Strengthening Capacities in the Western Balkans Countries to Address Environmental Problems through Remediation of High Priority Hot Spots

Study tour in Czech Republic

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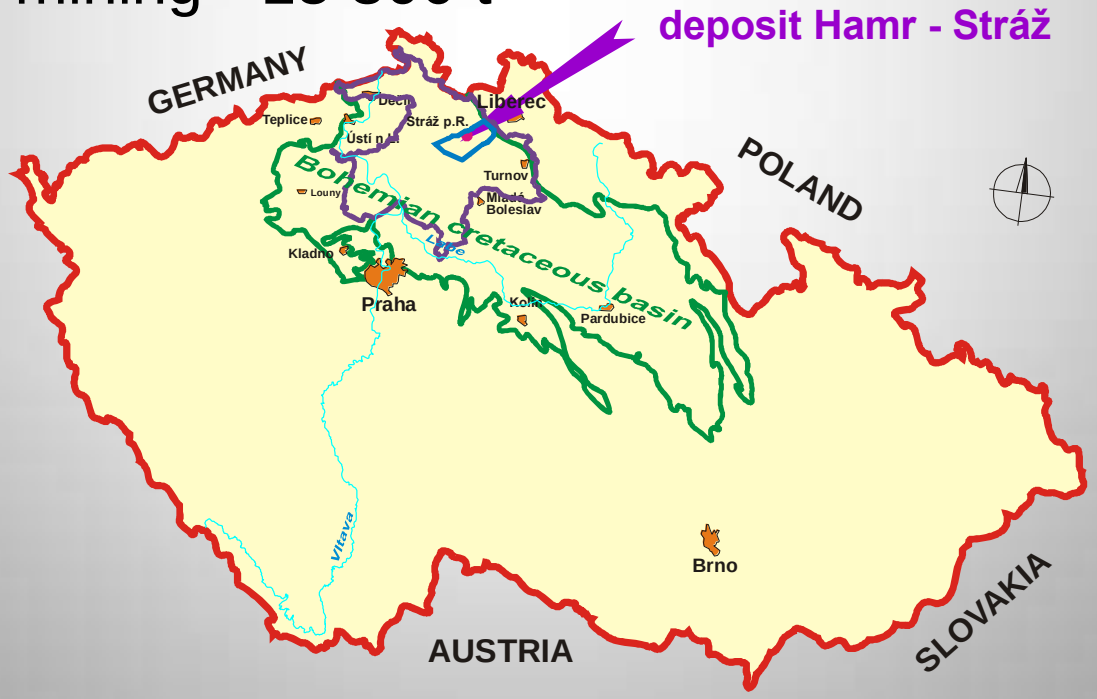
Stráž pod Ralskem
DIAMO uranium mine

- Period of exploration 1962-1971
- 1967 – 1996 more than 27 000 t of uranium:

