Practice Case: Mining and Postmining in Germany

Examples from the Sauerland Area

Workshop

How can sustainable mining in Europe be supported? Connect with other practitioners!

23 November 2021

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº 101003622.

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The Meggen Mine

- 60 Mio. t orebody,
- 1977 Europe‘s biggest zinc mine,
- Production: 1854 -1992,
- Pyrite (FeS_2) / barite ($BaSO_4$) orebody with 42 % Fe, 4 -10 % Zn and 1 % Pb
- Underground mine with 1,2 Mio t/a

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The Meggen Mine

Overview

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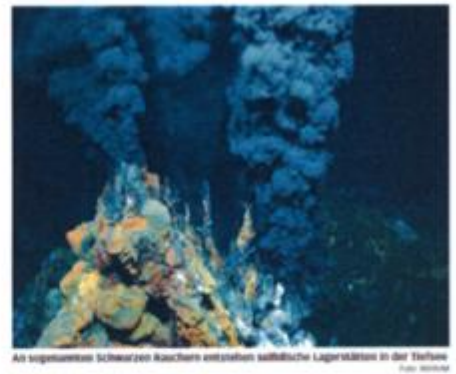
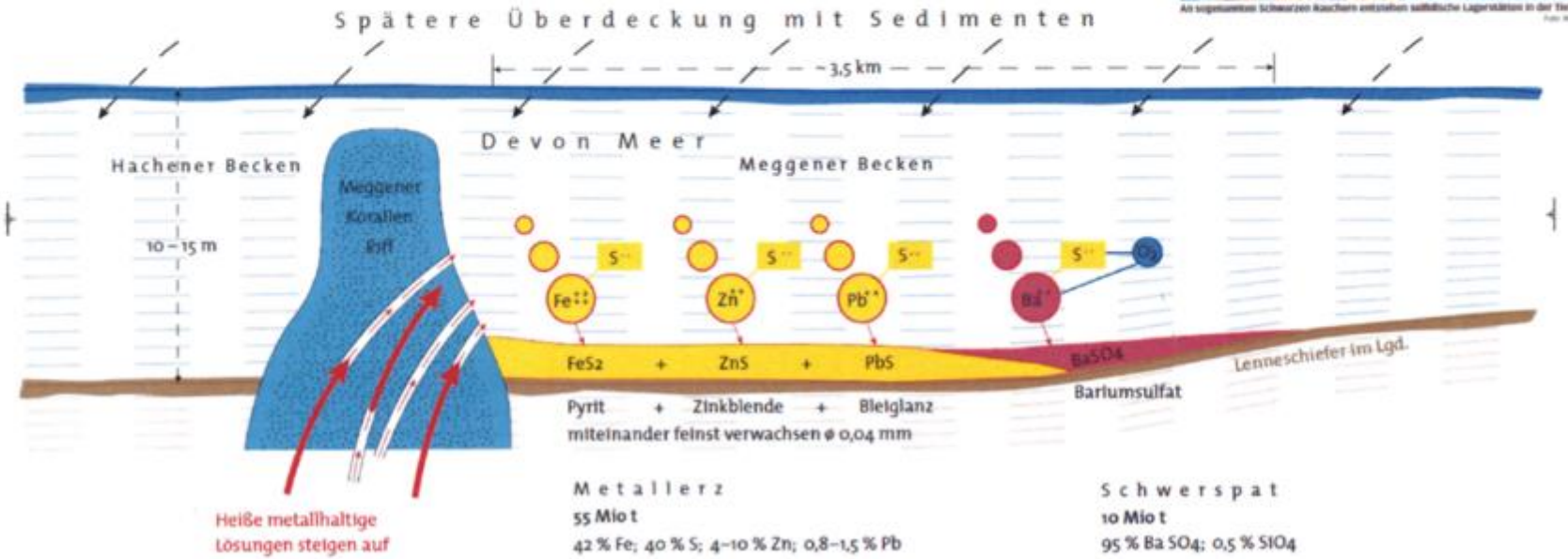
Meggen – Geology / Sedex type deposit





