international corporations, while simultaneously creating some risks and societal tensions at the local level having impact also to SLO.

Community Benefit Agreements in Nordic Mining Context

Author: Juha M. Kotilainen
Affiliation: University of Eastern Finland

Community Benefit Agreements (CBA) are locally negotiated arrangements designed to increase the local benefits of mining and mitigate its negative impacts through intensive collaboration and shared commitments. To date, CBAs have not been negotiated in the Nordic mining context, although interest in the concept has grown in recent years, particularly in Finnish Lapland. However, as CBAs are adapted to the needs and characteristics of the novel societal context of Finland and the Nordics, their content and implementation will require adjustments.

This presentation explores the concept of a Nordic CBA – its preconditions, potential and risks – drawing on the action research conducted in Sodankylä, Finland, where the idea was developed jointly with the municipality, mining companies and key stakeholders.

Social acceptance of Strategic and Critical minerals production in Europe
Author: Jussi Lähde
Affiliation: Latitude 66 Cobalt, Finland

Jussi Lähde has worked with his colleagues in Latitude 66 Cobalt with mineral exploration and mine development in Northern Finland for the last eight years. Lähde is a former spokesperson of the President of Finland and has worked as a journalist and with company communication. Lähde will share the insights and experiences gained on local, regional, national and European level on communicating the ways and importance of mineral exploration, mine development project and mining and mineral refining turning into critical infrastructure due to changes in global trade and security environment.

SESSION 3: Poster Session

The EGT-TWINN Project
Author: Kairi Põldsaar
Affiliation: University of Tartu

The Horizon Europe twinning project EGT-TWINN (Enhancing research capacity at the Geological Survey of Estonia to accelerate the country's transition to green energy) is entering its final year. Coordinated by the Geological Survey of Estonia (EGT) together with partners from the Geological Survey of Denmark and Greenland (GEUS), Geological Survey of Finland (GTK), British Geological Survey (BGS), and the University of Oulu, the project has strengthened Estonia's geoscience expertise and international networks. Over three years, EGT-TWINN has delivered targeted training courses, scientific exchanges, and collaborative workshops that have advanced skills in geological mapping, geophysical and geochemical methods, geothermal energy research, and data management. As the organiser of the Social License to Operate Conference 2025 in Tallinn, EGT-TWINN highlights the importance of combining technical excellence with active networking and stakeholder engagement. The project's experience shows that capacity building and collaboration across borders are key not only for advancing scientific knowledge but also for supporting responsible and sustainable mineral exploration. This poster provides an overview of EGT-TWINN's objectives, achievements, and future outlook as a foundation for lasting cooperation in geoscience and energy transition research.

Developing T-Shaped Professionals for Raw Materials Sector: EBS Micro-Degrees for Skill Expansion

Author: Veiko Karu
Affiliation: Estonian Business School

The raw materials industry increasingly requires T-shaped professionals — experts with deep technical knowledge and broad interdisciplinary skills. This presentation explores how micro-degrees support personal skill development, equipping mining professionals with competencies in sustainability, digitalization, and business strategy.

Social and Environmental Advantages of New Satellite-NMR Technology for Sustainable Mineral Exploration

Author: Kazbulat Shogenov
Affiliation: SHOGenergy and TalTech

Humanity is currently facing unprecedented challenges related to energy security, critical raw material supply, environmental protection, and climate change mitigation. Traditional mineral exploration techniques often rely on invasive procedures such as drilling and extensive fieldwork, which are costly, time-consuming, and raise public concerns about ecological impact. In contrast, the innovative Satellite-NMR (Nuclear Magnetic Resonance) technology – "SKYGEOEXPLORENOVA-NMR" (SGEN-NMR) – offers a transformative, non-invasive, and socially acceptable approach to sustainable mineral exploration.

