



OKD, DPB, a. s.
739 21 Paskov, Czech Republic

STATE OF CMM & AMM RECOVERY AND UTILIZATION IN THE CZECH REPUBLIC

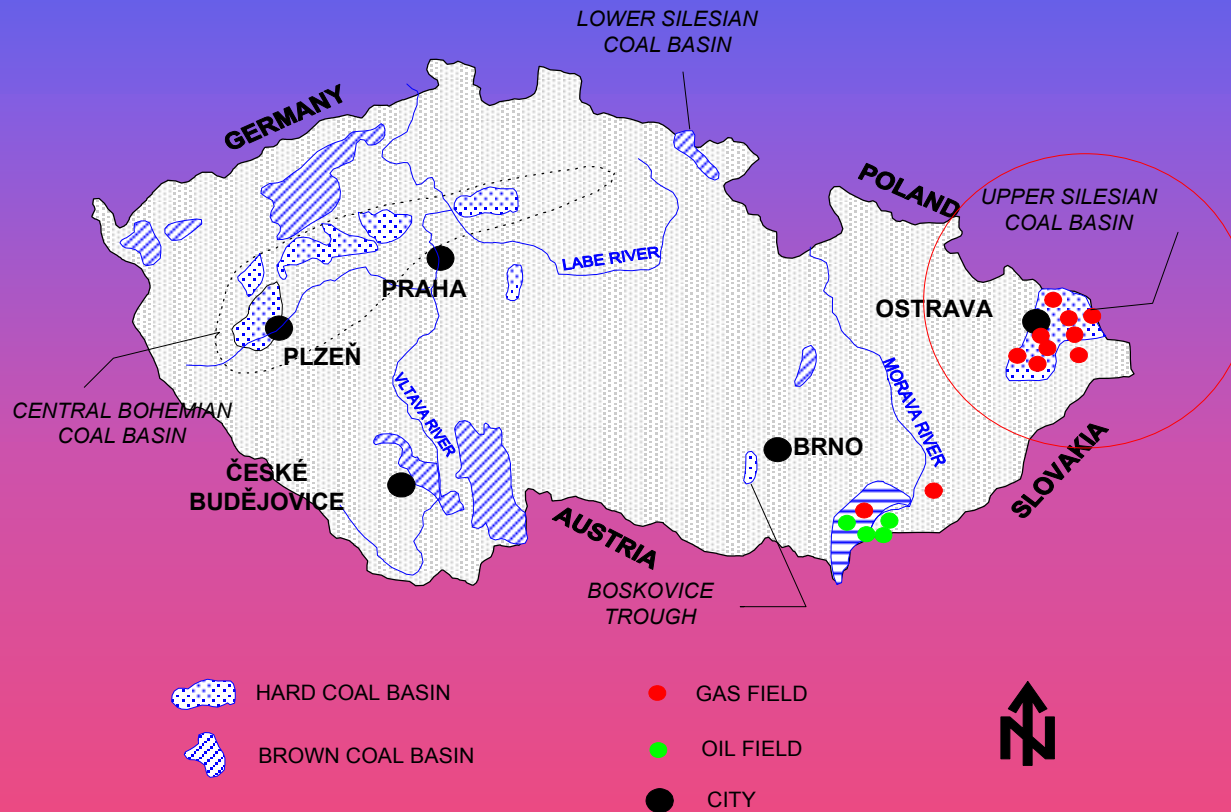
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Presentation to Ad Hoc Group of Experts on Coal Mine Methane
Geneva – 6 December 2004

