Lessons learnt in 35 years on the way from Europe's largest opencast coal region to the Lusatia lakes land

Where we came from (1989)

- 195 million tons of raw lignite in 17 mines
- 900 million m³ of overburden removal



Map of coal resources and mines in 1994

- 630 million m³ groundwater pumped
- water deficit approx. 13 billion m³, thereof 9 billion m³ groundwater deficit



map of groundwater impact in 1992



Where we are (2024)

- current production level 40 million tons of raw lignite in 4 active LEAG mines
- 21 artificial lakes in mine voids.



Lusatia mining area 2024

• groundwater deficit reduced to 7 billion m³ mostly around the active LEAG mines



Map of groundwater impact 2023



- active water management in place managing the rivers Spree, Neisse and Schwarze Elster based on water demand of priority users
 - 1. Ensuring water supply requirements (except for shipping and flooding/aftercare) and the required minimum discharges, taking water quality into account
 - 2. Refilling the dams and storages to ensure their operational readiness
 - 3. Feeding the apex of the Oder-Spree Canal from the Spree area
 - 4. Flooding and aftercare of post-mining lakes



Network of surface water bodies in the Lusatia lignite region



Lessons learnt on the way from Europes largest opencast coal region to the Lusatia lakes land

Lessons learned

- 1. rehabilitation of mine voids is a very longtime process (50+ years) and needs strategic planning and management
- 2. It is important to know the available and expected water balance (surface and groundwater) before developing a water management plan
- 3. Effective water management needs coordinated engagement of governmental and commercial stakeholders
- 4. groundwater table will restore nearly to pre-mining levels
 - this process shall be managed
 - active management of the water quality is required and possible
- 5. the mine voids will be filled up to long-term post-mining groundwater level
 this process needs active management and control to avoid soil stability problems and to actively control water quality in the new lakes
- 6. restoration of the groundwater table can have unexpected effects even in areas not affected by mining due to change from long-lasting dry conditions to natural wet situation.

- safety of all postmining landscape must be calculated based on final groundwater table



land subsidence in the former Seese-West mine area (left 2010, right 2011 after subsidence) Source: LMBV

- 7. water is a limited resource
 - active water management is required based on priority list
 - active water management will create conditions for use of river water for flooding in periods of excess water (spring, autumn, heavy rainfall periods)
- 8. former mine voids can play an active role in river management
 - dampen flood waves
 - stabilizing the river in low water periods
 - active mines are supplying groundwater to the river, this volume will not be available in future





(source LMBV)

