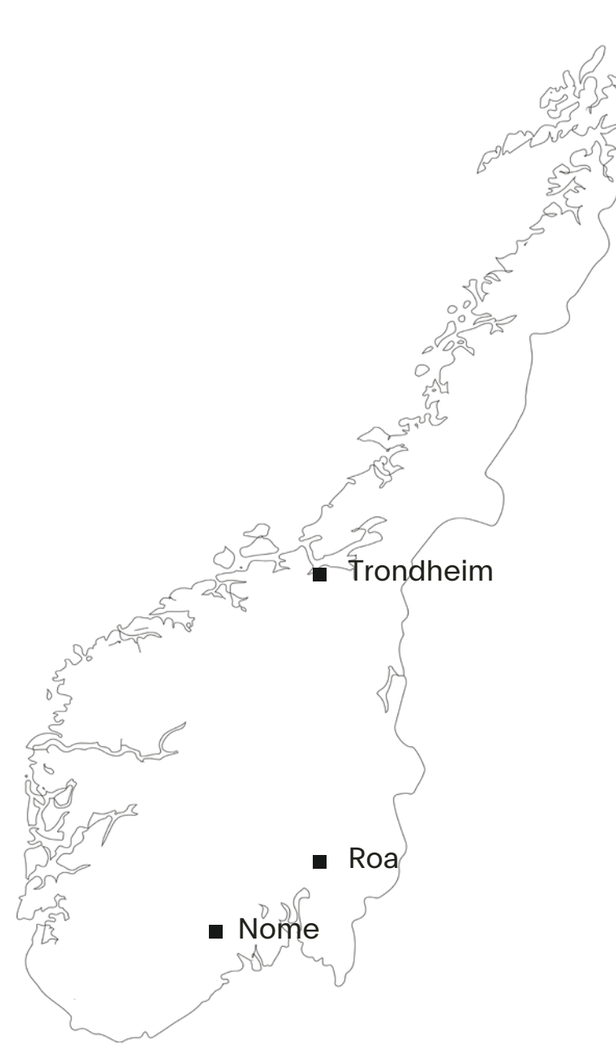
One of the potential sites designated for an industrial mining park. Photo: Aslaug Norendal.

The Fen Complex
Competition Brief

The Fen complex is Europe's largest discovery of geopolitically crucial rare earth minerals. This competition challenges you to explore concepts for how to organize the Industrial mining park and give form to the vast landscape alterations accompanying the mine.

How can we think differently about industrial sites to minimize land use, achieve flexible and circular synergies and see the transformation of the landscape as an opportunity to plan something truly new?

Content



Norwegian sites in Europan 18
Photo: Europan Norway.

Photo: Fritt Fall foto og design.

01: Competition

Competition procedure and key info

Timeline
- 03.03.2025 Competition launch and registrations open
- 29.06.2025 23:59 Submission deadline
- 17.11.2025 - Results are announced

Price money
1st prize 12 000 EUR
2nd prize 6 000 EUR

Commission for winners
After the competition Nome Kommune has the intention of awarding a contract to the winning team(s) for detailing the proposal further and adapting it to work as a base for the planning processes.

Post competition immediate procedure
1. National workshop with winners and runner-ups following the award ceremony
2. Invited workshop on-site for winners
3. Futher process negotiated between winner and site representative

Site representive (commissioner):
Nome kommune

Actors involved
Nome kommune

Organizer and competition secretariat
Europan Norge
Daniel Hansens Gate 7, 5008 Bergen

Team representative
Architect, landscape architect or planner.

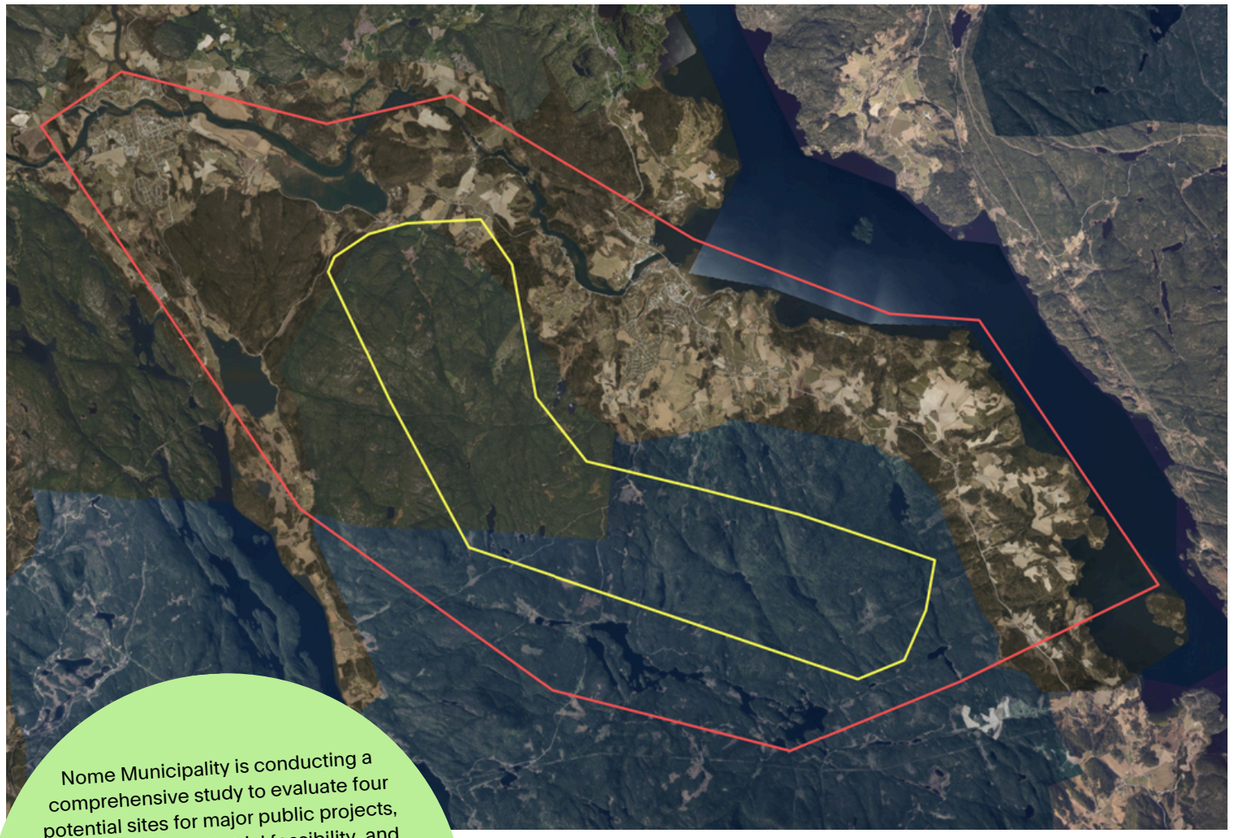
Expected skills
Multidisciplinary teams with strong skill sets in architecture, landscape architecture, planning and industrial design.

Communication
Question can be asked anonymously at the europan-europe.eu platform. After the competition projects are published online publication and at a local exhibition.

Jury
The jury process is organized in two steps:
In the 1st round the jury and site representative selects a short list of projects that moves on to the second round.
In the 2nd round the jury works autonomously and selects winner, runner-ups and special mentions.

See the full rules for Europan 18 at europan-europe.eu

Competition premise



Study Site Project Site Photo: Europan Norway.

Nome Municipality is conducting a comprehensive study to evaluate four potential sites for major public projects, assessing their industrial feasibility and the environmental impacts. The final report will be published this summer, guiding site selection expected in the fall. **Europan's role is to conceptually explore the Green Mineral park, providing proposals as discussion tools and inspiration for municipal planning, regardless of the chosen site.**

Ulefoss and Lunde, two small towns in the municipality of Nome, are on the precipice of a decision that will mark their towns for centuries to come and alter the landscape permanently. Europe's largest discovery of rare earth elements (REEs), a geopolitically crucial resource in short supply, needed for key technologies such as supermagnets, computers, and rockets, creates massive pressure to open up for mining. However, the municipality has not yet decided on whether the mine should be established or not. If the mine is approved, the Municipality wants it to be the most circular and sustainable mining operation possible.

The mine will demand considerable amounts of land, and produce large-scale impacts on nature, wildlife, and the landscape itself. Even with the newest technologies for automated underground mining, massive areas for landfills will be required to deposit rock and other mining waste. A large industrial park must be established, adjacent to the mine, for the processing of these materials.

The scale is hard to fathom. The landfills would become so large, that they might start rivaling the size of the mountains circling the towns. Yet, a mine here would have vastly higher environmental and human rights standards than extraction elsewhere. It would also loosen EUs dependence on China for crucial resources, and potentially provide lucrative jobs and development in Nome.

The municipality is using the term "Green mineral park" to describe their vision of an innovative industrial park. A park where different companies work in synergy to reduce their environmental footprint and utilize as much of extracted material as possible, generating value and jobs. Only 1% of the rock extracted and processed at the Fen Complex will be REEs, but the leftover 99% could have substantial commercial and industrial value.

There is a huge potential for circularity! How can one make sure to maximize the positive ripple effects, minimize the negative ones, as well as using the development to revitalize the stagnant towns Ulefoss and Lunde?

The role of Europan 18 is to bring the vision of a "Green Mineral park" to life. While discussions around the mine have been focused on technical, economic, and political aspects, they lack a tangible vision of how this transformation can best integrate with surrounding towns and landscapes. Architects, landscape designers, and planners can bridge this gap, translating abstract plans into physical forms. You are therefore asked to conceptualize the proposed industrial development, ensuring flexibility for future technologies, while exploring how infrastructures, ecologies, and communities can coexist in new ways.

Instead of defining a fixed plan, Europan''s role is to spark discussion. The proposals can provide a vision—a tool for the local community, municipality, and businesses to understand what this transformation could potentially be. As the Green Mineral park evolves over time, these ideas can serve as reference points, shaping strategies beyond short-term economic interests. This is a chance to set terms for how large-scale industries can integrate with existing communities, ensuring that development is not just profit-driven but also socially and environmentally responsible.

Generate Ideas. Create concepts which will inform the municipality's planning of the Green Mineral park.
Foster Dialogue. Visualize strategies that can help the public imagine the park and spark further discussions between the public and the municipality.
Explore Circularity. Explore strategies that promotes as much re-use as possible with the aim to minimize environmental impact and footprint.

Why it matters to engage

A mine can never be fully sustainable. In recent years, Norway's architectural discourse has centred around principles of degrowth and non-extractive architecture. These ideas challenge us to reconsider the use of resources, arguing for minimal environmental impacts. However, the global reality we face is an increase in resource extraction, not a decrease. If we, as architects, landscapers and planners aim to influence this trajectory, we cannot stand on the sideline.

We must actively participate in the conversation and apply our expertise where it matters most. What remains true about non-extractive architecture is its focus on the root of the problem: the origins of the materials we build with. Sustainable architecture cannot simply mean drawing green rooftops or planting trees around buildings. We must go deeper—to the very places materials come from. If we care about sustainability, we must care about the processes of where and how materials are extracted, and how much of these resources we ultimately put to use.

As an illustration, consider the cattle industry: when an animal is slaughtered, every body part has the potential to serve a purpose. In contrast, much of the material extracted in today's building industries remains unused — a waste of resources with devastating environmental consequences. If we are to extract, we must do so with intention and respect. Every part of the "slaughtered animal" must serve a purpose. This principle—minimizing waste, maximizing circularity—is at the heart of the challenge posed by the Fen Complex.

These minerals are crucial for technologies driving the green transition: wind turbines, electric vehicles, and solar panels. Yet, they come with a significant environmental cost. As architects, landscapers and planners we should participate in exploring how this process can occur as respectfully and responsibly as possible.

We know this will not be perfect. Norway has seen many industrial parks developed in recent years, that harm their surroundings, leaving scars on the environment and offering little value to local communities. Now, we have an opportunity to demonstrate how architectural and spatial thinking can make a tangible difference—creating a model for how such projects can be approached with care, circularity, and long-term vision.

The challenge is immense, but so is the opportunity. This is a call to action to engage deeply with the systems shaping our world and to explore how design can lead the way toward a more sustainable, thoughtful future.

What can we do?

1. Architects and landscape architects can challenge existing industrial typologies and conventions
2. Architects and landscape architects can plan landscapes that are part of a bigger eco-system, not strictly utilitarian.
3. Architects and landscape architects have visual skills that can make these ideas spatial and understandable.

December 2023, NRK interviewed prominent Environmental activists about mining operations at the Fen Complex, as it could mean the prevention of environmentally devestating deep sea mining. Their answers are translated from Norwegian to English on the next page. All photos by: NRK.

https://www.nrk.no/vestfoldogtelemark/miljororsla-samlar-seg-om-fensfeltet-etter-nyheit-om-havbotnmineral-1.16669007

Anja Bakken Riise - Framtiden i våre hender
Framtiden i våre hender is not a traditional supporter of onshore mining. Their motto is to reuse more metal and minerals and a stronger circular world economy. Nevertheless, Riise acknowledges that there will be a need for mineral extraction in the green transition.
Given that mining at the Fen Complex will be subject to strict environmental requirements, she stands positive.
– Right now, the Fen Complex stands out as a project that could meet many criteria for a potential [green] mining project.

Truls Gulowsen - Naturvernforbundet
Naturvernforbundet realizes that the minerals at the Fen Complex are so valuable that mining operations is inevitable. Gulowsen believes that the government must therefore prepare and develop for an operation that can proceed in a considerate and defensible manner.
– the Fen Complex should be Norway's most prioritized mining project.

Sigrun Gjerløw Aasland - environmental foundation Zero
Zero is concerned with the lack of knowledge on that authorities have on environmental risks concerning mining. Aasland believes that there is much more knowledge about the Fen Complex and mining on land than there is in the deep sea. She is therefore positive to the Fen Complex, but want to stop further exploration on the seabed.
– If we are going to intervene in nature, we depend on knowledge. We do not have that for seabed minerals.

Sigrid Margrethe Hoddevik Losnegård - Natur og Ungdom
Natur og ungdom is an organization that has strongly opposed land-based mining. They have been particularly critical of the mining projects at Førde and Repparfjorden. Losnegård nevertheless emphasizes that they are not fundamentally opposed to all mining, but are opposed to sea disposal. And mineral extraction on the seabed, of course.
– Mining will never be completely sustainable, but in the case of the Fen Complex it is important enough to extract these minerals.

