



Rozwój gospodarczy a europejska polityka energetyczna i klimatyczna

POLSKIE CZYSTE TECHNOLOGIE WĘGLOWE

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NATIONAL CONTACT POINT FOR EUROPEAN RESEARCH PROGRAMMES

GOVERNMENT GROUP OF THE ZERO EMISSION FOSSIL FUEL POWER PLANT

EUROPEAN TECHNOLOGY PLATFORM



CARBON CAPTURE AND STORAGE CHALLENGES

indirect
costs

carbon leakage

heavy industry
leakage

costs

urgent retrofit

new power plants
+ CCS

earlier decommissioning
ETS fines

benefits

indirect benefits
(knowledge-based
economy)

Underground Coal
Gasification
sythetic fuel
hydrogen,
EGR, EOR

construction of Polish
clean power plants
worldwide

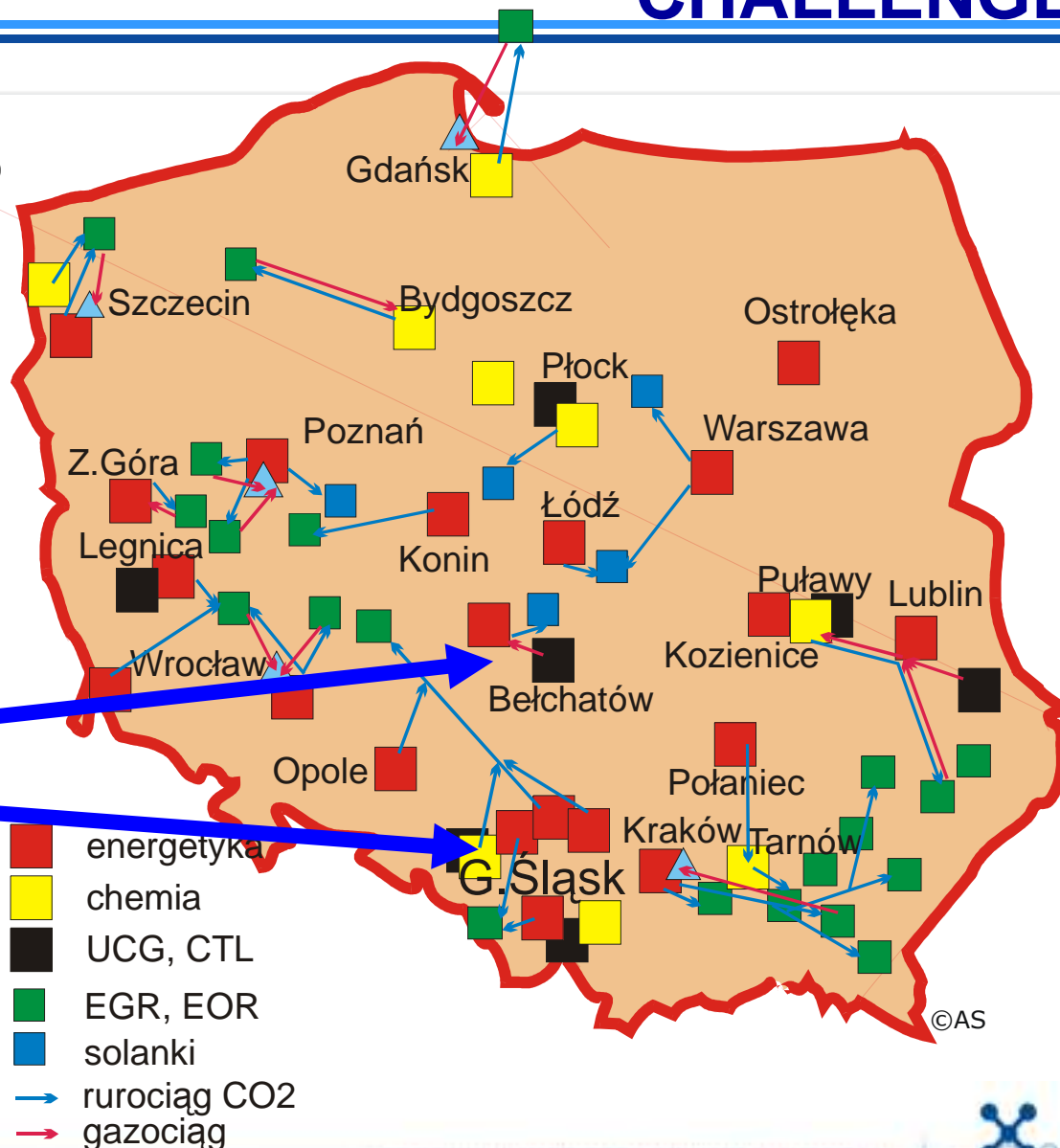
Each year of earlier
CCS deployment
will reduce losses



