# BRØNNØY KALK

# 12. Responsible consumption and production

## Nordplus Brønnøy, 12.04.2021

#### Marble = marmor



Lime = kalk



Mining = Gruvedrift

**Open pit = dagbrudd** 





Solidox













# Brønnøy Kalk = A producer of liquid marble for the paper industry

Liquid marble is used as filler and coater in paper production

<sup>50 %</sup> lime



# Do you know? How much rock do you consume in one year?

# A Norwegian spends 15 tons of mineral resources each year



# A family owned group of companies



#### BRØNNØY KALK

1948

~50 employees ~20 external

Brønnøy Kalk is a cornerstone company in the region

Lime from Brønnøy Kalk is part of the every day life of 100 million people in Europe





# The mining operation



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# The mining operation



Brønnøy Kalk

# Omya Hustadmarmor

- Where the liquid marble is produced
- Cooperation on operational level act as one company
- Weekly meetings on production and quality

## A 100 year perspective





#### **Reserves since 1998**

Marble93 million tonsSidewall44 million tons

Underground resources Marble ≈ 200 million tons

#### In 25 years time our reserves could be empty

### What happens after 25 years?



Options currently being investigated:

Underground mining at Akselberg
New open pit targets at Vassbygda

# In Norway it takes 15 to 25 years from finding a resource until it can be mined.

In Finland? 3 to 4 years.



miningglobal.com

"Rich mineral reserves, competitive taxes, efficient permitting procedures and certainty around environmental regulations [...]"

- Kenneth Green, Fraser Institute's energy and natural resource studies

# What are the biggest environmental challenges for Brønnøy Kalk?



# What are the biggest environmental challenges for Brønnøy Kalk?

- Change of terrain
- Fine particles in air and water
- Noise
- CO2-emission







The mineral act demands that mining companies provide financial security for

- Continuously securing the mine for people and animals
- Clean up during and after production.

Norsk Mineral started to put aside money for this purpose 3 decades before this law was written



## The rock has variable quality

#### Good rock



- Contain mostly calcite (lime)
- Coarse grained easy to separate «good» minerals from «bad»

#### **Bad rock**



- >10% non calcite minerals
- Variable content of minerals and elements
- Smaller grains more difficult to seperate





# **Resource utilization**



We are not discarding the uppermost 3 meters  $\rightarrow$  extends the life time of the mine with 1 year



#### We have explored alternatives since 2000:

- Regulation of pH
- Crushed rock for construction
- Cement
- Agricultural lime

# Monitoring water and fine particles

- Since 2014 all water is pumped to the fjord, not to fresh water.
- We are aiming to reduce the amount of particles transported to the fjord.
- NB: Lime (CaCO3) is **not** a pollutant



#### Digital monitoring of water quality since spring 2019



Dust is reduced by dustbinder (road salt) and spraying roads and rock with water

# How do Brønnøy Kalk handle chemical waste?

- Procedures for monitoring and cleaning up
- Chemical waste such as oil is stored, registered and delivered according to regulations.
- Our costomer Omya Hustadmarmor changed their main process chemical in 2015 to reduce the environmental effects.







Target

12.4

By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

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# Does Brønnøy Kalk have any new sustainable solutions? Is there a sustainability plan?

# **Towards Sustainable Mining (TSM)**

- A program developed in Canada to improve environmental and social practices in the mining industry.
- A tool for measuring how responsible a mining company is operating
- Representatives from the mining industry (also Brønnøy Kalk) meet every month to work with adapting TSM to Norwegian language and conditions.





![](_page_23_Picture_6.jpeg)

Encourage companies [...] to adopt sustainable practices and to integrate sustainable practices and to integrate sustainability information into their reporting cycle

# **Towards Sustainable Mining (TSM)**

![](_page_24_Figure_1.jpeg)

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12 RESPONSIBLE CONSUMPTION AND PRODUCTIO

## **Toward Sustainable Mining (TSM)**

#### **Biodiversity conservation**

Biodiversity Conservation Management Assessments Percentage of Facilities at a Level A or Higher 2013, 2016 and 2017

![](_page_25_Figure_3.jpeg)

![](_page_25_Picture_4.jpeg)

Target

12.6

12 RESPONSIBLE CONSUMPTION AND PRODUCTIO

![](_page_26_Picture_0.jpeg)

![](_page_27_Picture_0.jpeg)

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# Some of our sustainability goals for the future

- Constantly seek to increase utilization
- Implement TSM (towards sustainable mining)
- Transformation from fossil to non-fossil fuel
- Autonomous transport (see video)

![](_page_28_Picture_5.jpeg)

### Quiz

1. What is TSM short for?

2. How many tons of rock do you use every year?

3. How many years will it take to develop a new mine in Norway?

4. What will happen to to the open pit after Brønnøy Kalk has closed the doors?