Competition task

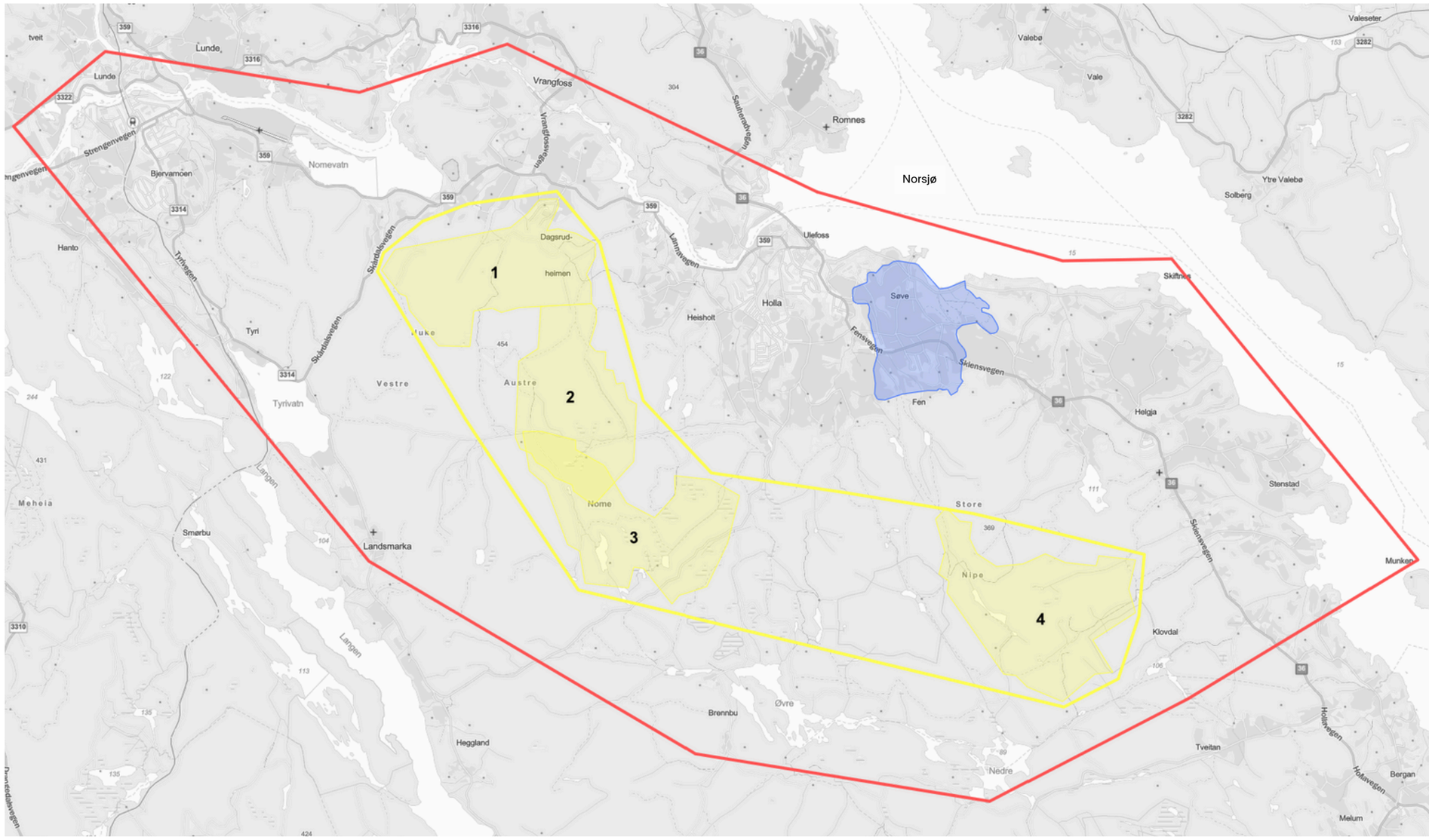
This is a speculative task asking you to be a futurologist. You will have to explore what something can be without knowing all the facts.

Create a vision for the “Green Mineral park.” Use your skills as architects, landscapers, and planners to imagine and explore how one might imagine the planning of a circular industrial park with a large footprint.

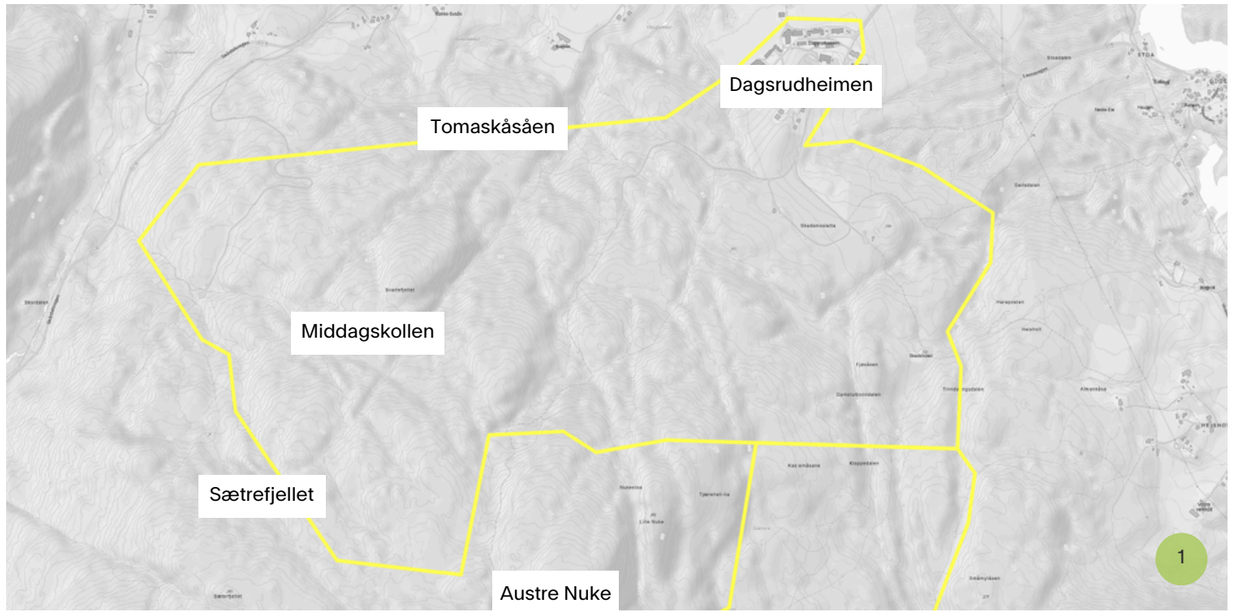
The municipality is currently evaluating four specific locations, each reflecting the scale and requirements of the proposed Green Mineral park and associated landfills. **The park has a planned max size of 3km2.** These locations are situated within the broader Europan site, delineated by the yellow boundary on the map.

Choose one of the four yellow areas as the focus of your proposal. Rather than designing a fixed solution, we are looking for principles of design —an adaptable approach that can be applied to any of the four sites, ensuring that its core ideas can be transferred and implemented regardless of location.

Within the study site (red line), you are free to work strategically and spatially, exploring how a Green Mineral park connects to the broader society and how it can create ripple effects that enhance the town’s attractiveness.



1-4 Municipal Study Areas | Project Site | Study Site | Fen Complex | 1 Dagsrud | 2 Nukedalen | 3 Vindsås | 4 Bærevann | Photo: Europan Norway.



1 DAGSRUD

Dagsrud is located in the northernmost of the alternatives. The area is located on a wooded north-facing slope. The buildings adjacent to Dagsrudheimen are part of the area, but not the agricultural land and the intermediate area.

- A facility at Dagsrud extending towards Sætrefjellet/Nuke.
- A deposit site north of Middagskollen, east of Tomaskåsåsen.
- Transportation must take place via the new county road currently under construction from Kaste to Stoa.

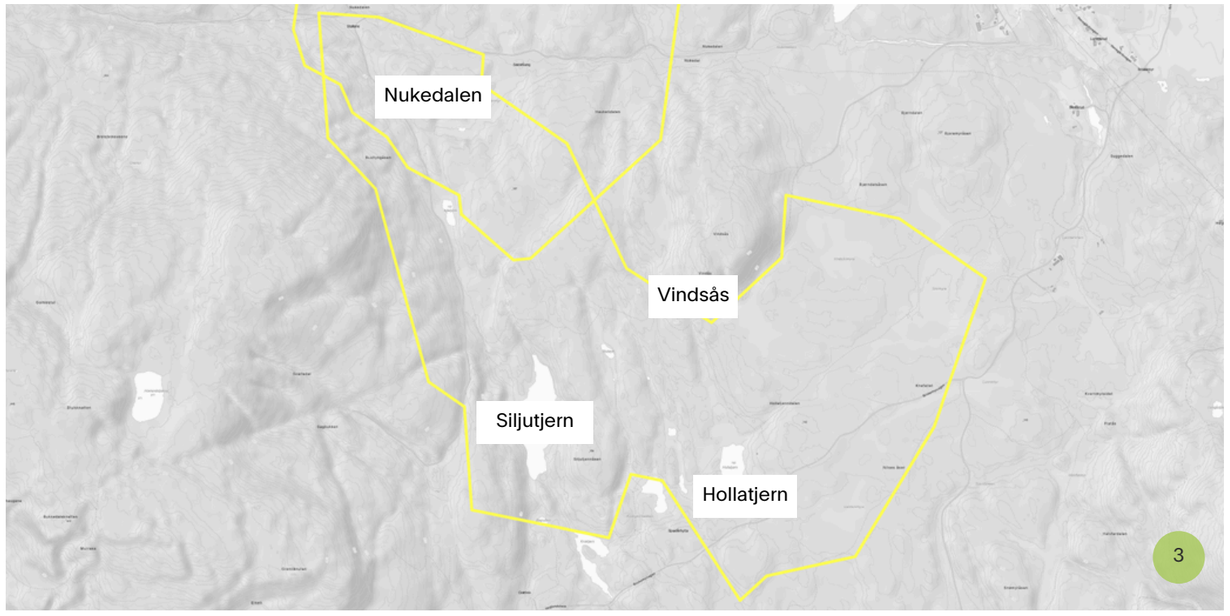
2 NUKEDALEN

Nukedalen is located south of Dagsrud alternative and with some overlap with the Vindsås alternative to the south. The area is hilly and forested with several valleys

- Deposit could be placed towards **Austre Nuke**, between **Knatten** and **Nonsås** or in **Nukedalen**
- Transportation via a new road.

Registered conditions:

- Arable land, peat, and rich marshland.
- Large parts of the area are below the marine limit.



3 VINDSÅS

Vindsås is located south of the Nukedalen alternative with some overlap. The area is gently rolling and forested in addition to having larger areas of bog and pond.

- A facility at **Vindås**
- A deposit site in **Siljutjern** and/or **Hollatjernor** in **Nukedalen**
- Transportation via a new road.

Registered conditions:

- Arable land, peat, and rich marshland.
- Large parts of the area are below the marine limit.

4 BÆREVANN

The mining companies' preferred site, with hilly terrain and direct access to RV36. Its strong connection to Grenland may reduce Nome's local impact if workers settle there instead. The alternative is the southernmost of the areas. The terrain is very hilly. Bærevann is located as a clear depression in the landscape.

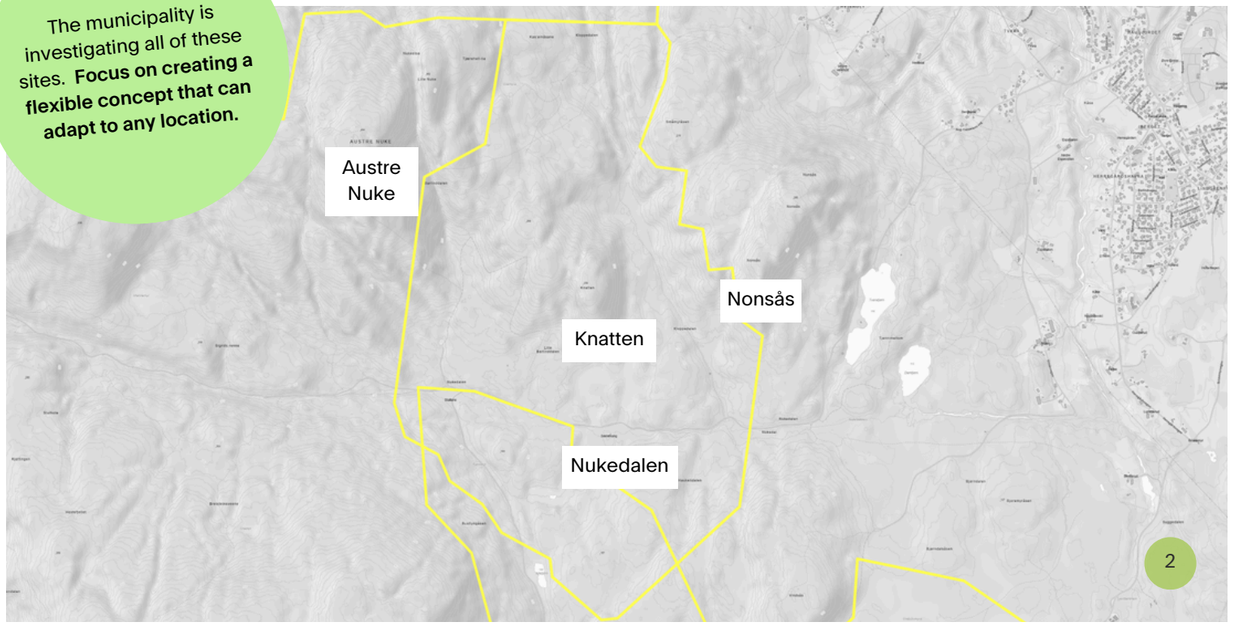
- A deposit site in **Bærevann**.
- Transportation via RV36.

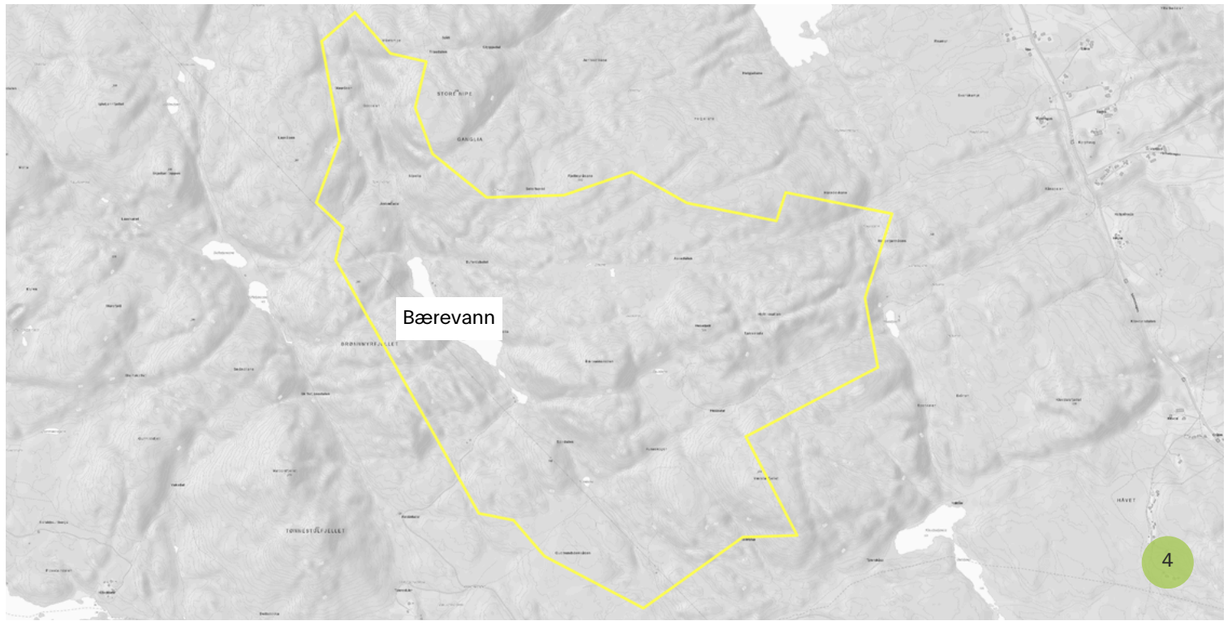
Registered conditions:

- Fully cultivated high-quality farmland.
- Important natural habitats. with peat and marshland.
- The area has runoff towards Norsjø.