CARBON CAPTURE AND STORAGE CHALLENGES

50 billion euro

FLAGSHIP PROGRAMME
2 billion euro
BELCHATOW
KEDZIERZYN



©AS



CCS Installation dedicated for 858 MW unit





siłasympiozy

jakość środowisko bezpieczeństwo



Południowy Koncern
Energetyczny S.A.

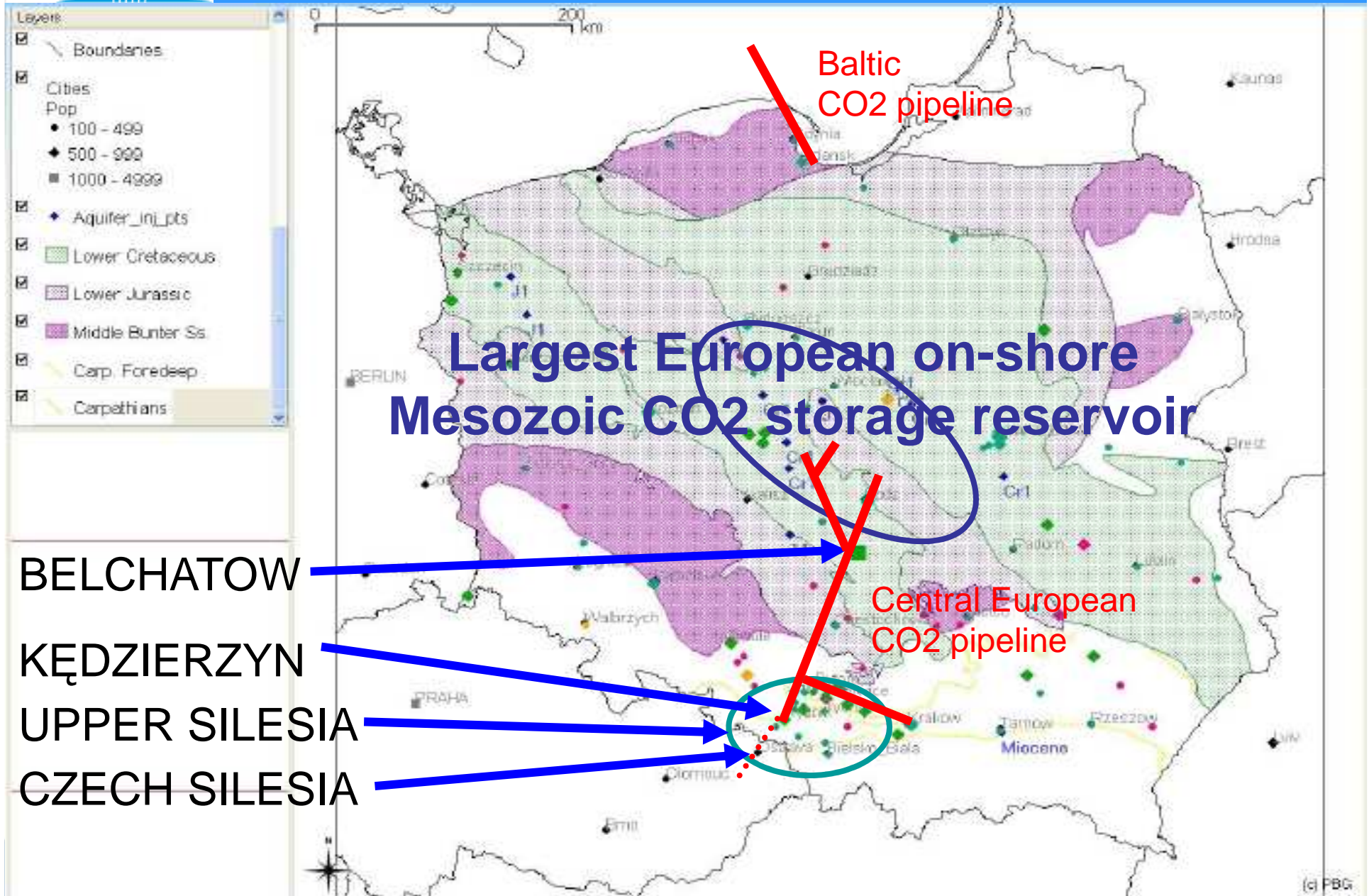


Zakłady Azotowe
Kędzierzyn S.A.