The fundamental principle of SGEN-NMR lies in point-by-point satellite-based resonance sounding of geological formations, using the Earth's magnetic field as a natural source to create NMR resonance conditions. This enables the detection and characterisation of subsurface deposits – including metals, rare elements, water, and geothermal reservoirs – at depths of up to 5 km, without drilling or other destructive operations during the initial exploration phase. The resulting data provide accurate 3D geological models, deposit boundaries, and optimal drilling points for exploitation of deposits and storage sites, thereby minimising environmental and social impacts. Another prospective use of SGEN-NMR is its application for monitoring of gas and energy storage sites, providing large economic benefits for operators and project developers and social benefits for local communities.

From a societal perspective, the advantages of SGEN-NMR are substantial. First, the technology eliminates the ecological footprint of traditional exploration by minimising surface intervention and avoiding harmful impacts on sensitive ecosystems. Second, it reduces social conflicts related to land-use permits, local acceptance, and public opposition, since exploration is carried out remotely. Third, its economic efficiency (shorter timelines, lower costs) supports the rapid development of strategic mineral supply chains essential for Europe's green transition and energy security. Fourth, it creates opportunities for countries like Estonia to build competitive advantages in sustainable resource management, fostering trust between industry, authorities, and local communities.

The wider benefits of adopting such technology extend beyond technical efficiency:
• Environmental sustainability through minimal-impact exploration.
• Social acceptance by addressing public concerns about safety and ecology.
• Economic resilience via reduced costs and improved access to critical raw materials.
• Global collaboration in advancing ethical and sustainable mining practices.

The adoption of non-invasive, socially responsible technologies such as SGEN-NMR can thus become a catalyst for building platforms where diverse stakeholders collaborate, exchange knowledge, and design strategies for sustainable mineral exploration, while ensuring a balance between mineral supply and environmental stewardship.

In conclusion, SGEN-NMR represents not only a technical innovation but also a societal breakthrough in mineral exploration. This breakthrough has the potential to redefine exploration standards and become a benchmark for sustainable practices worldwide. By integrating sustainability, social responsibility, and economic feasibility, it offers a forward-looking pathway to resource discovery fully aligned with global climate goals and societal expectations.

From Waste to Critical Raw Material: Pioneering Sustainable Graphite Production from CO_2
Author: Apostolos Segkos
Affiliation: UP Catalyst

UP Catalyst is tackling Europe's reliance on fossil-based graphite by converting industrial CO_2 emissions into battery-grade graphite. The company's proprietary process, based on Molten Salt CO_2 Capture and Electrochemical Conversion (MSCC-EC) technology, uses only CO_2 and renewable energy to produce climate-neutral graphite locally in Europe. CO_2GRAPHITE was recognised as a Strategic Project under the EU's CRMA.

Social Geophysics: Stakeholder Engagement for Social License to Operate in Geophysical Surveys in SEEMS DEEP and UNDERCOVER Projects in Kuusamo, NE Finland
Author: Toni Eerola
Affiliation: Geological Survey of Finland

In the SEEMS DEEP project, activities related to the social license to operate (SLO) were associated with geophysical surveys. This was considered important in Kuusamo, where natural resource disputes have occurred. Since the uranium debate (2005-2008), the disputes have concerned mineral exploration and mining.

The project's staff was introduced to the SLO issues at the beginning of the project in 2022. The Municipality of Kuusamo was informed about the project, and its representatives visited the townhouse. A meeting was held with the mayor and the technical director. The project was presented, and potential local challenges were discussed regarding the project. Also, a proposal to

arrange a public event in the townhouse before the first field season was well received by the Municipality representatives.

The SEEMS DEEP staff visited the residents of the research area before the first field work season, while also doing field reconnaissance of the area. Visits were carried out from house to house by knocking on the doors and talking about the project to the residents. Visits went well and GTK representatives had a good reception.

Residents were informed about the project, upcoming geophysical surveys and a leaflet on the project with contact information was shared with them. They were also invited to a public event in the townhouse. Where residents were not met personally, a leaflet was left in their mailboxes together with an invitation to the public meeting. A media release on the public meeting was also published in the local newspaper.