The municipality is investigating all of these sites. **Focus on creating a flexible concept that can adapt to any location.**

All photos: Europan Norway.





Competition guidelines

This is the type of competition where one cannot address all of the client's needs. We are looking for projects that can challenge us and explore completely new thoughts, that can illustrate and shine a light on what a Green Mineral park can be.

Physical Aspects

- **Flexible and Adaptive Design** – Create a Green Mineral park that can evolve over time to meet changing needs.
- **Landscape Regeneration** – Explore how waste materials can be repurposed to restore and enhance the landscape.
- **Human- and Nature-Centred Design** – Design a Green Mineral park into a vibrant space both for people and nature, rather than a lifeless industrial park.
- **Challenge norms** - Strategically locate fascilities to maximize possible synergies while minimizing environmental and societal impact.

Immaterial Aspects

- **Circular Systems** – Demonstrate how industries can repurpose byproducts and collaborate to create closed-loop systems.
- **Community and Identity** – Showcase how the Green Mineral park can integrate with the existing local community, strengthening its cultural and social ties.
- **Long-Term Impact** – Assess the park's influence on infrastructure, housing, employment, and social life, addressing both immediate and future effects.

Photo: Miracle Mineral

Commission for winner(s)

Nome kommune will invite the winning team(s) for a workshop on site in the spring 2026.

Based on the results of the workshop, Nome kommune has the intention of awarding the winning team a follow up contract to develop the proposal further.

The exact timeline and content of the follow up contract will be negotiated with the team based on the character of the proposal, the particular skill of the team and evolving needs of the client.

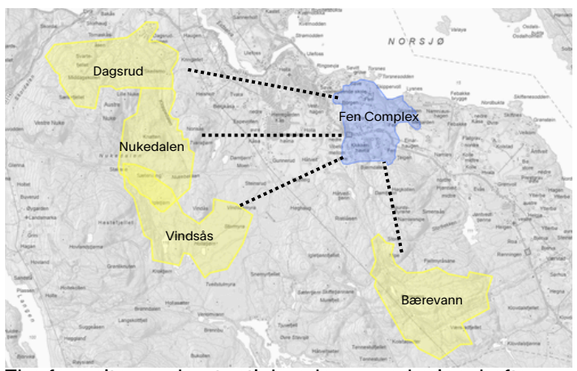
Tests from the Fen Complex
Photo: REE Minerals.

02: Understanding the program

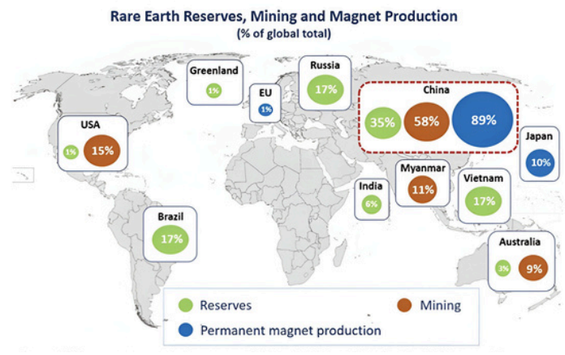
- The Mineral park explained
- Actors and flows
- Spatial program
- Development phases
- The generic mine
- Consequences on the site
- Mine waste as resource
- Symbiosis of industries
- A new landscape + case studies

Photo from one of the sites, by Aslaug Norendal

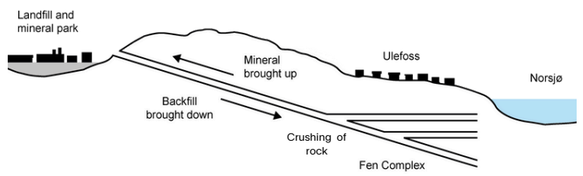
The Mineral Park explained



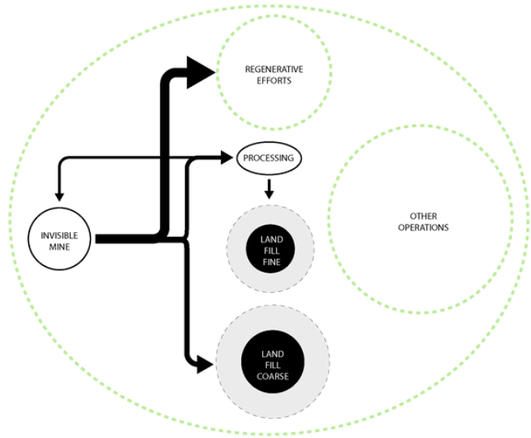
The four sites and potential underground mineshafts leading from them and to the Fen Complex, by Europan Norway.



Rare Earth Reserves, mining and magnet production, by USGS, company reports, industry reports, BMO Capital Markets, Baker Steel Capital Managers LLP.



Showing the concept of an underground mine, by Europan Norway.



Diagrams showing the operations of a Green Mineral park, by Europan Norway.

The mining concept under planning for the Fen complex is intended to be a completely underground operation. To reach the deposit, which is found 100 meters below ground and deeper, a long tunnel with a gentle slope will be established from one of the four sites. The first step of crushing the rock will happen with large machines below ground before conveyor belts move ore up through the tunnel to the surface, and processed ore back into the mine. After depletion, mining shafts will be filled with processed ore to reduce the amount of landfills needed on the surface and to as stabilising the mountain.

The Green Mineral park concept originates from the Norwegian Mineral Strategy, though its exact definition remains unclear. The municipality is using the term to describe a large industrial park above ground, adjacent to the mine where the ore is further processed, stored, and shipped away. This industrial park can contain a multitude of different programs: the core activities related to mining and processing REEs are a given, but preferably it will also hosts factories using waste products to create new products, landscape restoration efforts, support functions, energy production, educational and research facilities, as well as other activities that can partake in some kind of synergy.

Rare Earth Minerals (REE)
Rare earth minerals are a group of 17 elements that are essential for the technologies shaping our modern world. From smartphones and electric cars to wind turbines and advanced defense systems, these elements are the backbone of the green and digital transitions.

Despite their name, REES are not necessarily scarce in nature. The challenge lies in finding economically viable deposits that can be extracted sustainably—and ensuring that either you or a close ally controls the mining, so you're not dependent on unreliable external sources.

Geopolitics of REEs
The global competition for rare earth elements has intensified in recent years. China currently dominates the supply chains, which poses a significant geopolitical challenge for Europe and its allies. In response, initiatives like the EU's Critical Raw Materials Act and partnerships such as the Minerals Security Partnership aim to diversify supply and strengthen strategic autonomy.

In this geopolitical landscape, the Fen complex emerges, potentially containing the largest source of rare earth minerals in Europe. This places Nome at the intersection of global demands and local realities, where the competition for critical resources meets with the everyday lives of a small community.

Approach
The mineral park's core functions revolve around its various ore processing facilities. As mentioned, only 1% of the rock extracted and processed at the Fen Complex will be REEs, but the leftover 99% could have substantial commercial and industrial value.

In the first stages of developing the facility, waste rock from the mine will be used to build foundations for the processing facilities, offices, housing for workers, service areas for machines, as well as infrastructure such as power and roads. After the park has been established, the landfills will keep growing as rock is no longer needed for foundations. The size of these landfills are difficult to assess beforehand but have the potential to be immense.

If left over masses can be activated and become productive, rather filling up landfills, it would have major benefits. Environmental footprint would be radically reduced and the value generated from the extraction would multiply as waste rock would be upcycled. The landfills would also take longer to fill up, allowing the mine to operate for longer.

Land efficiency and mixed-use
The main issue of establishing the Green Mineral Park is that of coordination and organization. The scale is large, and mining and mineral processing are highly specialized businesses. Each actor usually specializes in just a few processes and only has the capacity to plan their own production line. It is left to the municipality, which stands to benefit from enabling synergies to incentivize for a holistic and circular approach.

As part of its effort to coordinating actors, Nome municipality enters Europan to generate its own holistic vision of what a Green Mineral park could be- an overarching vision that can bridge different actors.

The two main components of this problem are 1: to challenge traditional modes of monofunctional industrial planning to achieve denser, more area efficient and flexible use of the land. 2: working creatively and with landscape with giving form to new landscape left by the mine, and exploring how it can become something else than a gray mountain of rock.

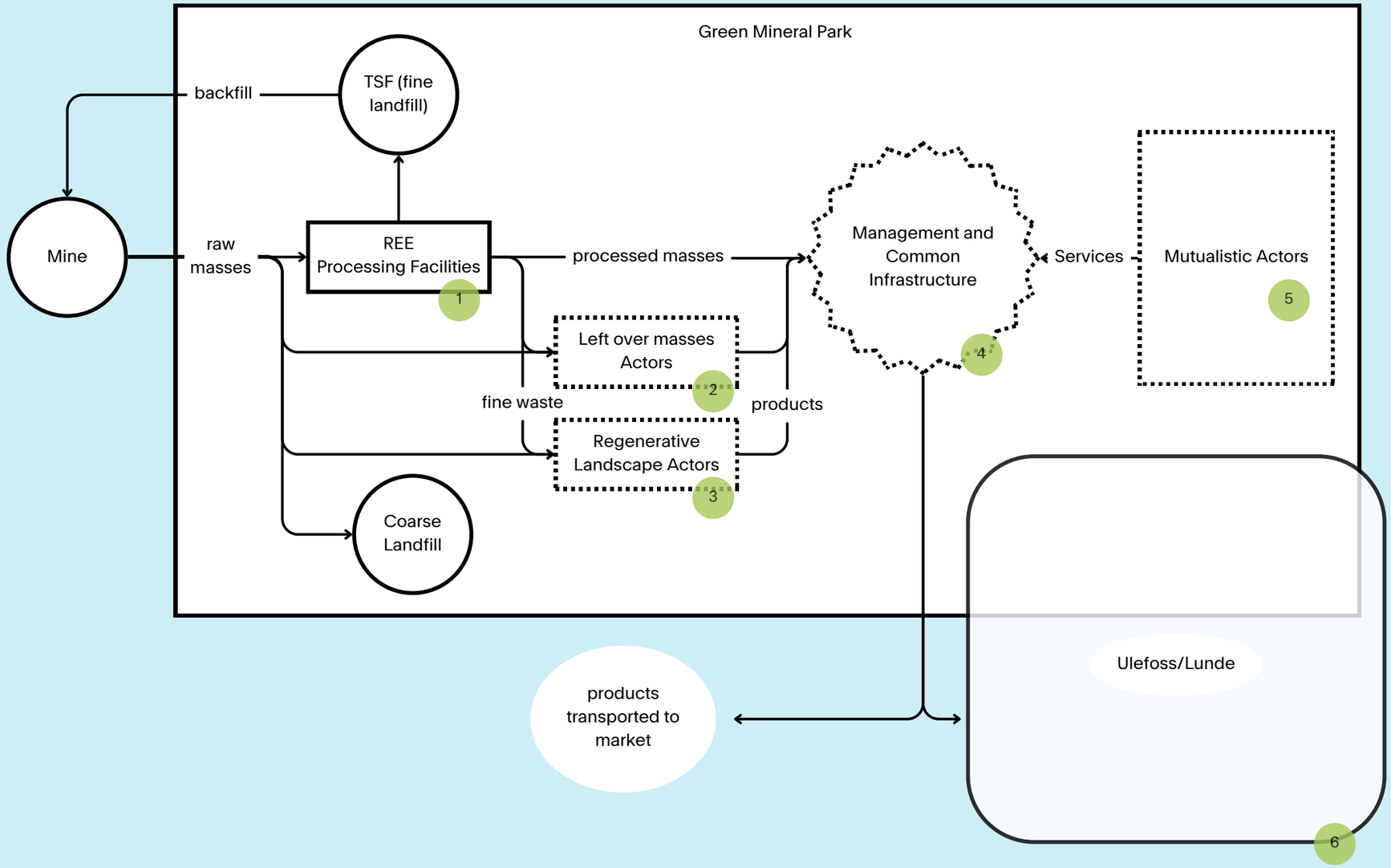
Actors and Flows

This diagram illustrates possible interconnected flows and actors within the Green Mineral park, highlighting how they can interact. While it primarily focuses on material flows, similar movements can also be imagined for the sharing of knowledge and services.

Rather than a fixed blueprint, this serves as a flexible tool for understanding the Green Mineral park while leaving room for experimentation and adaptation. The park will evolve over time, offering opportunities to refine and expand upon this concept.

A key distinction in the park's development is between the infrastructure actively planned by mining companies (full lines) and speculative infrastructure (dotted lines). The latter is important to the parks concept, but remains fairly undefined. Mining companies are already planning certain facilities, but other elements—such as shared spaces, logistics, and circular economies—lack clear ownership and direction.

This speculative side, the dotted lines, offers the most room for innovation. It is here that Europan participants can have the greatest impact, introducing new industries, collaborations, and ideas that shape the park's future in ways that mining-driven infrastructure alone cannot.



1 REE Actors

The REE actors represent **the mining companies.** Processing requires dedicated spaces for **sorting extracted masses**, **hydrothermal leaching**, **byproduct management and other programs.**

2 Left Over Masses Actors

These are actors that can repurpose **surpluss masses from mining** activities **into valuable byproducts**. Construction companies may use processed minerals for construction and specialized chemical industries can transform fine clay into new products etc. (see page 29 for more examples).

3 Regenerative Landscape Actors

These actors make efforts to regenerate landscape which the Green Mineral park comes in contact with. This can include **reforestation companies**, **soil remediation**, and **composting facilities** that turn organic waste into resources for agriculture or ecosystem restoration (technosols).

4 Management and Common Infrastructure

A **central management laying the foundation for a common infrastructure,** working for easier collaboration between different companies and streamlining operations within the Green Mineral park. They facilitate shared utilities, such as **roads**, access to **energy**, and **IT** networks.