***The first in EU
CLEAN ENERGY
- CARBOCHEMICAL COMPLEX
Kędzierzyn***



CO2 pipeline transport



**Largest European on-shore
Mesozoic CO2 storage reservoir**

**Baltic
CO2 pipeline**

**Central European
CO2 pipeline**

BELCHATOW

KĘDZIERZYN

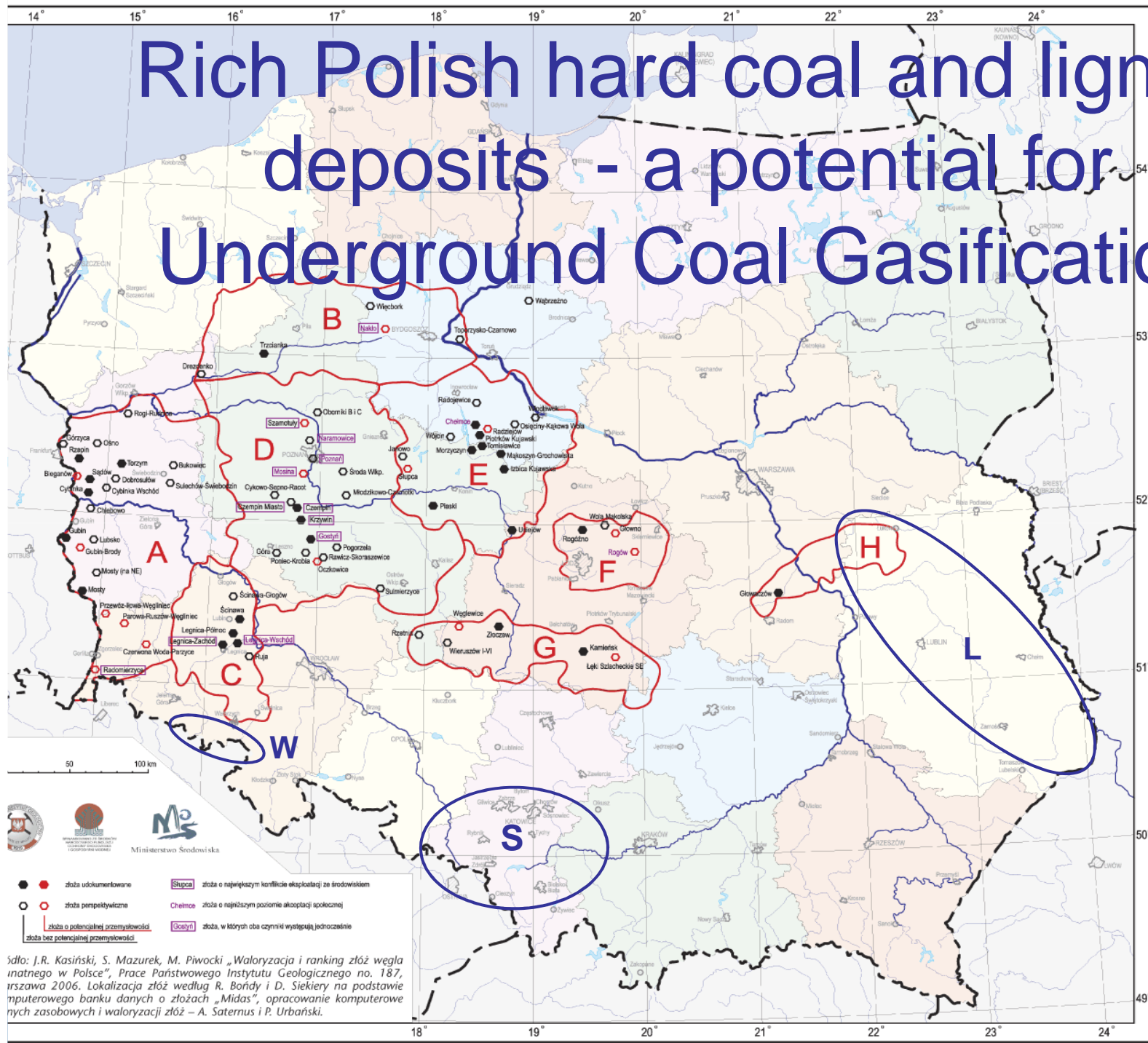
UPPER SILESIA

CZECH SILESIA

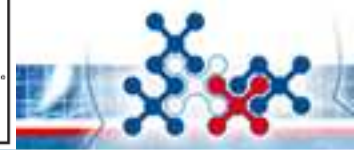
CO2 inland water transport?



Rich Polish hard coal and lignite deposits - a potential for Underground Coal Gasification