The public event at the Kuusamo town hall's auditorium was fruitful. Circa 20 participants came to hear about the project over a cup of coffee and snacks. The project was presented and after that there was time for questions and comments. One of the participants was the president of a local environmental non-governmental organization. However, no critical comments were made, and the discussion was carried out in a respectful way.

A project representative was also interviewed for a radio station. Overall, the visit and public event in Kuusamo were a success. During the field work, no opposition was met, although some landowners did not give a permit to do studies on their property. These were a small minority, and field surveys could be done comprehensively.

To avoid disagreements, communities are recommended to be contacted and informed personally about a project and its activities beforehand. It is a polite and respectful approach towards the local people in whose territory research is performed. Lack of information may create a void which can be filled by a third party whose version might not be favorable for the project and its holder. This may create unnecessary rumours and ignite opposition. It can be avoided by timely stakeholder engagement and communication. This procedure will also be applied in the UNDERCOVER project led by GTK.

REMINDNET & SLO: Sustainable Futures for Mining Activities
Author: Veiko Karu
Affiliation: Estonian Business School

The Social License to Operate (SLO) has become a critical factor in ensuring the long-term sustainability of mining activities, from exploration to closure and post-mining land use. The COST Action REMINDNET – Recovery of Mining District Network brings together over 90 experts from 30+ European countries to address one of the sector's most pressing challenges: the responsible governance, management, and rehabilitation of mining legacies.

REMINDNET's interdisciplinary approach integrates legal, socio-economic, environmental, and technological perspectives to harmonise best practices, develop a European mining legacy database, and create an open-access visualisation platform. This collaborative effort supports mining authorities, regulators, and industry in implementing socially balanced and environmentally sound strategies.

By linking SLO principles with REMINDNET's objectives, this initiative emphasises transparent stakeholder engagement, community development, and inclusive decision-making as cornerstones of responsible mining. It recognises that sustainable futures depend not only on technical solutions for risk management, remediation, and monitoring but also on trust, dialogue, and shared responsibility between industry, government, and society.

Through capacity building, training, and dissemination, REMINDNET fosters a community of practice capable of influencing policy, improving governance, and shaping post-mining landscapes that deliver social, environmental, and economic value. The poster presents key outcomes, lessons learned, and pathways for integrating SLO into the sustainable management of mining activities, ensuring that legacies are transformed into opportunities for future generations.

Case Study: Opening Dialogue in Community Valued Forests

Author: Susanna Kuusik
Affiliation: State Forest Management Centre (RMK)

This case study explores how Estonia's State Forest Management Centre (RMK) enhances community engagement in forest decision-making through its "community areas" (kogukonnaalad) framework. These areas are forest segments adjacent to settlements where locals frequently engage in recreation such as walking, berry picking, and sports.

RMK collaborates with local municipalities to identify and formalize these community areas, typically during local comprehensive planning processes. Recognizing the symbolic and practical significance of forests for nearby residents, RMK reframed the concept using the term "community area" to foster a clearer understanding and connection.

The decision-making process initiates with RMK and local governments jointly mapping out existing forest usage, identifying stakeholders, and agreeing on basic principles and timelines for planning across all community areas in a given municipality—creating a unified "overall plan" (tervikkava). These overall plans integrate both strategic context and reserve-specific forest operation plans. On each specific community area, proposed works—such as thinning, selective or shelterwood cuts—are developed collaboratively with community input. RMK actively communicates using public channels and invites stakeholders to share feedback and attend local meetings. This inclusive procedure shapes the final, co-designed forest management plans.

Importantly, community engagement on community areas represents only one of several directions in which RMK involves local stakeholders in planning processes. Negotiations and dialogue with

communities and authorities also extend to infrastructure development, large-scale nature conservation works, and the evolution of visitor management practices.

RMK also produced a "Principles of Engagement in RMK" guide that outlines key principles for transparent, timely, and meaningful interaction—creating structured opportunities for stakeholders to exchange information, understand forest plans, and voice opinions.