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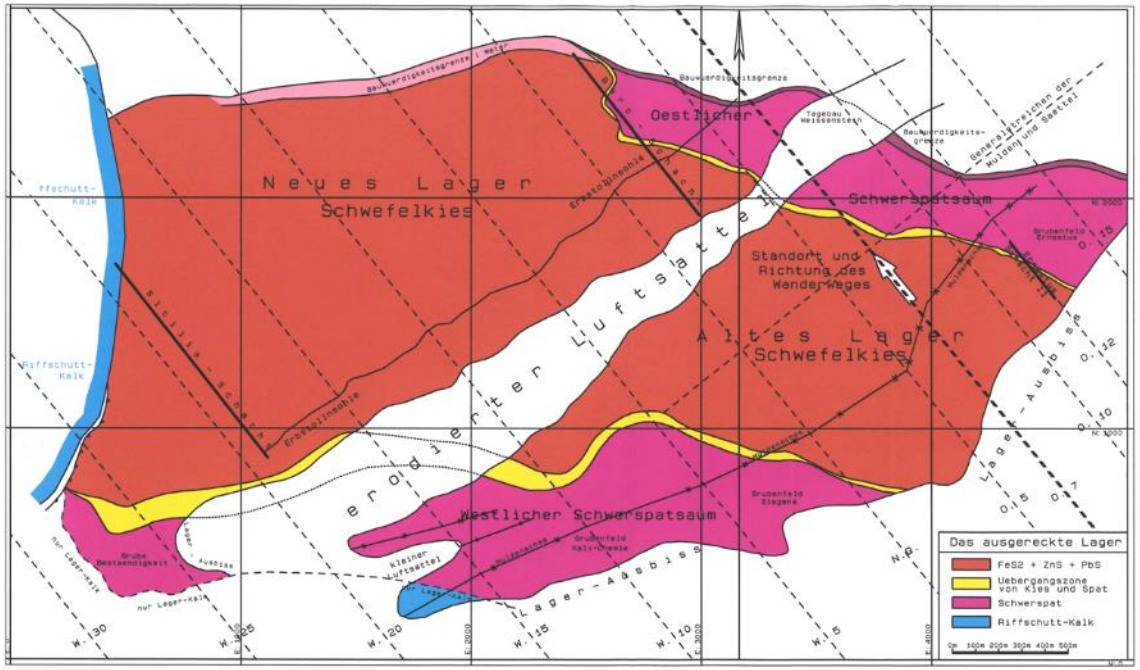
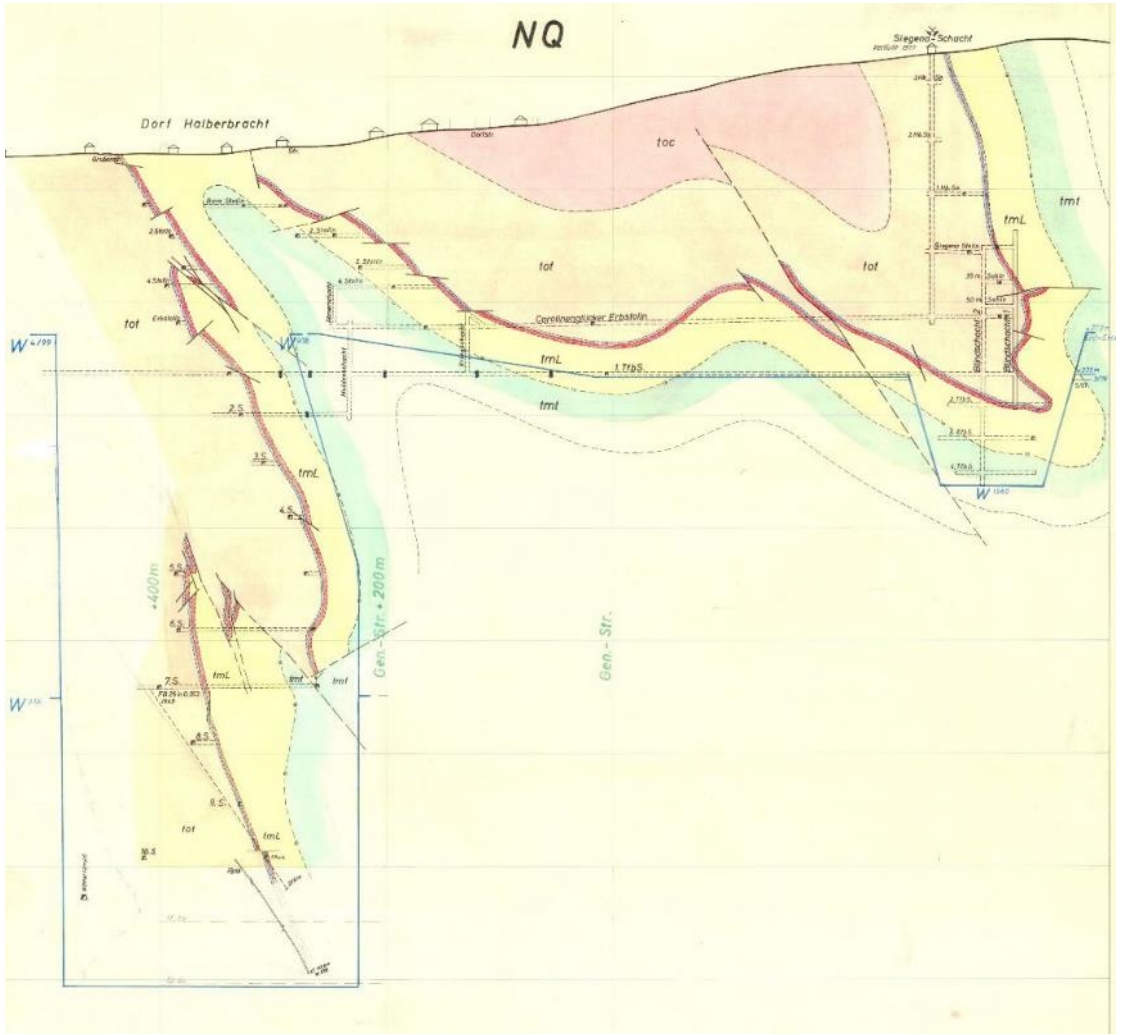
Meggen – Geology