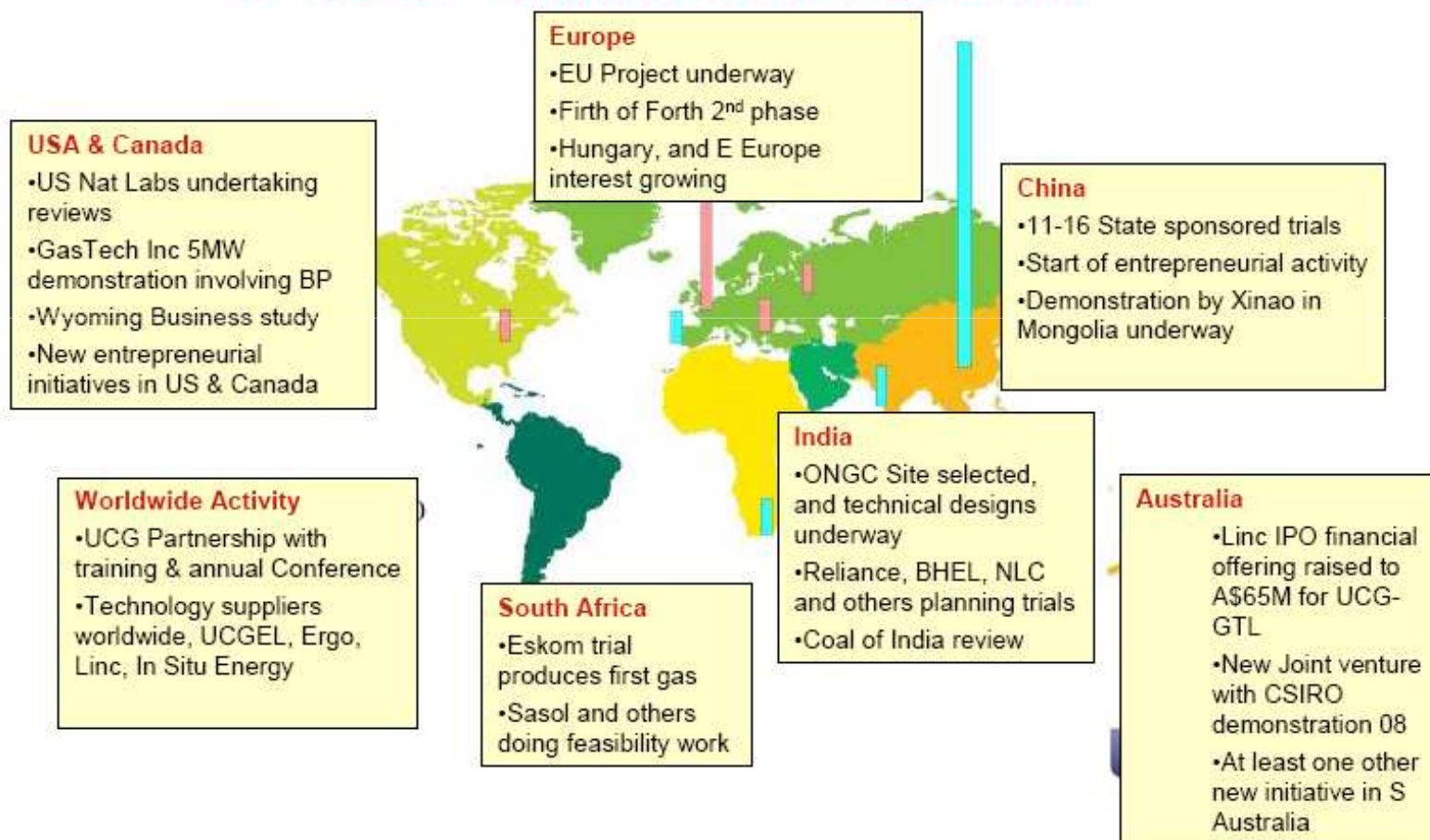


Źródło: J.R. Kasiński, S. Mazurek, M. Piwocki „Waloryzacja i ranking złóż węgla kamiennego w Polsce”, Prace Państwowego Instytutu Geologicznego no. 187, Warszawa 2006. Lokalizacja złóż według R. Bońdy i D. Siekiery na podstawie komputerowego banku danych o złóżach „Midas”, opracowanie komputerowych zasobowych i waloryzacji złóż – A. Saternus i P. Urbański.



UCG, why not in Poland?