This participatory approach exemplifies a successful Social Licence to Operate model: it builds legitimacy, trust, and stronger alignment between institutional forest management and local community values. The co-creation of forest work plans fosters mutual understanding—through shared mapping, planning, and dialogue. Even in cases of crisis (e.g., storm damage), RMK ensures prompt local notification and explanation, reinforcing responsiveness to community concerns.

In sum, the RMK's "community areas" engagement framework offers a replicable model for opening constructive, ongoing dialogue with forest-dependent communities, improving governance, social acceptance, and stewardship outcomes.

Development of the Extractive Industry in Central Ostrobothnia
Author: Matti Kinnunen
Affiliation: Geological Survey of Finland

With the start of mining operations, Central Ostrobothnia is becoming one of Europe's most important extractive regions, and the industry and its service networks are already a significant industry in the region. The goals of the European Union's (EU) Green Deal program, Critical Raw Materials Act (CRMA), and recent geopolitical changes have clearly highlighted the crucial need to increase the EU's raw material self-sufficiency. The Eastern and Northern Finland region, as one of the EU's most ore-potential areas, can address this challenge, but only if intra- and inter-regional cooperation within the provinces and the industry is enhanced.

The project addresses the identified need to further develop collaboration in the mineral industry together with Eastern and Northern Finland, and continues the dialogue aimed at mutual EU-level influence of these mineral areas. The project is an adjunct project to the Development of the Extractive Industry in Lapland, Northern Ostrobothnia and Kainuu.

SESSION 4: Case Studies Illustrating Best Practices

KEYNOTE: Keeping the Locals Informed – Practices, Experiences and Blunders from Geological Survey of Finland's Bedrock Projects
Author: Perttu Mikkola
Affiliation: Geological Survey of Finland

Geological Survey of Finland's (GTK) standard operating procedures (SOP) for bedrock research projects also include guidance for informing stakeholders about field activities. Due to the variable

range of methods applied, local conditions, areal and temporal extent of the projects, the guideline is, however, more of a checklist of things to consider than a step-by-step rulebook. Cornerstone of the SOP is proactivity, i.e. the first bulletin is provided before any activities are carried out in the field. In addition to the local press, the bulletin for regional projects is also sent to municipalities, village associations, NGO's etc. In more target-scale studies, the list also includes land owners, both permanent residents and summer cottage owners. Later bulletins are typically published at the end and beginning of each field season. Open town hall meetings are typically held in the beginning and at the end of the project, in longer projects, also yearly during the project. In these, the agenda includes, e.g. the methods applied and their environmental impact, issues related to required permissions, general presentation of GTK and its role in the Finnish mineral sector, local geology, expected and possible outcomes of the project.

Based on its current strategy, GTK is not doing ore exploration sensu stricto; instead, the projects are "mineral potential mapping projects", which aim to improve understanding of the regional geology and associated ore-forming processes in order to attract private exploration into the area by delineating the most potential areas. This role is challenging to explain to laymen who sometimes see GTK simply as a minion of the international mining giants. Therefore, it is relevant to also remind people about the usability of the up-to-date bedrock information, for e.g. aggregate production, evaluation of the geothermal energy potential and estimation of the groundwater quality (especially Fe and As content). On average, the tolerance for GTK's field activities is relatively good, especially among permanent residents, the most critical views being often held by summer residents.

Community Development Agreements – A Blueprint to Reconcile Minerals Extraction and Nature Protection in Europe

Author: Nike Luodes
Affiliation: Geological Survey of Finland

The European Union (EU) is confronted by a complex governance challenge in securing critical raw materials (CRM) while upholding environmental protection standards. The EU-funded CIRAN project investigates the evolving raw materials governance framework, particularly the Critical Raw Materials Act (CRMA) and its implications for environmentally protected areas. With approximately 85% of known European CRM deposits situated beneath or adjacent to environmentally protected regions, and in the absence of clear decision-making protocols to balance protection with extraction needs, the CRMA implementation presents significant dilemmas for permitting authorities.

Our research examined a fundamental question: how might biodiversity and ecosystem protection be reconciled with securing mineral resources essential for Europe's economic stability and quality of life?