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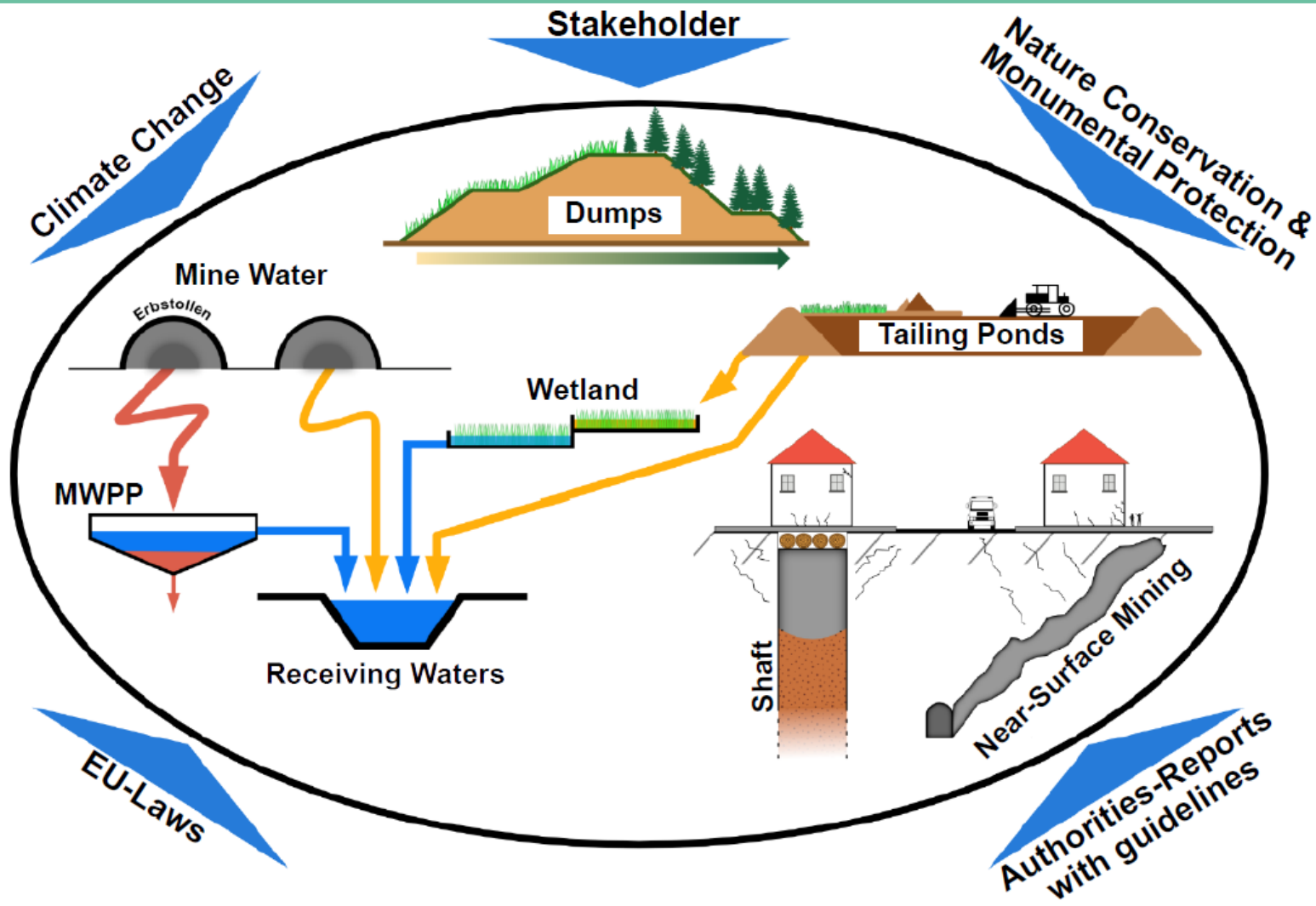