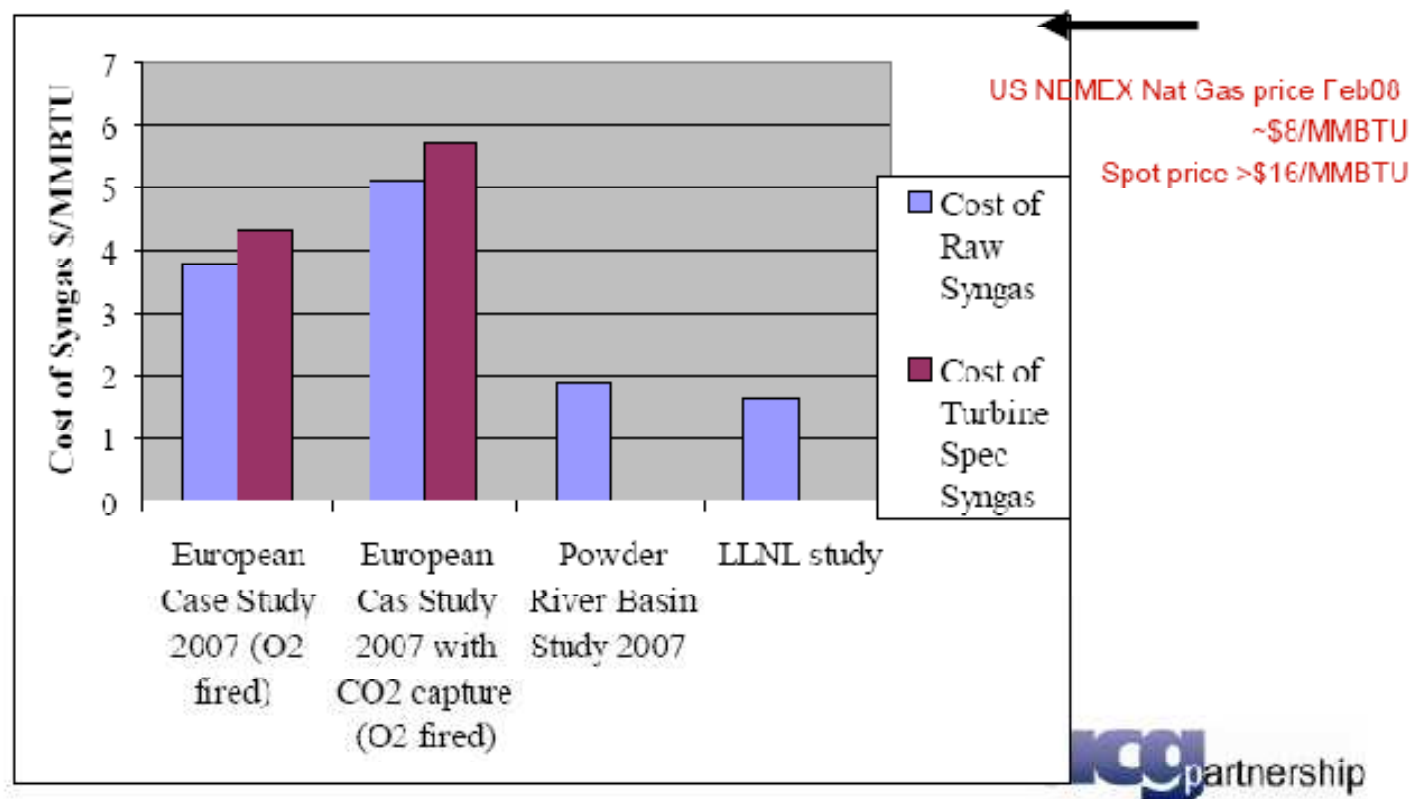
WORLDWIDE UCG ACTIVITIES



Source: Michael Green, UCG Partnership



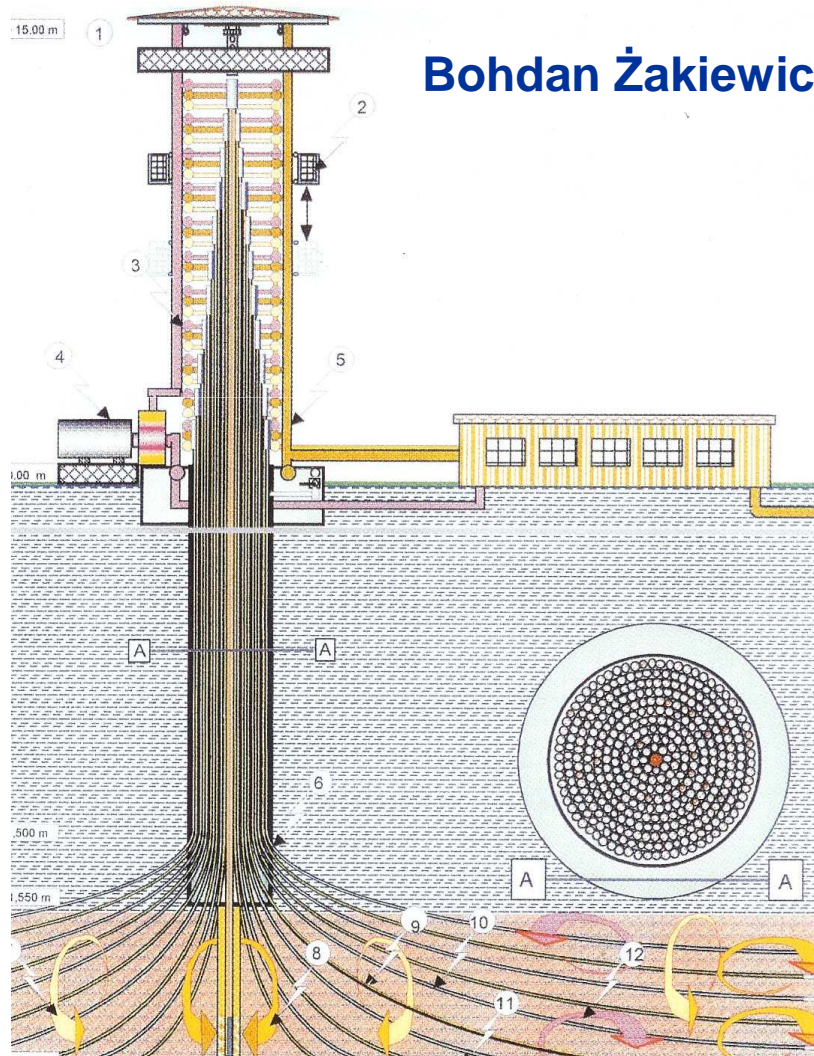
Average Costs of UCG for two recent studies – Europe & Powder River Basin



Source: Michael Green, UCG Partnership



RYBNIK PILOT PLANT ENHANCED COAL BED METHANE UNDERGROUND COAL GASIFICATION



Pilot Plant in Rybnik

- ❑ Single SDS shaft
- ❑ 4 km² of georeactor
- ❑ 100 mln m³/yr syngas production =
 - ❑ (75 mln m³/yr hydrogen)
 - ❑ 35-50 MWe power production
- ❑ 50 years of exploitation



POLISH FLAGSHIP PROGRAMME FOR CLEAN COAL TECHNOLOGIES

- Support for 5-6 demonstrating Clean Coal Technology initiatives
- Legal and regulatory framework
- Increase of national production of natural gas and oil with the use of CO₂ (EOR, EGR)
- Pilot plant for Underground Coal Gasification (UCG)
- Coal Bed Methane Recovery (CBMR)
- Production of synthetic fuel from coal (CTL, CTG, CTH), new fertilizers (urea)
- Development of Polish potential in constructing clean power plants