5 Mutualistic Actors

Various companies can support the Green Mineral park by providing services that enhance operations and workers well-being. For instance, **transport companies** can handle logistics, **healthcare providers** can offer medical services to employees, while **food and catering services** can supply meals and provisions. **Cleaning and waste** management companies can maintain safe and hygienic working conditions. Other services could be **educational facilities, social spaces, and offices etc.**

6 Ulefoss/Lunde

Ulefoss and Lunde have the potential to grow alongside the development of the Green Mineral parks. For this to happen consider how the towns and the Green Mineral park can relate. Can programs and activities related the Green Mineral park be placed in the towns?
How can you ensure that the Green Mineral park strengthens the two local towns, rather than strengthening only the near lying Industrial region of Grenland. (see page 22).

Spatial Program

Most industrial areas are planned in a sprawling monofunctional manner that isolates industries from each other and therefore doesn't use space in the most effective manner. The goal for the Green Mineral park is to challenge this convention and showcases how functions can be mixed, area usage can be optimized and businesses can be incentivized to collaborate.

There is potential in exploring synergies, shared infrastructure and possible collaborations, such as transport routes or TSF facilities. Additionally, exploring how they might connect with other businesses to create a circular economy, particularly in the handling of waste materials.

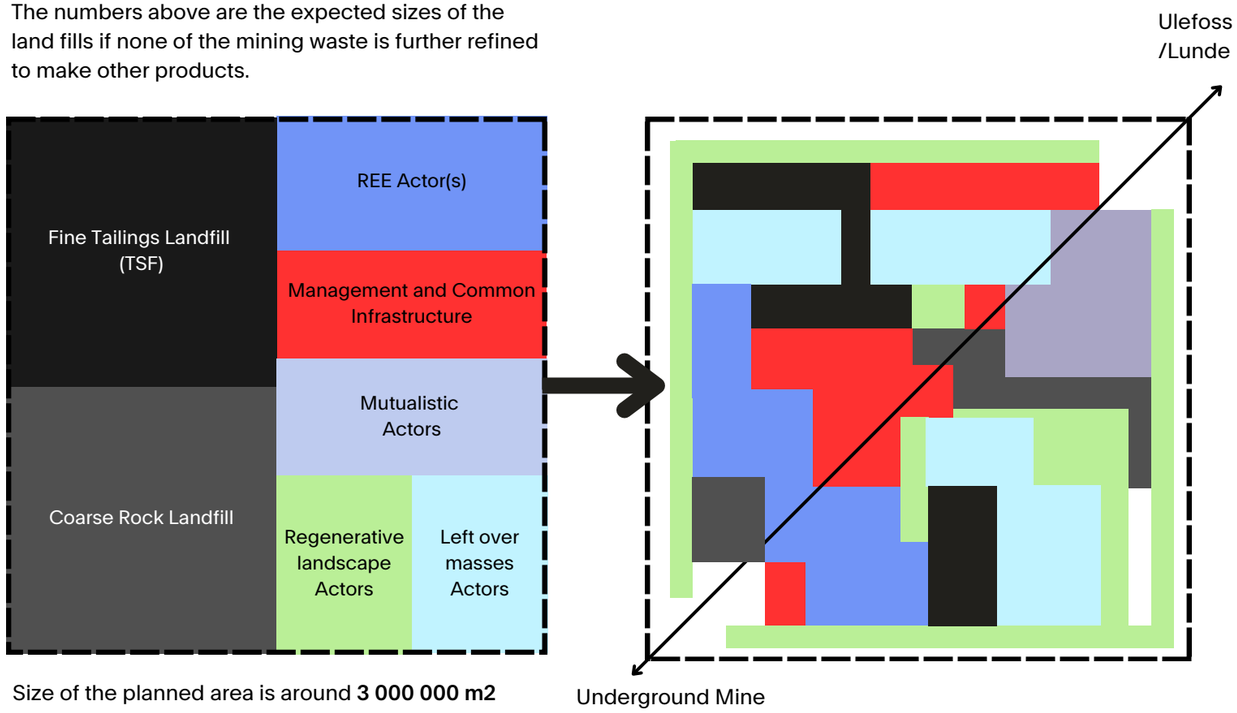
At this stage, the key consideration for Europan participants is not specific square meter allocations, but how possible interactions can happen between industries within the **3 km² framework**. The relationship between the the various actors in the Mineral Park has potential to be explored further.

Fine Tailings Landfill (TSF)	approx 30 mil m3
Coarse Rock Landfill	approx 40 mil m3

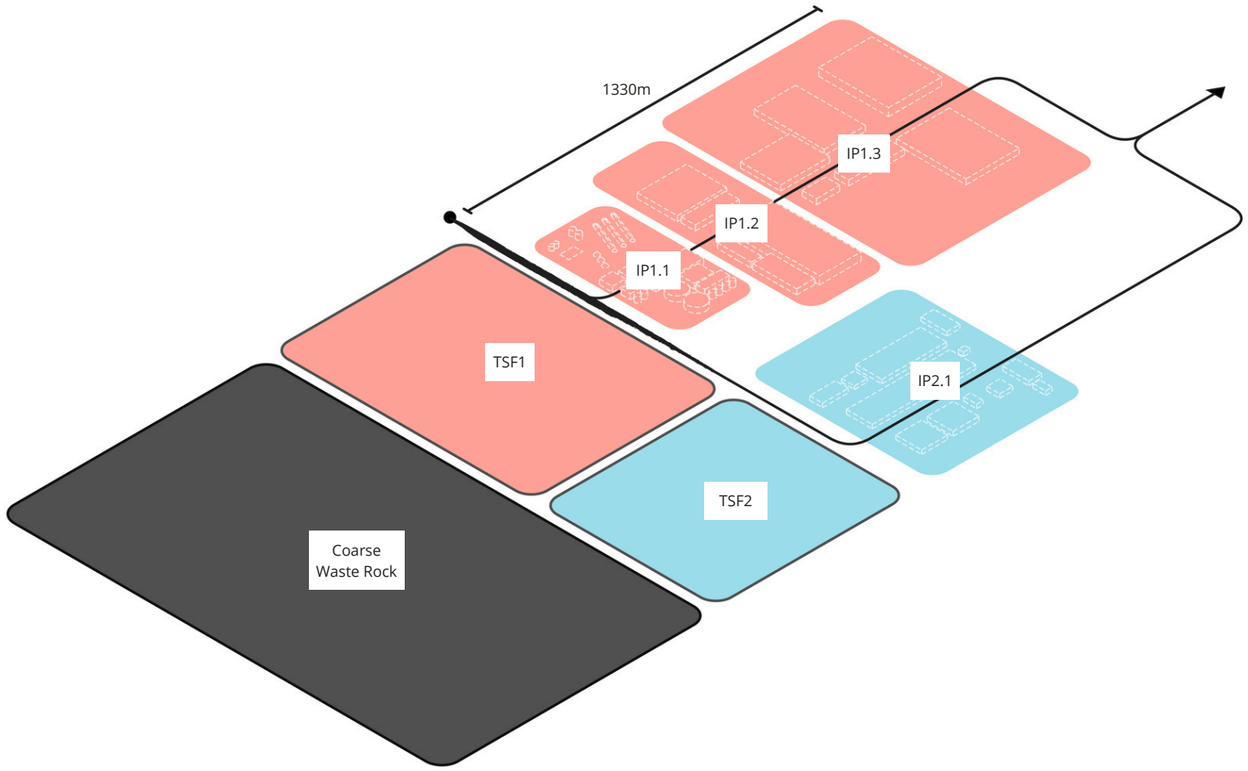
The numbers above are the expected sizes of the land fills if none of the mining waste is further refined to make other products.

To illustrate this, Europan has created a diagram showing approximate sizes (down to the left). These are not exact measurements but serve as a guiding framework. Beside it, another diagram explores how industries could coexist more efficiently—intertwining programs, fostering synergies, and encouraging collaboration, much like a city where shared resources and dialogue drive innovation.

The landfills are also represented in the diagram, but their final sizes may vary based on on the landscape which is chosen and the extent to which the waste material can be reused. Initially the landfills will be relatively small, as the first masses extracted are planned to be used for levelling the landscape where the REE facilities will be placed. As mining and processing activities continue, the volumes will steadily increase.



Size of the planned area is around **3 000 000 m2**



IP1.1 industrial Park 1	188 000m2	Need for start of construction phase for site development approx. 2026 – 2030
IP1.2 industrial Park 2	251 000m2	Phased need during project development approx. 2029
IP1.3 industrial Park 2	900 000m2	Potential long-term expansion, possibly after 2110
TSF 1	742 000m2	Fine mineral land fill (TSF) footprint dependent on landscape.
IP2.1 industrial Park 2	742 000m2	Mining company 2 request for sizes
TSF 2	500 000m2	Fine mineral land fill (TSF) TSF footprint dependent on landscape
Coarse Waste Rock	1 656 000	Size based on average depth of the two TSF requests. Size dependent on the landscape.

The illustration above shows the initial size requests from two companies interested in mining at the Fen Complex, and correlating landfills. The diagram is speculative, and it is clear that the proposed industrial parks to the right are oversized. The land fills on the left, may be close to real needs. **These requests far exceed the 3 km² the municipality plan to use**, highlighting the need to create **strategies that effectives' space.**

Europan particants can challenge how the companies interact with each and other actors. In traditional mining projects these actors would usually want exclusive deals and work insulated. The Green Mineral Park concept challenges this notion, and asks how different actors are incentivized to work together and minimize space need and waste.

It's uncertain how many mining companies will establish themselves in the Green Mineral park. While two have submitted size requests, others have shown interest. But it is also possible that it in the end, there will only be one company.

Development phases

Today
- The municipality is considering different sites
- Pilot projects initiate looking into profitability of REE mining
- Municipality decides if they want a mine and where. If they decide to, the following phases are set in motion.

Site preparation
- Clearing the Green Mineral park area of forests and loose materials.
- Developing infrastructure (roads, electricity, water, etc.) leading to the Green Mineral park.
- Tunnel excavation to access the mineral deposits.
- Rock masses from roadwork and tunneling will be used for foundation preparation for future buildings in the Green Mineral park and, if necessary, for additional roadwork.
- Temporary access roads or forestry roads.
- The construction phase requires temporary housing for specialized workers.

Building
- This phase begins once the foundation reaches the required size.
- Once sufficient space is prepared, mining companies will begin constructing processing facilities.
- This phase requires temporary housing for specialized construction workers.
- Transportation of building materials, machinery, and equipment.

Operational
- Primary operations: production and associated services (e.g., workshops, washing stations, storage, offices, administration, kitchens/canteens, maintenance, security, research, and development).
- This phase leads to permanent settlements and commuting workers.
- Transport of REEs, by-products, and other goods produced, as well as the movement of personnel.
- Waste deposition.

Expansion
- Excavated materials will be used to establish new foundations for industrial buildings. This can occur in multiple stages.
- Creation of interconnected industries and services within the Green Mineral park.
- Inclusion of additional industries and repurposing of mining waste for secondary products.
- Encouragement of educational institutions, research centers, and businesses to participate in development.
- Reforestation, soil remediation, and waste transformation processes implemented.

The longer picture (2125)

The municipality is currently beginning to explore long-term plans for the Green Mineral park, looking ahead 100 years. To ensure a structured and well-organized approach, a masterplan will be needed to guide its development. The proposals from Europan 18 can serve as ideation and possibly a foundation for later work that the municipality will do in creating such a masterplan.

Open Questions

The specific buildings and businesses that will be established in the Green Mineral park remain uncertain. Therefore the municipality is interested in establishing guiding principles that allow for organic growth. Instead of a rigid plan, a flexible framework can support shaping the park over time, ensuring it remains adaptable to new opportunities, needs, and ideas.

Here are some questions to help open up the exploration:

Integrating Spaces for Humans & Nature
- How can the Green Mineral park become a space where people want to be and work?
- How can the local community and local businesses be brought into the Green Mineral park? Education, jobs, other things?

Building over time & adaptability
- How can the Green Mineral park be designed to evolve over decades?
- What strategies allow for flexibility while still guiding towards a long-term vision?
- How can future-proofing be integrated to ensure continued use even if mining operations cease?
- What infrastructure should be prioritized in early stages versus later stages?

Spatial efficiency & Integration
- How can the large-scale industrial park be designed to function efficiently without becoming a vast grey, empty zone?
- What are alternative ways to structure and organize the land use for maximum effectiveness?
- How can the park remain porous and connected to its surroundings?
- Can the park serve as a testing ground for new forms of sustainable industrial clustering?

Circularity and resource flows
- How can transportation between different actors be optimized to reduce waste and inefficiencies?
- How can circular economy principles be pushed to the furthest extent possible?
- What industries or businesses could be symbiotically connected to the Green Mineral park?
- Can waste be transformed into a design asset rather than a problem?
- How can effective energy solutions be implemented?

Challenging assumptions & finding unexpected opportunities
- What aspects of traditional mining operations could be rethought or restructured?
- Could the park become an innovation hub for materials science or new construction techniques?
- How could technology (automation, AI, robotics, etc) be integrated into the park's development?

The Generic Mine

Norway strives to be a country at the forefront of sustainability efforts, but progress within the industry of mining has been challenging. Innovation in ways of operating, managing and restoring methods, have been lacking. Currently there doesn't exist alternatives, beyond what we know as the generic mine.

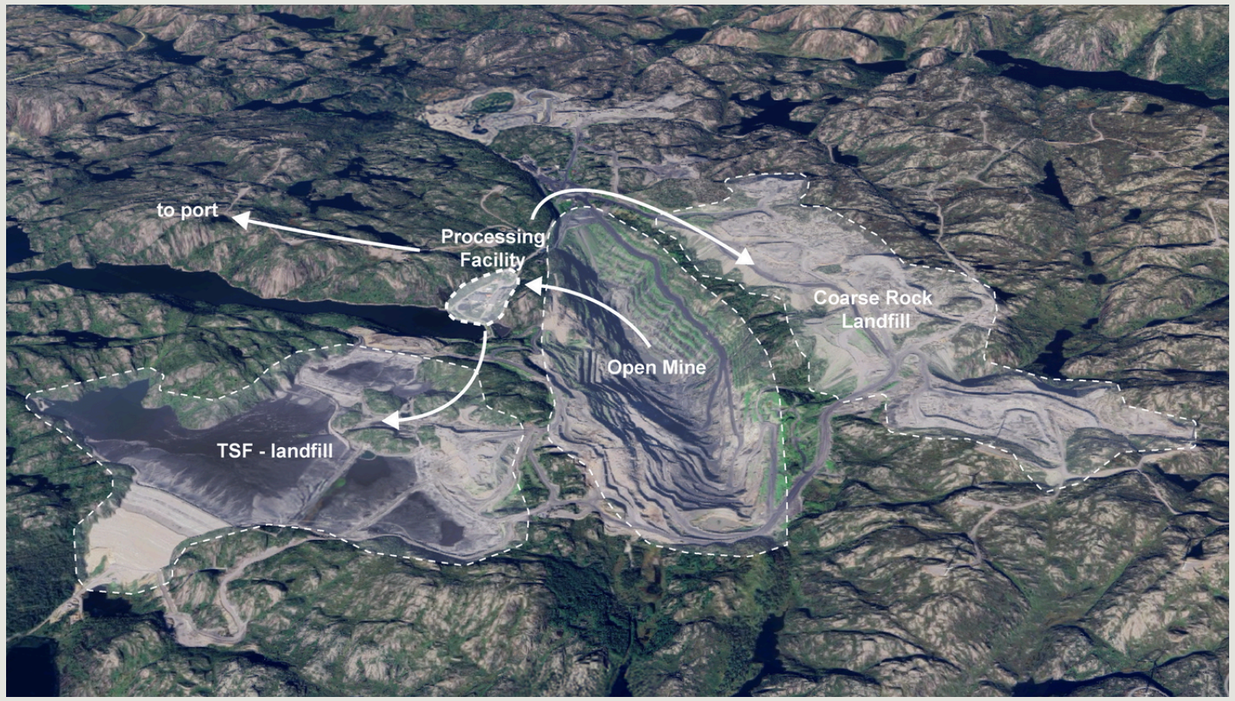


Diagram by Europan Norway

case study **Titania A/S**

Titania is a mine founded in 1902 in Sokndal, containing the worlds biggest reservoirs of illimite. They have a yearly production of approx. 700 000 tons of ilmenite concentrate, a mineral used in paints, inks, fabrics, plastics and many other products. Two by-products, magnetite concentrate and sulfide concentrate, are also produced and sold.