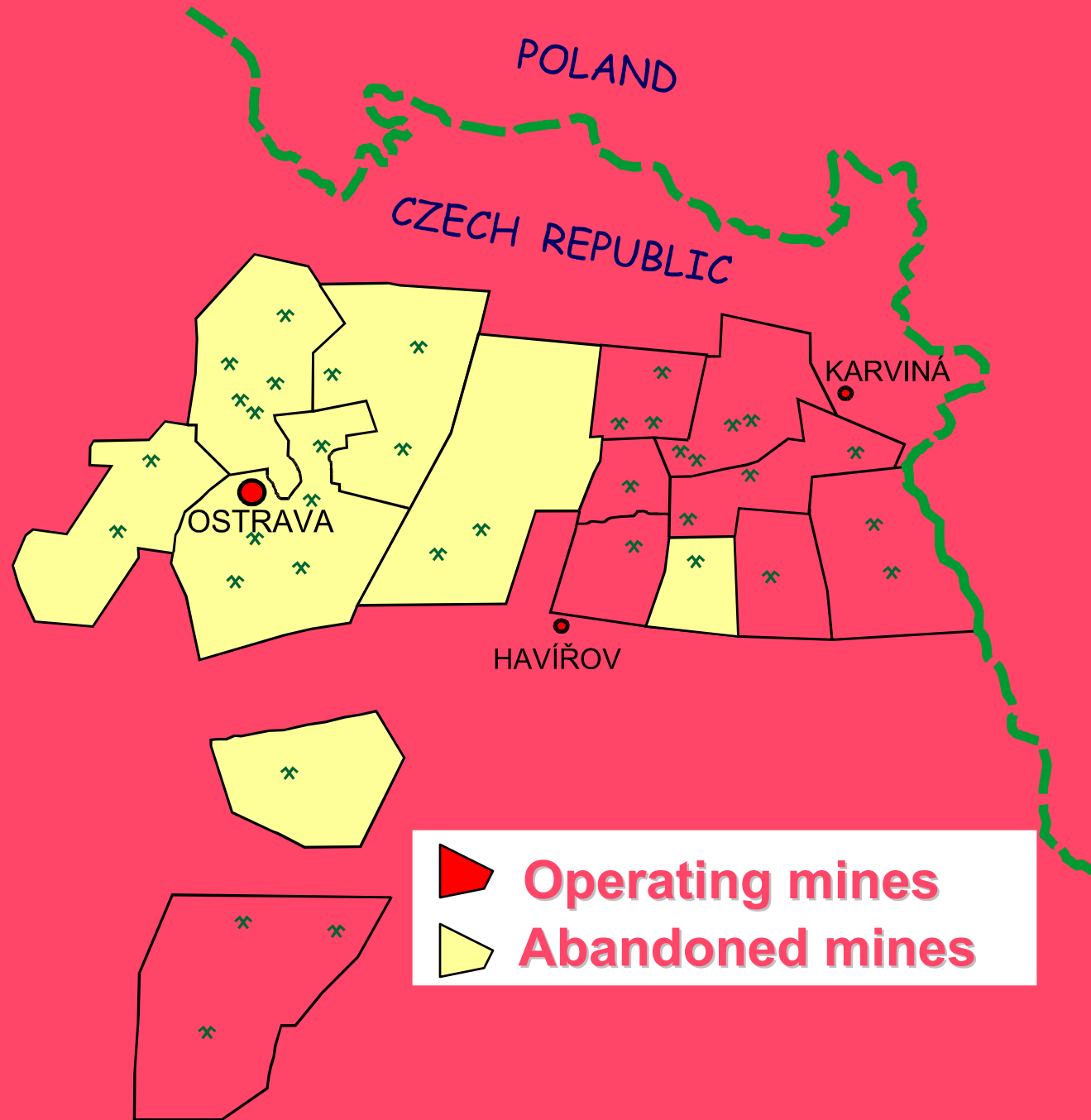


The Position of the Main Coal Basins in The Czech Republic





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HARD COAL MINING COMPANIES

OKD, a.s., Ostrava
ČMD, a.s., Stonava



CMM DRAINAGE (CAPTURING) SYSTEM IN OPERATING COAL MINES

11 GAS DRAINAGE PLANTS

65 VACUUM PUMPS

5000 MINE GAS SOURCES:

- BOREHOLES

- ABANDONED WORKINGS

231 km UNDERGROUND PIPELINES



CAPTURED GAS MIXTURE CONTENT

CH_4 50 - 55 %

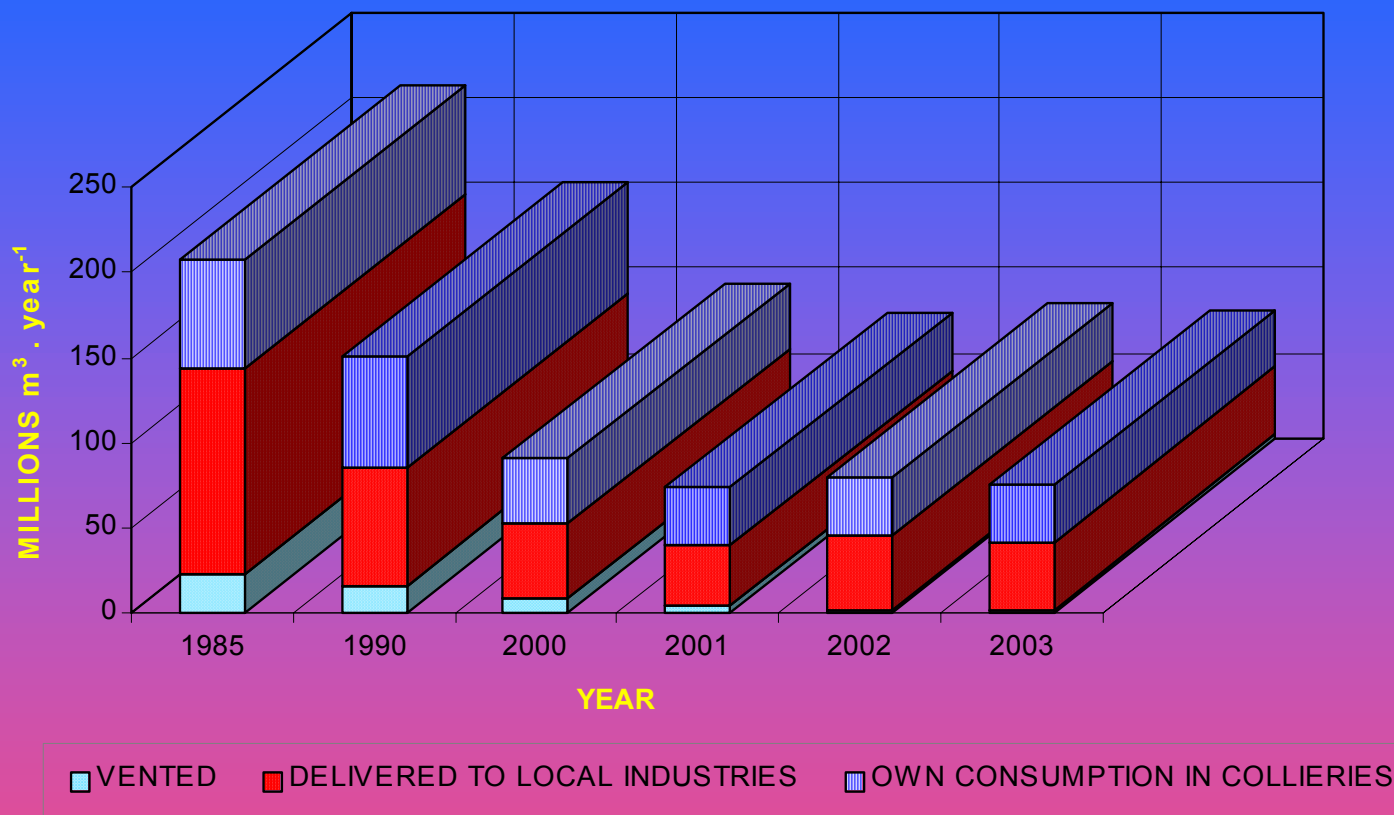
CO_2 2 - 4 %

O_2 1 - 3 %

N_2 47 - 38 %

HEATING VALUE

19-20 MJ.m⁻³



UTILIZATION OF METHANE CAPTURED IN OSTRAVA - KARVINA COLLIERIES



AMM - MINE GAS FROM ABANDONED COAL MINES

- **Recovery started** 1997
- **CH₄ extracted quantity** 32 million m³.year⁻¹
- **Extracted gas content** 70 - 80 % CH₄



AMM EXTRACTING COMPANY

- OKD, DPB, a.s. – a sole company extracting AMM in the Czech Republic
- operates since 1960 specially in mine gas and water drainage
- a private company – member of Karbon Invest, a.s. Group
- single shareholder - the coal mining company OKD, a.s.
- owner of all AMM concessions in abandoned coal mines areas



AMM DRAINAGE SYSTEM

- 6 GAS EXTRACTION PLANTS**
- 20 VACUUM PUMPS AND COMPRESSORS**
- 12 AMM SOURCES:**
 - ABANDONED SHAFTS**
 - WELLS INTO ABANDONED WORKINGS**

CMM and AMM Extraction and Utilization System

17 DRAINAGE PLANTS

150 km SURFACE PIPELINES

ONE CONNECTED SYSTEM

CENTRAL DISPATCHING IN OKD, DPB, a.s.

OKD, DPB, a.s.

- extracts AMM
- buys CMM from operating mines