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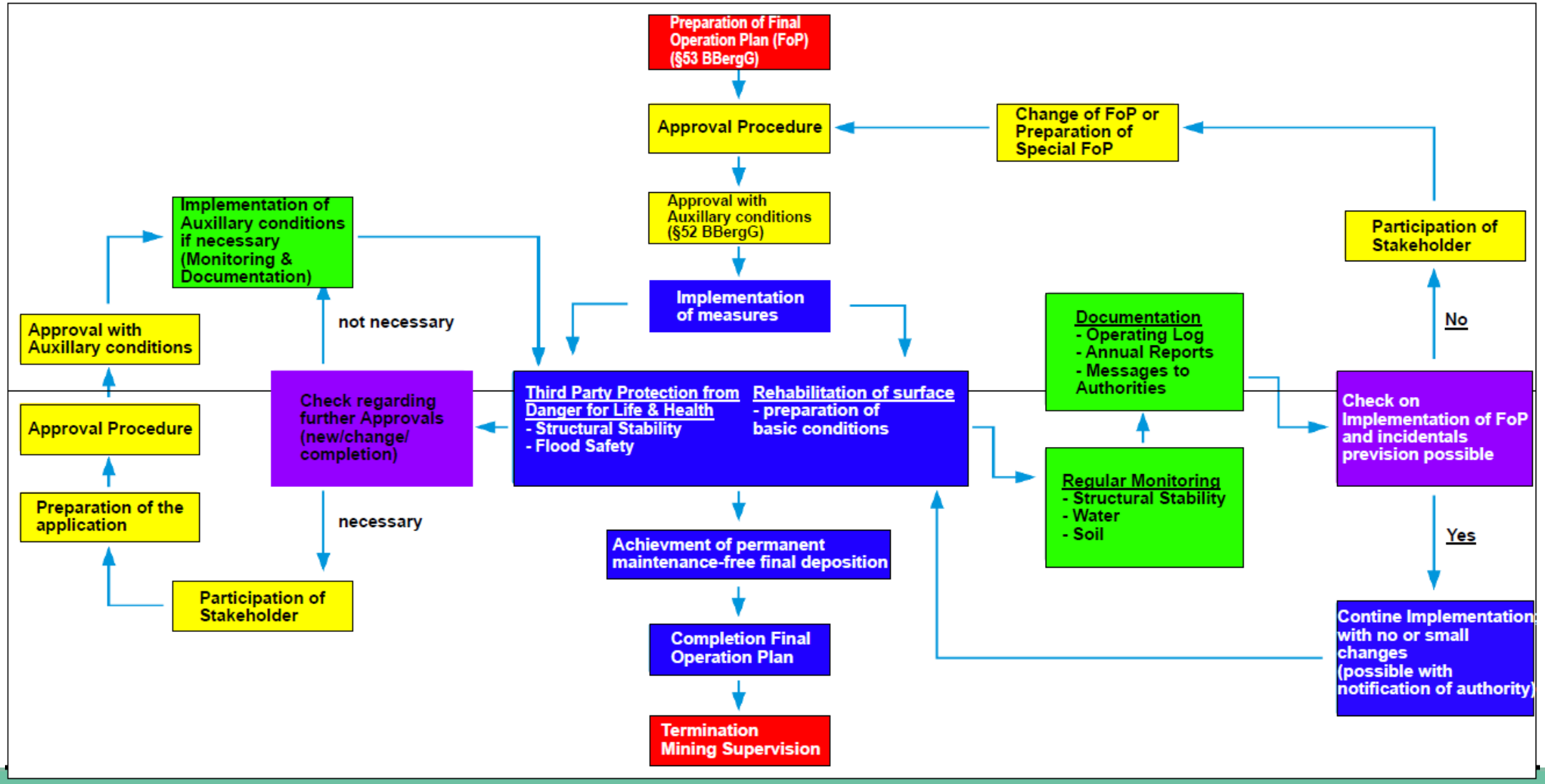