From the primary crusher, ore is transported to silos for storage before processing. Then, at the processing plant, the ore is crushed, milled and seperated for valuable minerals. The remaining material is deposited in landfills. Until 1994, the company's common practise was to dump its mining waste in nearby fjords and waters.

For over 30 years now, the company has managed two land fills where their waste is stored. In 2019, contaminated waste leaked from the landfills into the drinking water source Mågevatnet, posing severe health risks. In recent years, dust from the landfills plague residents of the nearby village Åna-Sira.

Their regenerative landscape effort encompasses making a racing track, next to its mining operations.

Above is the TSF landfill at Titania A/S. Photo: Pål Christensen.
Below, a drone footage of TSF wall. Photo: Titania AS

Waste management
Titania serves as a key case study for the Fen Complex. With 2 million tons of tailings produced annually, Titania's TSF landfill is nearly full- opening up discussions of how the land fill can be expanded even further.

The Fen Complex is planned to have a TSF capacity of around 70 million tons. If it generates waste at the same rate, the landfill would reach full capacity in about 35 years —far short of the hoped-for 100-year operation.

Consequences on the site

TSF land fill from the Titania mine in Sokndal, Norway. Without watering, dry tailings from the Titania TSF would create significant dust pollution. It's necessary to mitigate this substantial water application performed through manual watering using tractors and sprinkler systems. Photo: Mathias Oppedal.

The development of a mineral park, even a "green one", will have significant environmental consequences. Here follows a short overview of some of possible negative consequences:

Land Use and Habitat Destruction
The mining operation will require leveling of large areas, hills and valleys, leading to deforestation, habitat loss, and disruption of ecosystems. This transformation threatens biodiversity and alters the landscape permanently.

Pollution and Waste Management
Mining generates noise, dust, and waste, impacting air quality, wildlife, and local ecosystems. Extracting rare earth minerals also produces significant amounts of leftover rock and dust, which must be responsibly managed to prevent environmental damage.

Visual and Industrial Impact
Beyond direct ecological damage, industrial infrastructure—roads, buildings, and large-scale excavation—will permanently alter the area. Poorly planned industrial zones risk becoming underutilized, as seen in instance at Frier Vest, leading to unnecessary environmental degradation without delivering expected economic benefits.

Water Contamination and Radioactivity
Mining runoff could pollute the Norsjø lake, a key drinking water source. While severe radioactive contamination is considered unlikely, the handling of Thorium has raised concerns.

Land fills

Surplus materials from mining activities require specialized handling and storage. These materials are typically divided into three key categories, each with distinct characteristics and storage requirements.

Underground backfill
Underground backfill involves mixing tailings with binders (such as cement) to create a paste-like material. This material is pumped back into depleted mine shafts, effectively reducing the need for surface storage while enhancing underground stability.

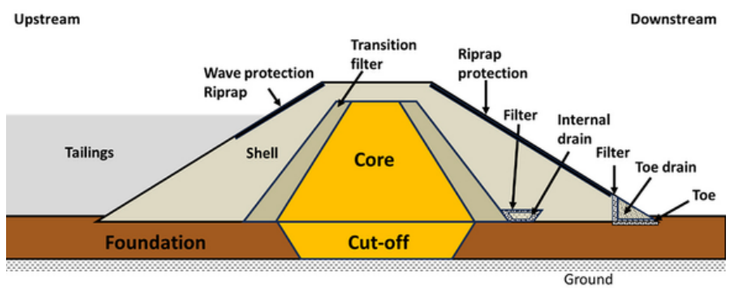
One mining company at the Fen Complex suggests backfilling 45% of tailings, another 60%. The exact amount is uncertain, and tailings must anyways first be stored in a TSF before being pumped back.

Coarse Rock Landfill
Coarse waste rock consists of larger fragments, such as wall rock, created during blasting and initial sorting processes. These materials are low in REEs and radioactive minerals, making them relatively inert and easy to handle, compared to finer tailings.

Mining companies often store these materials in large piles or use them to create flat surfaces for infrastructure development, such as roads or building foundations. However, the reuse of these materials is often underutilized, resulting in the biggest landfills.

Tailings Storage Facility (TSF)
Tailings are fine-grained materials, often smaller than 100 microns, left over after chemical processing, such as flotation. These materials may contain higher concentrations of REEs and radioactive minerals, making them challenging to store safely.

TSFs are specialized facilities designed to contain these materials securely. They typically incorporate lined containment systems, barriers, and water management systems to prevent contamination. Water runoff is managed to reduce environmental risks, and in some cases, tailings are dewatered and compacted to minimize the facility's footprint.



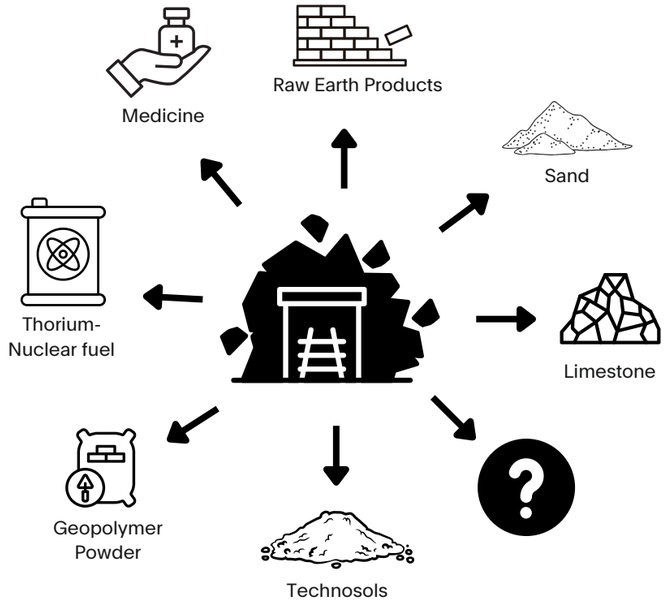
Section of TSF-wall, by Geological Survey of Sweden

Underground Backfill. Photo: Sika Canada

Coarse Land Rock Fill. Photo: Hydrogeology and Mineral Resource Development

TSF - Tailings Storage Facility. Photo: International Geotechnical Center - CGI

Mine waste as a resource



Mining extracts vast amounts of material, with REEs often constituting less than 1%. The challenge lies in managing the remaining surplus efficiently. Emerging strategies showcase how waste from the Fen Complex can be repurposed into valuable products.

Sand/Gravel: Most leftover material consists of coarsely crushed rock, similar to gravel and sand. Initially used to level the mining site, the rest is typically landfilled. Since sand and gravel are often used for construction- better utilization is possible. The main challenge is activating it locally to minimize transport costs, which are often the biggest hurdle.

Geopolymer powder: mine tailings that contain alumino-silicates can be used to create geopolymers—a low-carbon alternative to cement made by activating minerals with alkalis. These can be turned into stabilized bricks and other durable construction materials.

Technosols: Some tailings can be combined with organic matter, such as compost, to create engineered soils. These technosols can be sold as a product or used locally to restore degraded land.

Raw earth products: If mixed with clay, minerals from the mine can be used for unfired compressed earth bricks, rammed earth walls, and clay plasters.

Thorium: Some tailings contain nuclear-rich materials that can be processed into thorium for use in medicine or as a nuclear fuel source. Research is already underway to explore its potential applications at the Fen Complex.

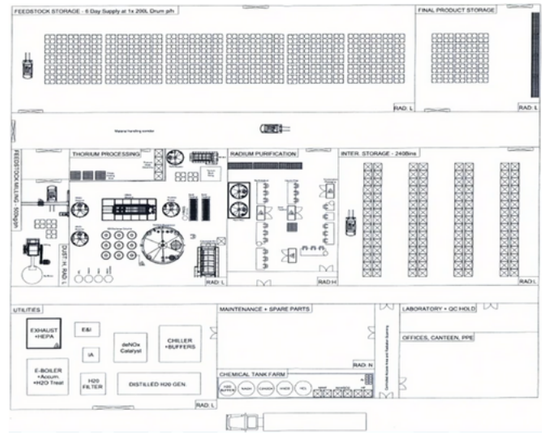
These are only a few potential applications. There are also a range of other materials such as **limestone** that will be extracted and could be further refined.

Thorium- first step into waste valorization

Thorium Norway AS is currently exploring how to extract thorium from REE tailings from the Fen Complex, for use in nuclear fuel and medical applications. Their process transforms tailings into eight different products, including refined thorium for advanced reactors and radiopharmaceuticals for cancer treatment.

In energy production, thorium-232 is converted into uranium-233, which can power advanced nuclear reactors, which produces less nuclear waste and operates more safely than traditional uranium fuels.
In medicine, thorium-227 is used in cancer treatment, where it delivers radiation directly to tumors, destroying cancer cells while sparing healthy tissue.

The company is working with mining companies to plan their facility, which is expected to process around 1,200 tons of material annually. The production facilities will cover approximately 4,300 m^2, with an additional 5,500 m^2 allocated for raw material storage. They estimate that around 75 people will be employed at the site.



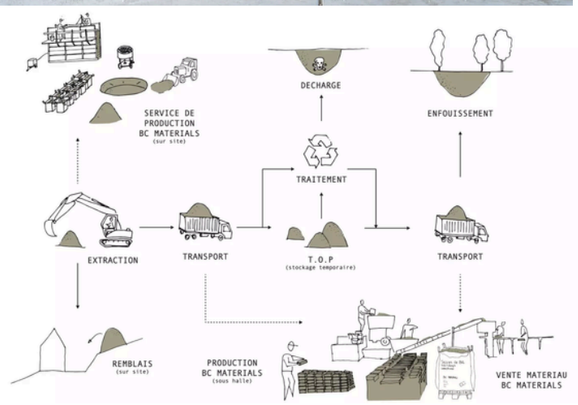
Plan drawing of purification plant, by Thorium Norway AS

case study
BC materials

BC Materials transforms excavation and construction waste into sustainable building materials, demonstrating how leftover minerals can be repurposed rather than discarded.

Using loam, sand, and other waste materials from the Brussels region, they produce moulded blocks, stabilized bricks, rammed earth mixes and clay plasters Their process not only cuts carbon emissions but also preserves local soil ecosystems by avoiding the need for excessive excavation and reducing reliance on virgin resources.

Photo above: Sander Lambrix
Photo below: BC Architects



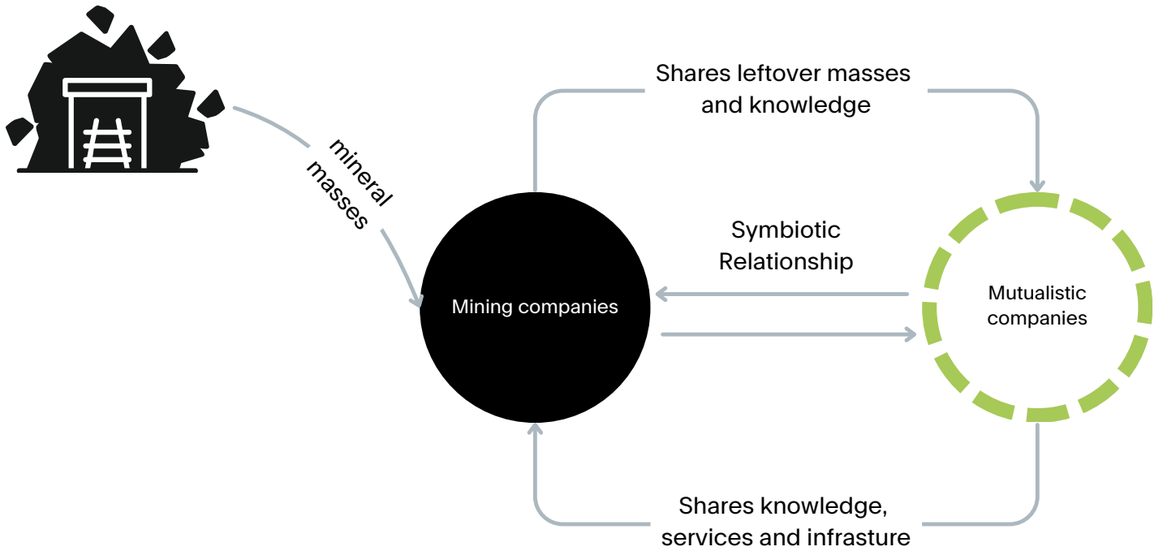
Symbiosis of Industries

The park must evolve in phases, allowing businesses to adapt to its changing needs. The more byproducts the Green Mineral park repurposes, the more sustainable it becomes. **The park should function as a polyculture, not a monoculture: fostering collaboration between companies through strategic partnerships.** By prioritizing cooperation, it can reduce environmental impact, strengthen existing businesses, and create new economic opportunities for locals.

In order to promote **social sustainability** for the people of Nome, local businesses can be connected with mining enterprises . Local suppliers can provide goods and services that help them integrate into the evolving industrial ecosystem and economy.
Local efforts, like MTNU tenktanke (local business think tank), are already fostering collaborations between local businesses and the mining companies.

Including **education services and sharing knowledge** can create strong connections between the local community and operations at the Green Mineral park . Nome's high school is already aligning its curriculum with the park's workforce needs. Targeted training programs will equip local youth with skills to be able to actively participate and thrive in a specialized industry.

Nome is already attracting considerable mining interest, yet they are recieving few requests from companies working with the leftover masses. To meet its green ambitions, the park must attract businesses capable of turning waste into resources. A tool in doing so may be to create a common infrastructure which ensures that the park functions cohesively. A central structure can coordinate operations, facilitate collaboration, and support new businesses.