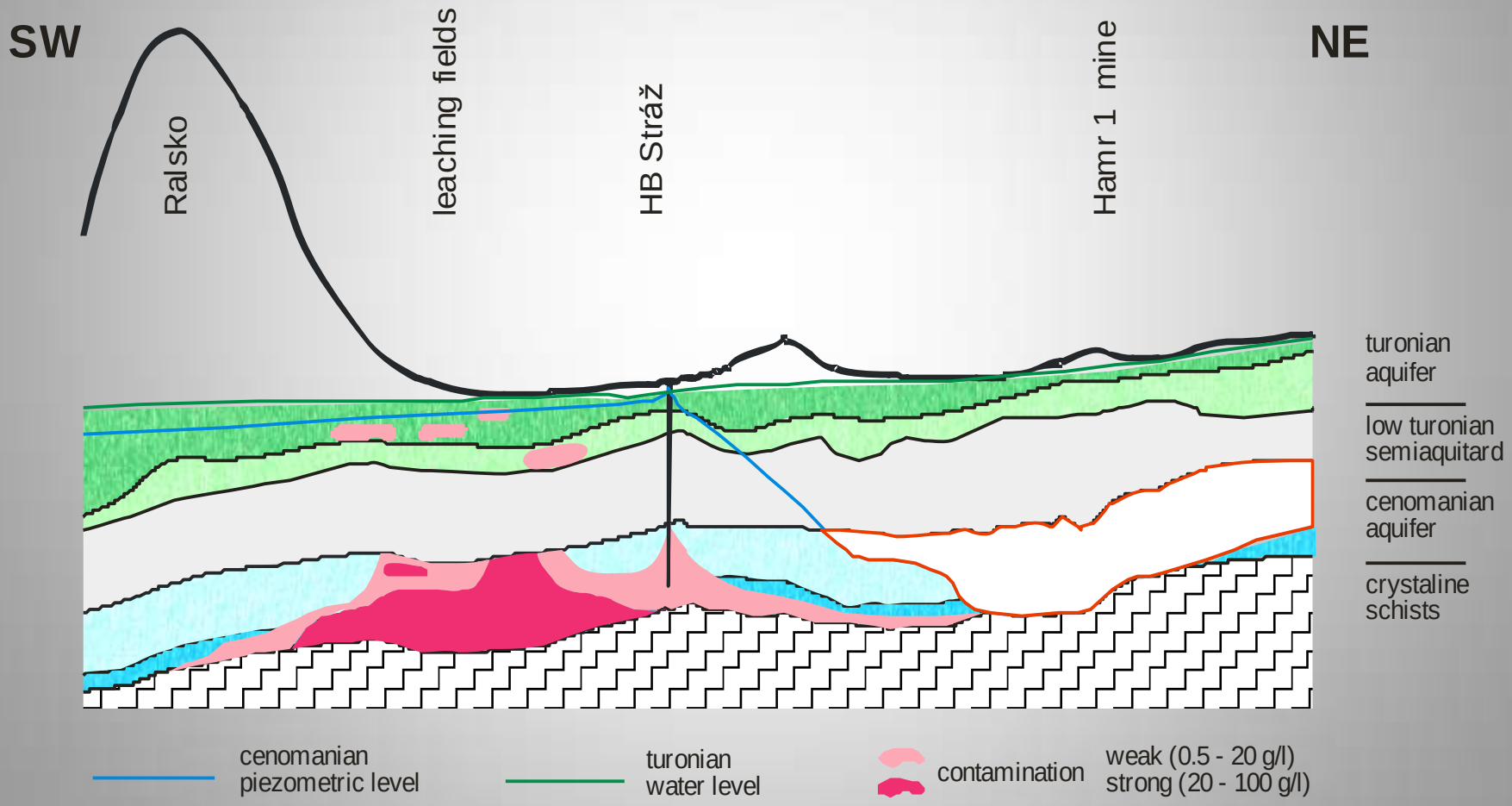
  deep mining - 11 600 t

  chemical mining - 15 800 t



DIAMO

Schematic cross-section of the area



DIAMO

Ground water contamination

- 15 000 wells (8 000 technological) were drilled during chemical mining period
- Area of leaching fields 628 ha
- Total influenced volume of groundwater is more than 400 million m^3.
- Contaminated area larger then 27 km^2
- Mainly SO_4^{2-} (sulphates jon) NH_4^+ (ammonium jon) and Al contaminate both aquifers

DIAMO
Remedial Activities

- Czech Government has undertaken series of actions with the following objectives:

➢ to restore the rock environment to a condition guaranteeing continuing usability of water

➢ to decommission bore holes and surface installations,

➢ to incorporate the surface of leaching fields into the ecosystems taking into account regional systems of ecological stability and urban plans.

DIAMO

Methods of remediation

- Pump and treat method

- Innovative in-situ immobilization approach is planned to use.

- All remediation process is expected to finish in 2035. During this period 3,7 mil. tons of contaminants will be withdrawn from the ground.

Palivovy kombinat, s.p.,Kohinoor MOST town.

- Brown coal mine: 1899 mine was open for use and closed by Government in 2002.
- Mine site upgrading and re-cultivation (leveling, drainage channels etc) are series of remediation activities that **Palivovy kombinat and Government are undertaking**
- After remediation sites will be used for recreational purposes.
- Re-cultivation and reforestation will be finished in 2015.

Palivovy kombinat

Site location

Palivovy kombinat

Remediation Activities

Open pit Ležáky before and present

Palivovy kombinat

Remediation Activities

Part of remediated open coal pit

Sokolovska uhelna, a.s. Sokolov.

- **Activities**

  Brown coal mining , production of electric power , production of chemicals
- **Products & services**

  Coal: domestic, industrial, briquettes

- **Electricity production and distribution**
- **District heating, cooling, steam and compressed air supply services**
- **Inorganic acids and anhydrides**
- **Compressed and liquefied gases. Chemicals for refrigeration**
- **Phenols, polyphenols, ethers, aldehydes, ketones, quinines**
- **Coal, wood and resin distillation products**
- **Land clearance and reclamation contractors**

Sokolovska uhelna, a.s. Sokolov.

- Most environmental influence in the region of Sokolov.
- Long-term master plan for land reclamation was established in 1993.
- Focusing in water area restoration.
- Achieving maximum of diversity.
- Creating areas for recreation.

Sokolovska uhelna

Part of open coal pit

Sokolovska uhelna

Remediation Activities

Golf terrain

Sokolovska uhelna

Remediation Activities

Part of remediated open pit

Experience from Study tour

Kosovo open pit mines

Mirash and Bardh-Obiliq

- The **Mirash** and **Bardh** open-cast coal mines are lignite coal mines.
- The two mines cover a working surface area of 10 km^2 and, if all the external dump sites from 1956-1991 are included, the mine will cover a total surface area of 11 km^2.
- There is no mine remediation activities since the mines existance.
- Re cultivation activities undertaken at ash dumps at Kosova A.
- Czech experiences in coal mine remediation are the best samples for the Kosovo government, especially: **Kohinoor and Sokolovska uhelna** coal mines.

Mirash and Bardh open coal mines

Satellite pictures

Mirash and Bardh open coal mines

Site plan

Thank you