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Tailingpond Hachen

- **Constructed 1971**
- **In Operation until 1992**
- **3,2 Mio m³ / 6 Mio. t tailings**
- **44 m high dam, length 300 m**
- **20 ha**
- **Covered with 1,3 Mm³ uncontaminated stones and soil**
- **Completely recultivated**

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Mining and Postmining in Germany

Tailingpond Hachen

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Tailingpond Hachen – Authorities involved

Mining Authority
Community
County
Regional Council
Environmental Authorities
Water Authorities
Forestry
Monuments Office
Construction Authority
Real Estate Office
Soil Protection Agency

Local and regional NGOs
Private stakeholders

Various independent experts
Lawyers of all parties involved

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Tailingpond Hachen – Monitoring Activities

Subsidence control
Dam movements
Water tables
Chemistry surface waters
Precipitation
Soil chemistry of external soils
Amount and chemistry of drainage water
Plant chemistry (reed, grasland)
Stability control
Flood protection
Toxicological Animal Control

Daily visual control

In close cooperation and under control of authorities involved. Monthly and annual reports.

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Tailingpond Hachen – Permitting and Operating Plans

During operation:
Hauptbetriebsplan / Main Operating Plan
Talsperrenaufsicht / Dam Supervision

During Closure:
Abschlußbetriebsplan / Final Operating Plan
Sonderbetriebsplan / Special Operating Plan
Wasserrechtliche Erlaubnis / Water Law Permits

