EURACOAL

European Association
for Coal and Lignite

European Coal and Lignite – Perspectives and Challenges 2009

EURACOAL Conference
Brussels – 26th January 2009

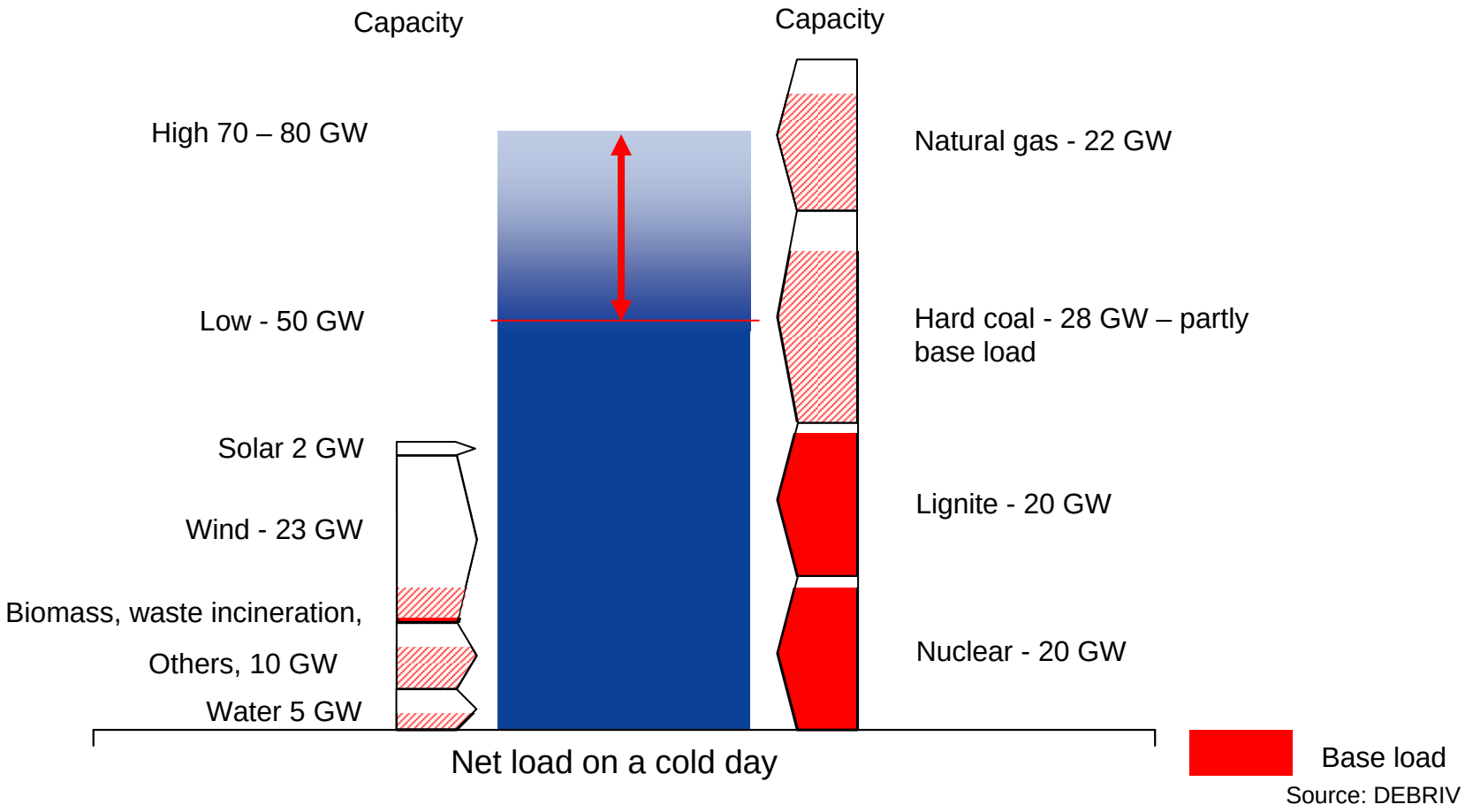
Petr Pudil - President

European coal and lignite – Perspectives and challenges 2009

Overview

- The Commission's Strategic Energy Review II – Emphasis on security of energy supply
- Coal-related CCS demonstration projects – Examples throughout Europe
- Other hard coal and lignite issues for 2009 – EU ETS and Regulation for Large Combustion Plants

The gas crisis – Power generation 5th - 11th January 2009 - Example Germany



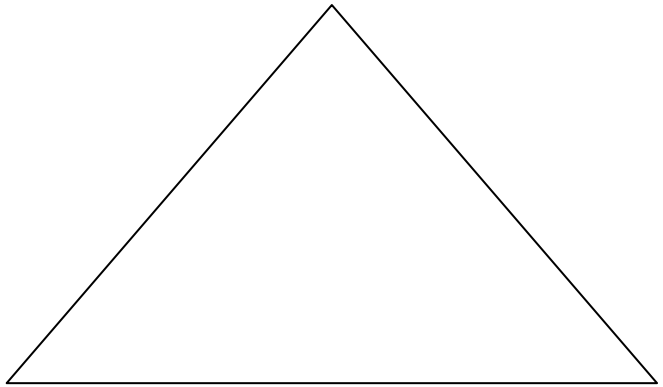
Source: DEBRIV

Coal generation helped in the crisis, the renewables did not.