The methodology comprised systematic analyses of mining operations in the proximity to protected areas across nine European countries. CIRAN examined successful cases of co-existence and highlighted the good practices adopted by the mining industry and by authorities and the latest technologies that allow to minimise environmental impacts along the mine life cycle. The

methodology used the DPSIR (Drivers-Pressures-States-Impacts-Responses) framework to evaluate policy mechanisms, such as the EU Green Deal. Analyzing the Member States' policy framework, it emerged that an effective balance of environmental protection requirements and demand for CRMs requires a structured process involving multiple inputs and engagement from various stakeholders. This approach can be visualized using a bow-tie framework that aims to guide the development of regulatory policies that strike a suitable balance between environmental protection and CRM extraction. Additionally, the CIRAN project conducted consultations with five different communities located near environmentally protected areas across the EU.

Contrary to assertions in contemporary narratives characterising mining projects as inherently destructive, our findings demonstrate that mineral extraction is both feasible in protected areas and socially acceptable across all studied cases. While current regulatory frameworks do not categorically prohibit mining operations in protected zones, administrative impediments cause considerable delays.

The lack of public acceptance emerged as the foremost barrier to effective CRMA implementation. Resistance typically results from perceived disconnections between EU-level policies and local interests, corresponding with broader Eurosceptic sentiments and mistrust in institutions. Successful mining projects consistently exhibited three characteristics: comprehensive environmental impact assessments, effective stakeholder engagement, and robust post-mining planning.

While the current thinking on obtaining Social Licenses to Operate (SLO) relies on informal agreements, Community Development Agreements (CDAs) emerged as a promising mechanism to address the public trust deficit and facilitate equitable distribution of burdens and benefits. These formal tripartite arrangements between governments, mining companies and communities, focused on long-term regional development and have successfully reconfigured social contracts in various contexts.

CDAs transcend traditional administrative processes by establishing shared visions with clear accountability for all parties, rendering them particularly valuable for projects in ecologically sensitive areas. By facilitating meaningful local participation in decision-making, CDAs establish pathways for communities to obtain direct benefits from resource extraction according to their expressed preferences. This approach addresses the gap between local concerns and EU-level policy priorities, thereby establishing a more robust foundation for societal acceptance of CRM mining projects.

Social Perceptions of Mineral Exploration: Insights from the UNDERCOVER Project
Author: Sam Whittlesey
Affiliation: LGI Sustainable Innovation, Finland

The transition to a net zero global economy is forecast to produce significant gaps between critical mineral demand and supply, and the IEA projects a 31% shortfall between the copper required to meet globally announced climate pledges and the existing pipeline of announced copper projects (IEA 2024). Thus, in the coming decades, critical mineral exploration will remain a necessary enabler

of the energy transition by unlocking additional primary supply for electrification, alongside complementary efforts aimed at promoting sufficiency and circularity. Social acceptance is essential for exploration projects to reach production (Eerola 2022), as demonstrated by numerous recent examples around the globe of commercially viable mine sites failing to operate because of local opposition to mining (ex. protests in Serbia against the Jadar lithium mine).

UNDERCOVER is a Horizon Europe project working to make mineral exploration more viable and responsible. The project will develop a range of innovative technologies in support of critical mineral exploration in deep-land deposits at case study sites in Finland, Portugal and Namibia. UNDERCOVER will also work to support exploration companies in the three case studies in securing a strong social license to operate, by including participatory research on the ESG aspects of each case study site.

This presentation will provide an overview of the initial findings of a comparative study of community perceptions of mineral exploration across the project's three geographically and socially diverse case study sites. The research question guiding the study is: what are the key determinants of social acceptance of mineral exploration, and how can community engagement practices by exploration companies support positive environmental and social outcomes?

To answer these questions, the study will draw upon environmental and socio-economic data from the three UNDERCOVER case study sites, as well as interviews and focus group discussions with exploration companies and residents living around exploration sites. It will be argued that corporate conduct should reflect the unique local socio-environmental conditions and land uses of a given exploration site in order to secure effective social license to operate.

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