Diragram showcasing the symbiotic relationship between the actors in the Green Mineral park.

An aerial of Mo Industripark. Photo: Rana NO

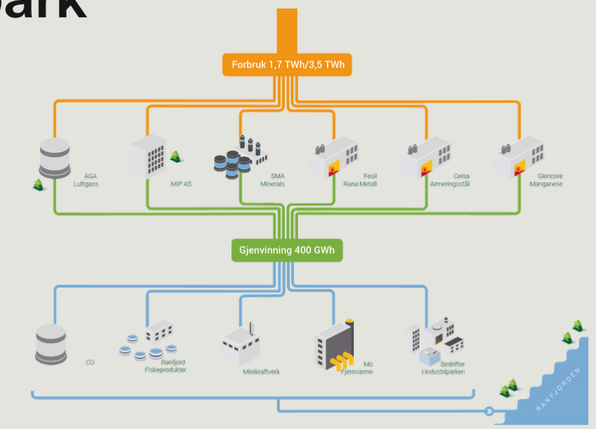
case study **Mo Industripark**

Learning from other industrial parks

Mo Industripark in Norway is a prime example of transformation through industrial symbiosis. Once infamous for heavy smog and pollution, it had no choice but to change. By integrating shared resources and circular systems, it evolved from a waste-heavy, carbon-intensive hub into a leader in green industry.

In Mo Industripark, over 110 companies reuse by-products, share energy, and cut emissions, turning waste into valuable resources. At Mo Industripark managment company, called Mo Industripark AS (MIP AS), oversees that infrastructure, property management, and development runs smoothly

Notably, MIP AS is jointly owned by multiple companies, ensuring that no single entity has full control. In other Norwegian industrial parks, such coordinating companies are sometimes owned by municipalities, highlighting the importance of having an **open and collaborative management structure** that welcomes new ideas and businesses.



This illustration highlights the shared power infrastructure that makes Mo Industripark a model of industrial symbiosis. Recognized by Enova as a "Norwegian champion" in energy recovery, the park annually recovers around 400 GWh—enough to power 24,000 households, equivalent to a city the size of Tromsø. By reusing energy and by-products, the park not only reduces waste but also strengthens collaboration between companies.

A new landscape

While a significant portion of leftover material from the mines can be repurposed and activated in various ways, full reuse remains unlikely.

Rather than viewing landfills as burdens, we can explore their potential as landscape features that can support biodiversity, recreation, or rewilding efforts. From the outset, it is possible to design with principles for nature in mind, such as technosols—mine waste mixed with organic matter to create fertile soil that fosters new ecosystems.

Photo: NRK.

case study
Svea

The Svea restoration project in Svalbard is one of the largest environmental rehabilitation efforts in the Arctic. After the closure of coal mining operations, infrastructure was dismantled, pollutants removed, and the landscape reshaped to allow nature to take over. Roads and buildings were cleared, and native vegetation was reintroduced to stabilize the land and support biodiversity.

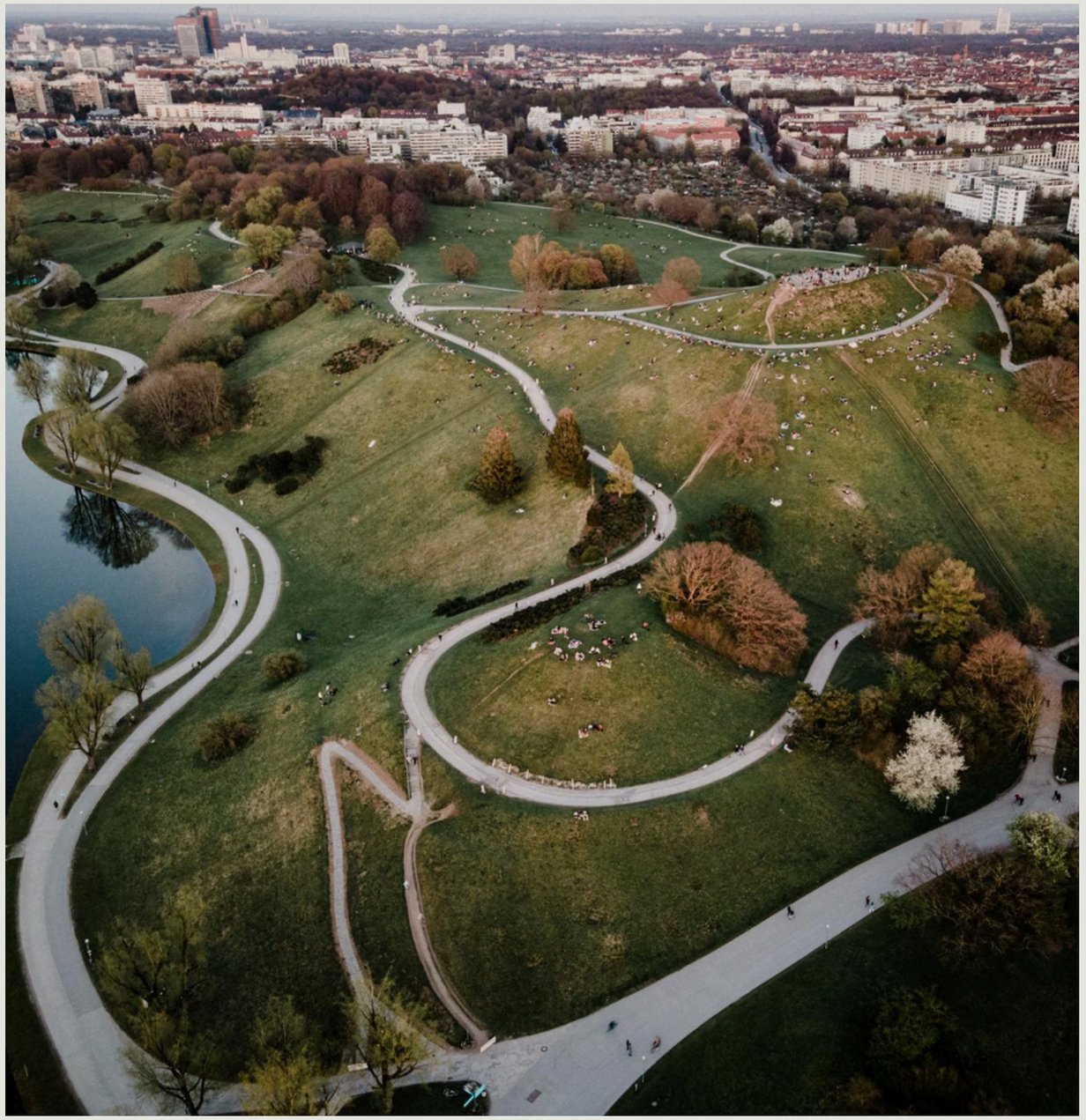


Photo: Olympiaberg Munchen.

case study
Olympiaberg

Olympiaberg in Munich is an example of a man-made landscape, built from the rubble of World War II and transformed into a public park as part of the 1972 Olympic Games. This artificial hill is now covered in greenery and integrated into the city's recreational network.

case study **Norway in Red, White and Grey**

In 2024 NRK, Norwegian Broadcasting Corporation, published a comprehensive article documenting how Norway's nature is gradually being developed and degraded, often without us noticing. Using artificial intelligence and satellite images, they mapped 44,000 nature encroachments over the past five years. The findings shocked the country, showcasing how most industrial parks and areas are being developed today.

The article revealed forests, marshes, and vital natural areas disappear in small increments. Industrial parks, highways, and residential developments are the primary contributor of this trend. The article highlights the importance of finding new strategies, to avoid large parts of Norwegian nature ending up as grey surfaces.

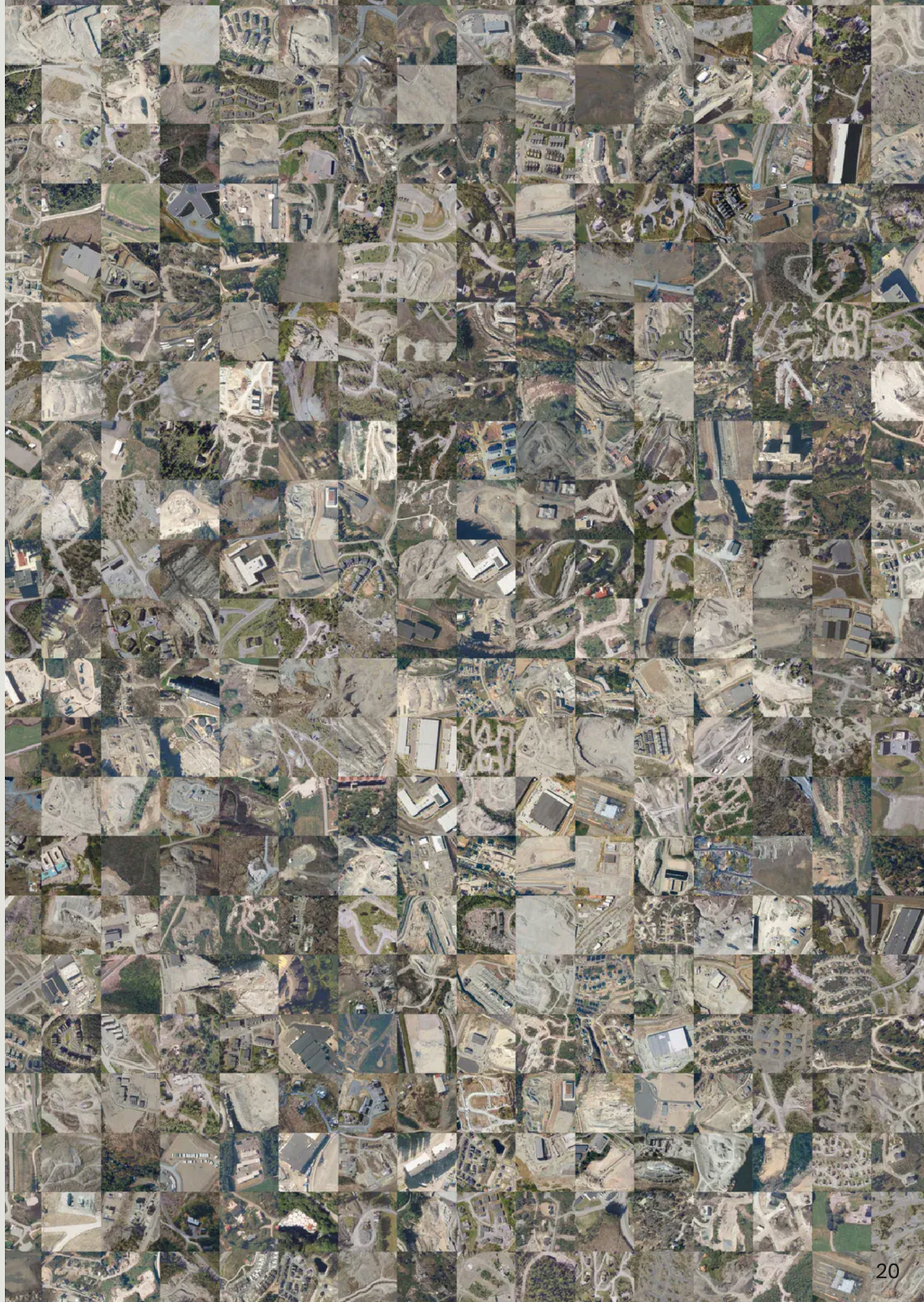
The investigation reveals that several developments occur in areas already recognized as valuable for biodiversity and ecosystems. Forests like Lønnebakke in Porsgrunn, where rare trees and rich biodiversity once thrived, have been transformed into industrial zones without significant media discussion or political opposition.

A key finding is that there is no comprehensive system to monitor and regulate nature loss. Decisions are made at the municipal level, often without national oversight or clear guidelines on what should be protected. Even large-scale developments, such as the construction of highways and industrial parks, often go unnoticed. NRK's mapping shows that 79 square meters of nature disappear every minute and that there is no "nature budget" ensuring that development proceeds sustainably.

The article advocates for a new land management approach that effectively balances development needs with the preservation of nature and biodiversity. Nome municipality is trying to do it's part by conducting a comprehensive study of the local ecosystems. However, this effort may fall short without effective concepts for implementing more sustainable mining practices.

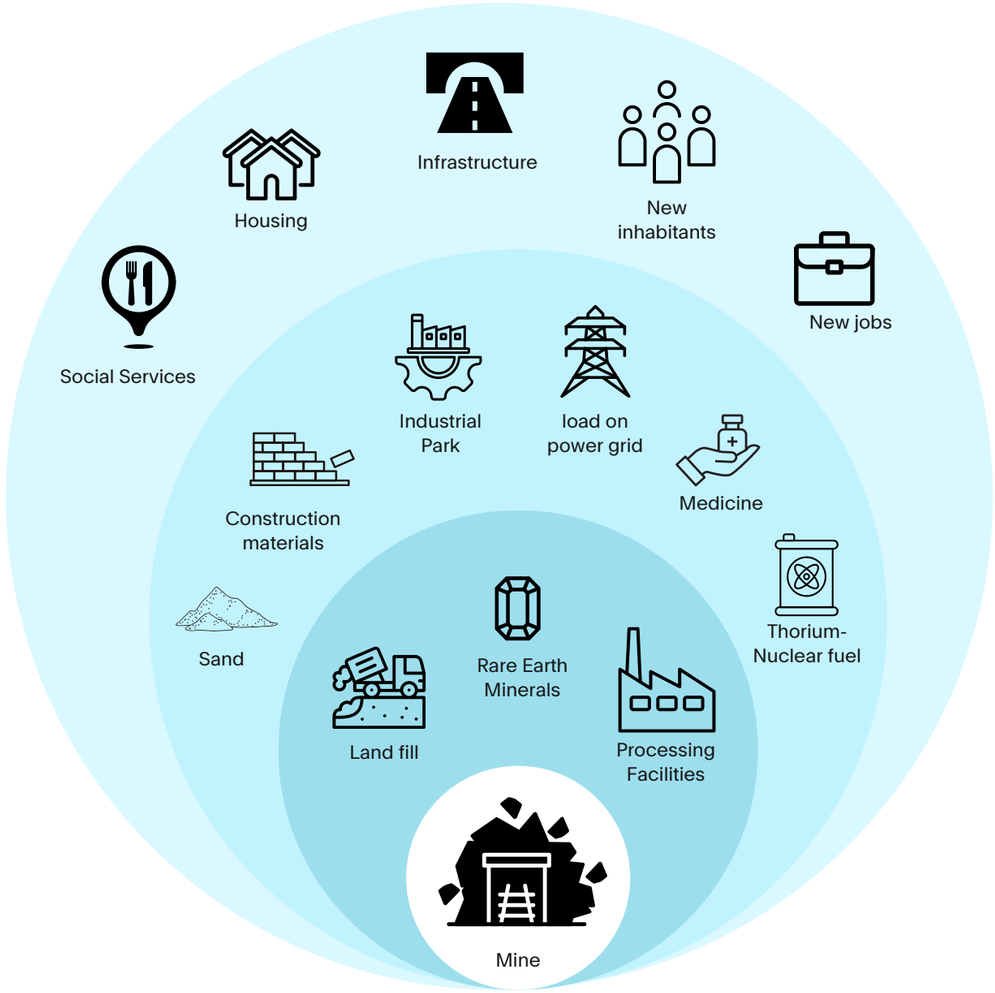
All photos: NRK. Link to article:
https://www.nrk.no/dokumentar/xl/nrk-avslorer_-44.000-inngrep-i-norsk-natur-pa-fem-ar-1.16573560

An example pulled from the national NRK survey to the right.
This is a "before-and-after" documenting another area in Telemark, south-east of Nome.