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Tailingpond Hachen - today

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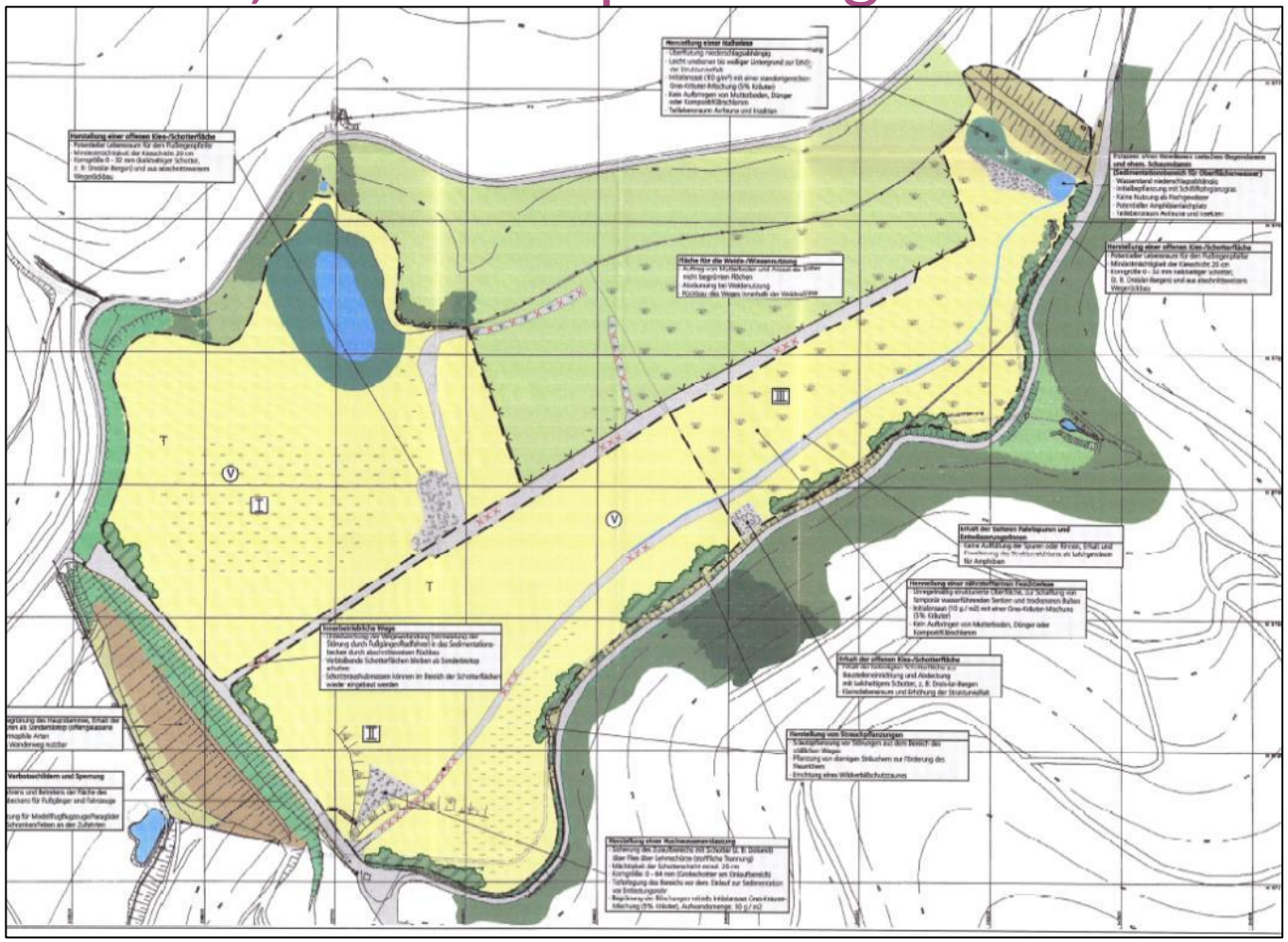
Tailingpond Hachen, Land use planning