- operates the pipelines system and the central dispatching
- sells CMM and AMM to direct users for technological and heating purposes



LEGISLATIVE AND FISCAL ASPECTS

- CMM - considered as by-product of coal mining:
 - no mining concessions
 - no fees
- AMM - regulations as for any other mineral:
 - mining concessions
 - concessions fees - 10,000 CZK.km⁻².year⁻¹
 - exploitation fees - 5 % of selling price
 - taxes



TECHNICAL AND COMMERCIAL ASPECTS

- No motivation of operating mines to increase the efficiency of CMM capture above traditional 34% sufficient to ensure safety
- Above 95% of captured CMM is used
- Restructuralisation of the traditional industry using mine gas and decreasing of energy consumption
- Releasing of AMM to the atmosphere (low CH₄ content) by degassing boreholes and/or drainage plants to protect inhabitants and constructions on the surface of abandoned mines areas against CH₄ explosions
- No motivation to look for new methods of mine gas utilization
- The CMM and AMM recovery and utilization become commercially less interesting



RECOMMENDATIONS

- ❖ CMM to be considered as secondary source of energy (by-product of coal mining)
- ❖ AMM to be considered as renewable source of energy (continuous migration – desorption of methane from coal into abandoned old workings due to extraction and due to changes of atmospheric pressure – experiences from foreign countries and from Czech Republic)
- ❖ To support the recovery and the utilization of both CMM and AMM