03: Local context

- → The region
- → The people of Nome
- → History at the Fen Complex
- → Mobility and Transport
- → Lunde
- → Ulefoss



Mining for REEs will have a range of ripple effects on the region. Both Ulefoss and Lunde suffer from gaps in social infrastructure and key amenities. The mining operations and the Green Mineral park offers an opportunity to revitalize the area, but it also introduces a number of challenges.

Be aware of these ripple effects. However, the primary focus should remain on the Green Mineral park itself. The goal should be to create a thriving Green Mineral park that naturally fosters positive ripple effects through the local community, while minimizing negative ones.

The Region

Grenland and Telemark

Nome Municipality sits between the industrial hub of Grenland and the cultural and educational center of Bø.

Grenland, includes cities like Skien and Porsgrunn, and is Norway's largest industrial region. The area is home to significant heavy industries, energy production and logistics hubs. Herøya island is particularly notable in this context, as some of the mined material may be transported there for further processing.

Bø, has a strong focus on education and tourism. The University of South-Eastern Norway (USN) in Bø attracts students and researchers, fostering a dynamic atmosphere with innovation and cultural exchange.

Nome is connected to the broader region via Riksvei 36, a nationally controlled road passing through Ulefoss, linking Nome to both Grenland and Bø. Lunde, on the other hand, has a train stop on the Bratsberg Line, which connects southern Norway to the capital Oslo.

The Midt-Telemark region's landscape is characterized by mix of forests, lakes, and hills, shaped by centuries of natural and human activity. Norsjø and the Telemark Canal are central to the identity of the region. Forests provide opportunities for forestry, recreation, and tourism.

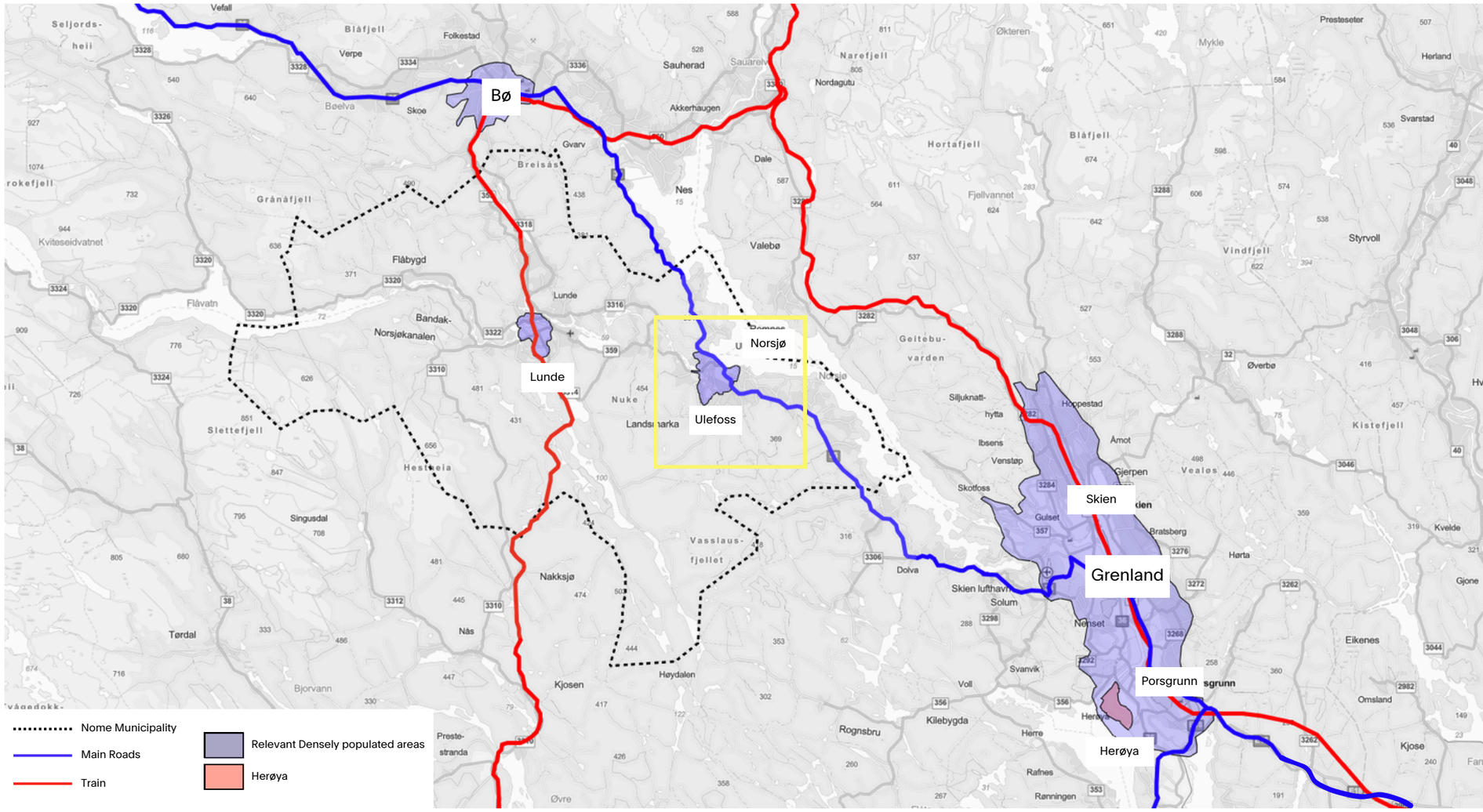


Photo: Europan Norway.

Nome Municipality at a glance
Nome municipality was established in 1964 by merging Holla (now Ulefoss), an industrial hub, and Lunde, a rural agricultural community. This dual identity of industry and agriculture continues to shape the municipality's culture, economy, and landscapes. Ulefoss and the Telemark Canal have historically played roles in regional transportation, the economy, and the shared cultural identity of the area.

The municipality is known for its mix of industrial workers and agricultural traditions. A notable individual for architects is Sverre Fehn, who spent his childhood in Ulefoss.

Despite its rich history, Nome has experienced limited growth in recent decades, with predictions of a population in decline. This trend poses challenges, particularly as the population ages and younger residents move away.

The Fen Complex, however, holds potential for transformative change. Yet, this initiative has met resistance, particularly in areas like Helgja, where local opposition to the project has been vocal. The municipal government has worked to involve the community in the planning process, and will continue to do so.

Like many rural municipalities in Norway, Nome faces economic challenges. The Green mineral park offers an opportunity to reverse these trends by attracting investment, creating skilled jobs, and fostering industrial growth. **For Nome to fully benefit, however, it must ensure that new workers choose to settle in the municipality rather than commute from nearby areas like Grenland and Bø.**

To attract and retain a skilled and educated workforce, Nome must invest in infrastructure, amenities, and quality-of-life improvements. By doing so, the municipality can position itself not only as a place to work but as a community where people want to live, grow, and thrive.

Nome Key Numbers

6 587
Inhabitants, 3rd quarter 2024

6 572
Expected inhabitants 2030

6 588 Inhabitants
Expected inhabitants 2050

Source: Statistisk Sentralbyrå

The People of Nome

Social

Nome's population is aging, with a significantly higher proportion of residents over 80 compared to the national average. By 2040, this group is expected to make up 12% of the population. At the same time, Nome struggles with youth outmigration, as many young residents leave for bigger cities with better opportunities. Limited public transport, fewer recreational options, lack of attractive jobs and lower rates of higher education contribute to this trend.

The Green Mineral park could help by generating jobs, improving infrastructure, and revitalizing the local economy. But it also risks reinforcing a car-dependent lifestyle and widening social disparities if not carefully planned. Therefore community participation key. Nome Municipality is working to involve residents in decision-making through public meetings and impact assessments.

Fensdagene

One of the key platforms for public engagement is Fensdagene, a dedicated event where experts, local stakeholders, and decision-makers discuss the future of the Green Mineral park and its potential impact. It also provides an opportunity for Europan participants to follow the conversations, either online or in person. Recordings of the event are made available after the event.
Fensdagene 2025 will be 22-25 of april.

The Way Forward
Europan can play a role in creating tangible visions that can help inform public discourse.

Nature

The sites are today hilly, vibrant landscapes, home to wild nature and many hiking/ski routes actively used by the local population as they are relatively close to Ulefoss. Comprehensive studies to look at the type of nature and the consequences of the mine is underway, but it clear that most of the natural landscape in the are designated for the park will be destroyed.

Locals relation to the sites

Like most Norwegians, the people of Nome have a strong connection to nature. Norway uses only 2.7% of its land for agriculture (compared to the European average of 41%), with much of the country dominated by forests and mountains. These untouched areas are an integral part of Norwegian life, used extensively for leisure activities like hiking, skiing, and biking, as well as productivity through hunting, timber, and more

17 of May in Lunde - Norways national day. Photo: Tore Rell.

Fensdagene in the auditorium at Ulefoss samfunnshus.
Photo: WERA AS

History at the Fen Complex

The Fen Complex, the remnant of an approx. 580-million-year-old limestone volcano is a mineral-rich geological formation. The area's industrial significance dates back to 1657 with Holden Jernværk (now Ulefoss), extracting iron ore from the Fen mines. This marked the beginning of the region's long history of mineral exploitation.

The initial focus for the mining activities at the Fen Complex was iron ore, and ceased in 1927. During World War II, the German occupation forces conducted trials to extract niobium for military applications. In 1953 until 1965, the state-owned company AS Norsk Bergverk resumed niobium extraction in the Søve area, producing ferroniobium to enhance steel's heat resistance. The activities left behind significant slag heaps containing radioactive waste.

Ulefoss Jernværk's workforce has shrunk from 450 jobs in 1990 to 150 today, reflecting broader economic challenges due to automation and market shifts.

In recent years, the Fen Complex has gained attention for its deposits of REEs. This has sparked debates about revitalizing mining operations in the area on an unprecedented scale. While the prospect of economic renewal is promising, concerns have also emerged. Local stakeholders highlight risks such as environmental impacts, waste management, and ensuring tangible benefits to the community rather than primarily serving external interests.

Photo above: Ulefos Jernværk. Photo below: what the Fen volcano may have looked like 580 years ago, by Åsmund Tynning and Johannes Fredriksen

Søve Gruver
From recent history: From 1953 to 1965, Søve was a site for niobium extraction, leaving behind slag heaps containing concentrated uranium and thorium classified as Naturally Occurring Radioactive Material (NORM). Although the radiation levels are low and pose no immediate danger, law requires the cleanup of such materials to prevent any future environmental concerns. Norsk Nukleær Dekommisjonering (NND) was in 2020 tasked with removing 5,000 tons of waste, and ensure the area can be used without restrictions and to uphold strict environmental standards.

Photo: AS Norsk Bergverk, Søve gruver.

Waterways

Telemarkkanalen is a canal, stretching 105 kilometers, comprises 18 locks that elevate vessels a total of 72 meters above sea level.

The canal was often referred to as the "Hurtigruten" (or fast route) between Eastern and Western Norway and served as the most transport route between upper and lower Telemark, facilitating the movement of people, livestock, goods, and timber. Today, tourists from all over, visit to experience this unique waterway, which appears much as it did over a hundred years ago. The stone-clad lock walls, the massive lock gates, and the opening and closing mechanisms – all remain authentic. The most popular segment lies between Ulefoss and Lunde, a trip that navigates through some of the canal's most impressive locks.

Besides for boat traffic, the rivers have historically been vital for timber transport, known as tømmerfløting in Norwegian. Before the canal, a particularly challenging section was Vrangfoss (translated to Stubborn Waterfall), a turbulent stretch where logs frequently became jammed, causing significant delays. These blockages, known as tømmervase, caused financial strain for workers, who were only paid once the timber reached Grenland. In particularly stubborn cases, dynamite had to be used to dislodge the logs. The construction of a five-chamber lock system at Vrangfoss, which lifts boats a total of 23 meters, resolved these challenges by facilitating smoother timber transport. This improvement boosted the local economy and marked a major engineering achievement.

Norsjø is a lake in Telemark geography and history. With its elongated shape, it spans approx. 30 kilometers. As part of the Telemark Canal, Norsjø connects Bandak–Norsjøkanalen (Bandakkanalen) with Norsjø–Skienkanalen, making it a vital link in the region's historic transport routes. The lake also gathers most of the rivers within the Skiensvassdraget watershed before they flow into the Skienselva river.

Historically, the stretch from Notodden through Norsjø to Skien was the last in Norway to have commercial timber floating, ended in 2005. **Norsjø remains a critical water resource today, serving as the drinking water supply for the municipalities of Skien and Nome.**

Photo above: Anno Norsk skogmuseum
Photo below: public domain.

Mobility and transport

Challenges and Opportunities
Despite their close geographic proximity, Ulefoss and Lunde have long faced challenges with connectivity, which has also impacted the development of a shared culture. The primary route between the towns, Lannavegen, falls short of modern infrastructure standards. Its narrow lanes and inability to handle increasing traffic volumes have created safety concerns, particularly as the area's economy grows and demands on infrastructure increase.

Plans for a significant upgrade are underway with the construction of fylkesvei 359 Kaste-Stoadalen, a bridge and tunnel combination set to open in 2025. This project promises to alleviate traffic pressures on Lannavegen, providing a faster and safer connection between Ulefoss and Lunde. Once the bridge is finished, Lannavegen will be closed with a barrier. However, toll costs on the new bridge have raised questions about equitable access, especially for local residents who rely on the route for daily commutes.