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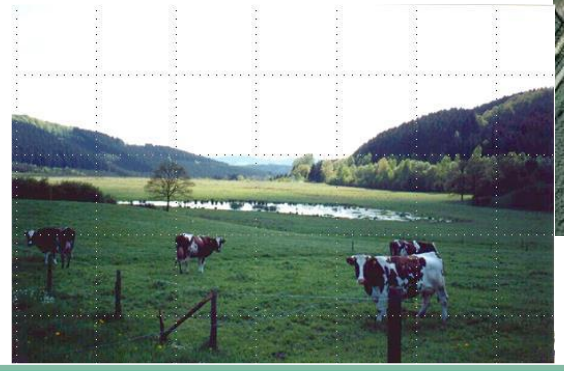
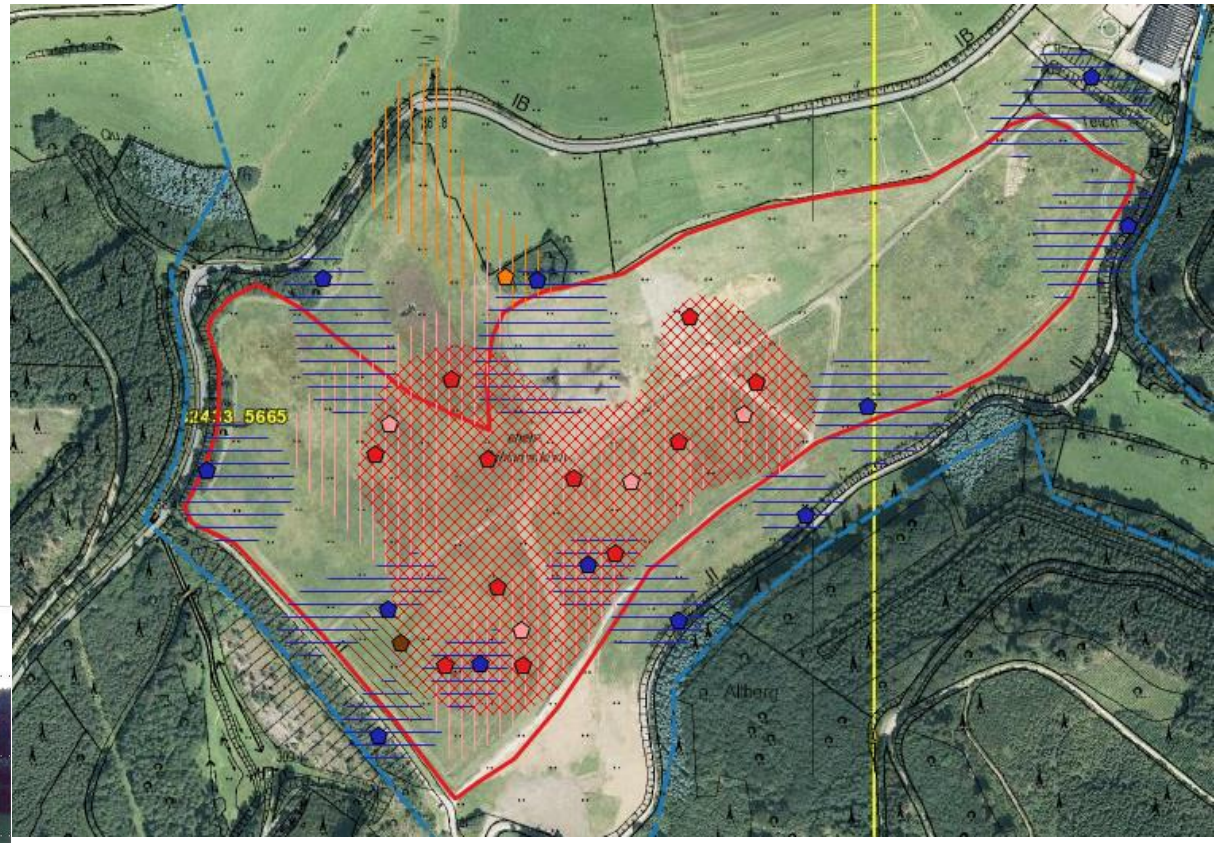
Tailingpond Hachen, Land use - *Future*

Environmental protection





Energy transition

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Practice Case: Tailingpond Hachen – Wetland (Passive Water Treatment)

Natural reduction of heavy metal contaminants in drainage water (Zn, Pb, Mn).

Previous test results proved up to 50% reduction by reed and other water plants.

Development Of Analytical Water Limits:

- **1990: 1 mg/l Zn**
- **2000: 0,3 mg/l Zn**
- **Today: 0,014 mg/l Zn**

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Conclusion

Mining in Germany is needed.

It is necessary together with environmental and social protection.

Nature on time, energy transition, mining – no contradiction if the necessity is accepted and compromises are made.

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All Photos with thanks to the courtecy of Sachtleben Bergbau Verwaltungs-GmbH

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