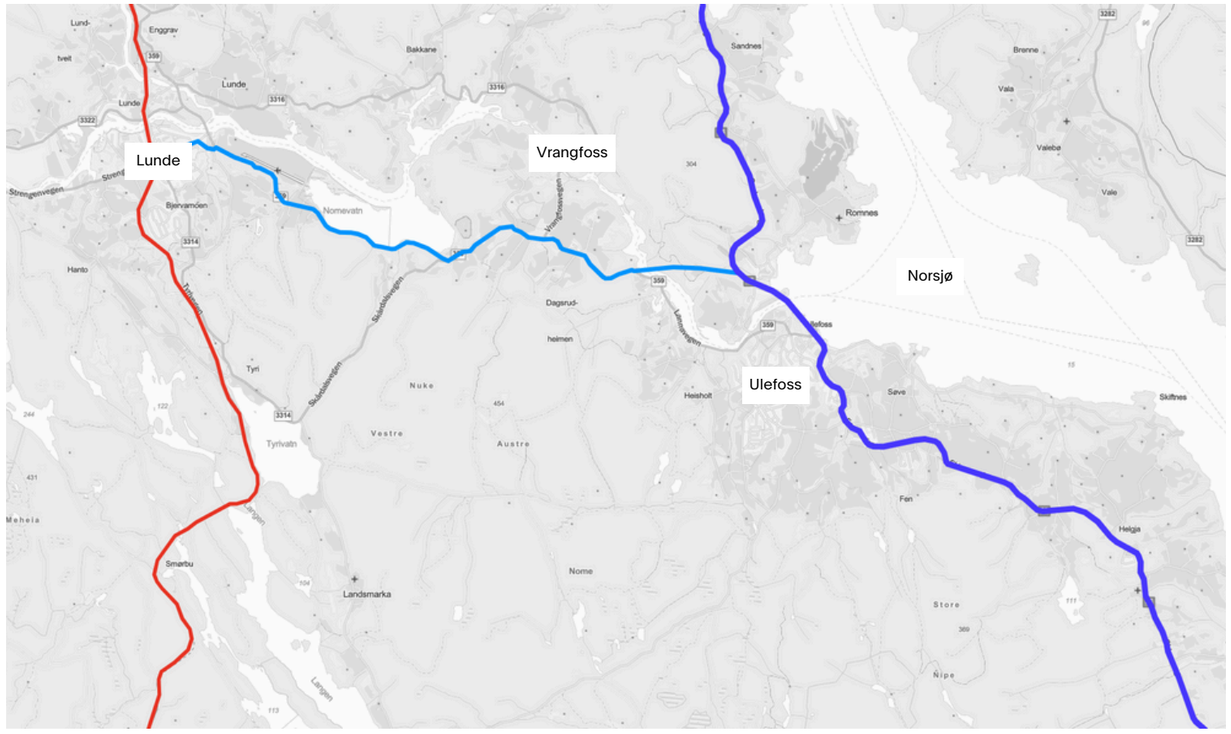
The Future of Lannavegen
As the main road shifts to the new fylkesvei, the character and role of Lannavegen are poised to change. Historically, Lannavegen was the heart of Ulefoss, offering scenic views of the canal and a connection to the area's architectural heritage. However, as traffic intensified over the years, its charm was overshadowed by safety and congestion issues.
With reduced traffic, Lannavegen could once again become a focal point of the community. Its proximity to the canal and the surrounding hills offers an opportunity to reimagine the space as a pedestrian-friendly route or a recreational area. Thoughtful investments in its maintenance and redesign could turn it into a cultural and social hub.

Public Transport
Public transport between Ulefoss and Lunde is currently limited but functional. Bus line 103 provides a direct connection between the two towns. Both towns are also connected to broader regional bus networks, providing access to surrounding municipalities.

Lunde benefits from its train station on the Sørlandsbane line, which links the town to major cities like Oslo and Stavanger. This connection positions Lunde as an accessible hub. But since a lot of transportation in the area is rather car based, Ulefoss may actually be more strategically places with its connection to Riksvei 36. If more people move to Nome, integrating bus and train schedules more effectively could improve the overall mobility network and make public transport a more viable alternative to car travel.

Regional and National Connections
While Nome is linked to the larger region via Riksvei 36, this road creates a barrier between Ulefoss and the Norsjø lake, isolating the village from one of its key natural and recreational assets. For many travelers passing through on Riksvei 36, Ulefoss is just a waypoint, with little incentive to stop.

Preparing for Heavier Transport
As Nome prepares for increased industrial activity, including the potential development of the Green Mineral park, its roads must be ready to handle heavier transport loads. Roads like Riksvei 36 will be important, but other roads, including those connecting rural areas, may require upgrades.



The new bridge along fylkesvei 359 is under construction and is set to open later in 2025.
Photo: Olav Heggenes/Telemark Fk

Lunde

1 524
Inhabitants 2024

Lunde is the smaller of Nome's two centers, with around 1,500 residents. Its denser, more pedestrian-friendly town center along Brugata and Hovedgata contrasts with Ulefoss. However, Lunde faces challenges as several businesses have closed or moved away.

Nearly 60 years after merging with Ulefoss, Lunde maintains a distinct history and architectural style. Unlike Ulefoss, with its red workers' housing and grand manors, Lunde has a flatter hierarchical structure, shaped in part by its agricultural history. The Sørlandsbane railway runs through Lunde, offering a direct 2-hour 20-minute link to Oslo.

Until 1867, Lunde was part of Bø municipality, and many residents still feel a stronger connection to Bø than Ulefoss. This was evident in the 2017 municipal merger referendum, where most Lunde residents favored joining Bø. A proposed Nome split—Lunde with Bø, Ulefoss with Skien—had strong support in Lunde, but Ulefoss voters opted to remain Nome municipality.

Lunde was home to Norway's last operating brick factory, Bratsberg Teglverk. Established in 1895 and relocated to Lunde in the 1950s, it became a leader in facade brick production, modernizing its facilities over the decades. However, changing market demands led to its closure in 2014, when its kiln was permanently extinguished. The factory, once a major local employer, now serves as a storage facility for the Wienerberger group, marking the end of an era in Norwegian brick production.

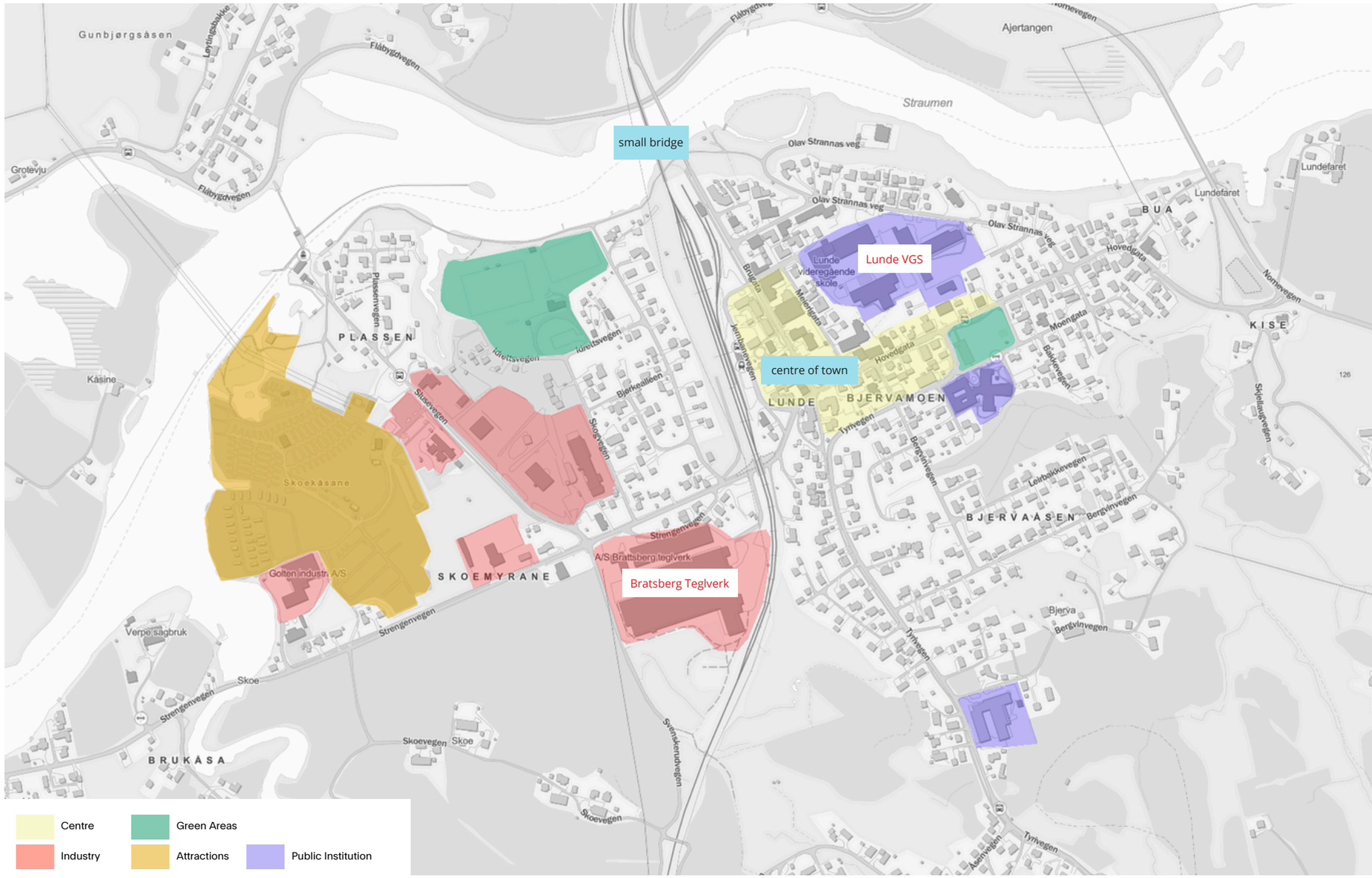


Photo: Europan Norway.

Photo: Industrimuseum.

Photo: Visit Norway.

Photo: Scan Flyfoto A/S/Nasjonalbiblioteket.

Photo: Roy Olsen.

Ulefoss

2 488
Inhabitants 2024 (SSB)

Ulefoss has a rich industrial history, rooted in its proximity to Telemarkskanalen, old mines, and the iconic Ulefos Jernverk. The center of the town reflects this heritage, with buildings owned (or previously owned) by the influential Cappelen family distinguishable by their distinctive red facades. Despite this deep history, modern Ulefoss suffers from a lack of vibrant social amenities. The town's sole café is tucked away inside a mall with little natural light, and there is no dedicated bar or other lively social spaces. These gaps underscore the need for spaces that foster community interaction and improve quality of life for residents. Historically, the town center has been relocated three times, with its current site resting on reclaimed land.

Ulefoss lies along the picturesque Norsjø waterfront. Despite its scenic location, access to the water is obstructed by Riksvei 36, a national road that bisects the area and hinders seamless integration with the water. As a national road, its rerouting is beyond local jurisdiction, limiting the town's ability to fully capitalize on its lakeside potential.

The town's infrastructure presents several challenges, particularly for pedestrians and cyclists. The intersections at Lannavegen and Krøsset are not adequately designed for safe, non-motorized traffic, highlighting a need for improved accessibility. When the new road opens, Lannavegen's function could transform significantly. This presents an opportunity to reimagine the area, perhaps revitalizing it to better serve the community by creating pedestrian-friendly spaces or enhancing connections to the waterfront.

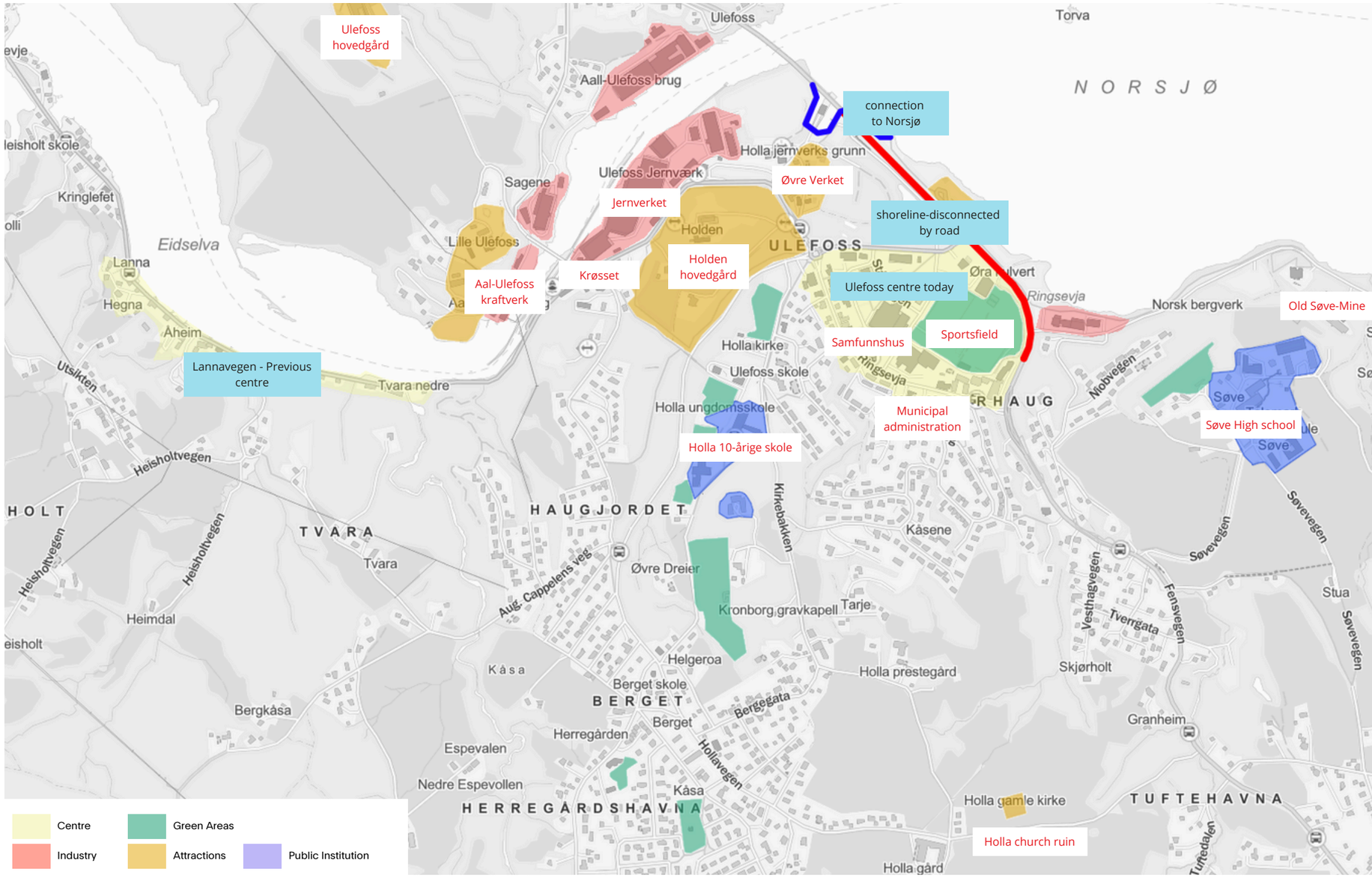


Photo: Europan Norway.

Photo: Skien Vassdrag.

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About Europan Norway

Site representative

Nome kommune

Nome
Kommune

Secretariat of Europan Norway

Bjørnar Skaar Haveland
General secretary

Katie Åland
Architect

Alvar Ekhougen Larsen
Architect

c/o Utopic AS
Daniel Hansens gate 7
5008 BERGEN
NORWAY
post@europan.no
www.europan.no

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