Energy policy triangle

Secure energy supply

- Coal, nuclear and large hydro as the backbone of power supply, not only in case of tension
- Functioning world markets for coal plus considerable domestic coal extraction



Competitiveness

- Coal prices are attractive for the economy and less volatile than oil and gas prices

Climate Protection

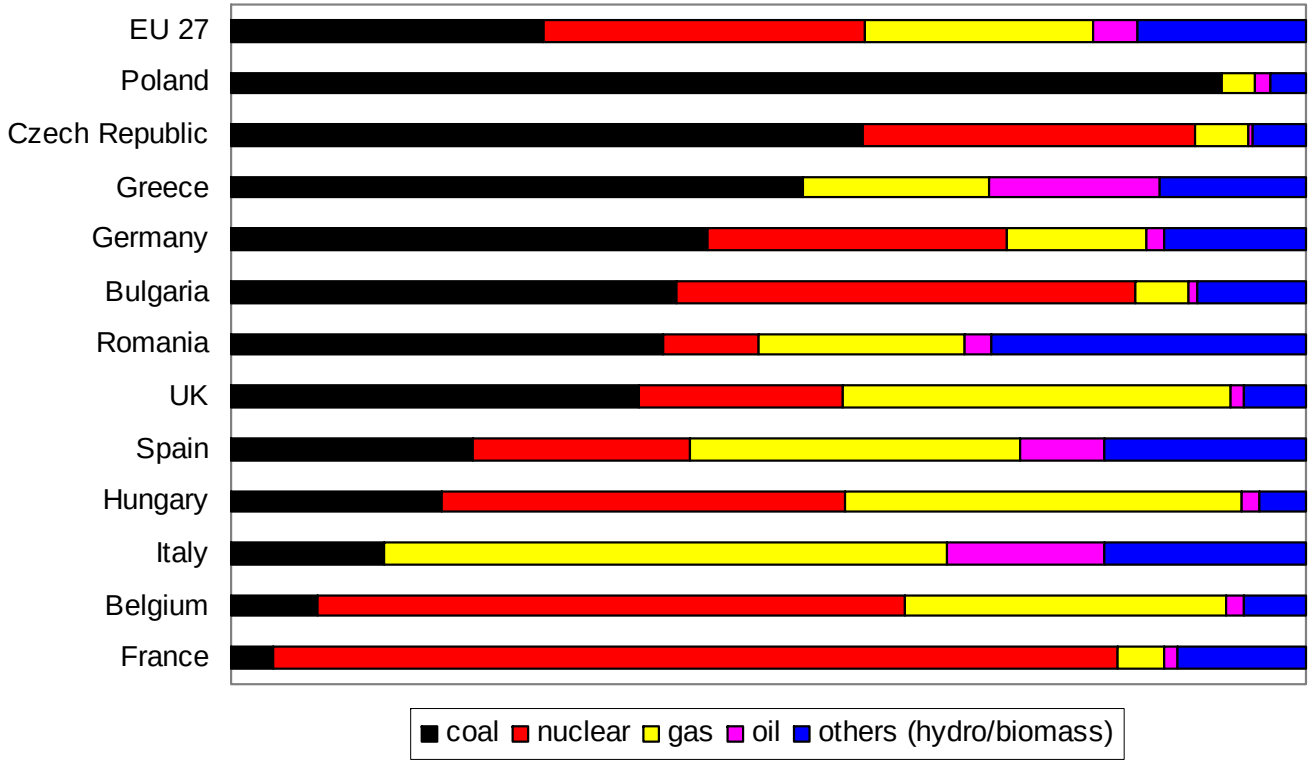
- Domestic coal extraction: world leader and example for others
- Power generation: continuous modernisation and CCS demo plants as an important part of climate protection policies

The Commission's Strategic Energy Review II – Coal

- "Coal remains an essential component of Europe's domestic energy supply … "
- " … continued substantial use of coal and lignite in generation in Europe is projected."
- " … in the longer run … compatible with the climate challenge if highly efficient plants predominate and … CCS is widely available."
- " Obligatory CO_2 emissions standards should be considered only after results of industrial demonstrations have been evaluated … "

EURACOAL welcomes Commission's statements on coal in SER II.

Power generation structure in selected EU 27 Member States



	Gross power generation TWh	Share of coal in %
EU 27	3.357.958	29
Poland	161.743	92
Czech Republic	84.361	59
Greece	60.789	53
Germany	636.600	42
Bulgaria	45.843	41
Romania	62.698	40
UK	398.327	38
Spain	303.007	22
Hungary	35.859	20
Italy	314.122	14
Belgium	85.535	8
France	574.473	4

Source: EUROSTAT – Energy / Yearly Statistics 2006

As at 9/2008

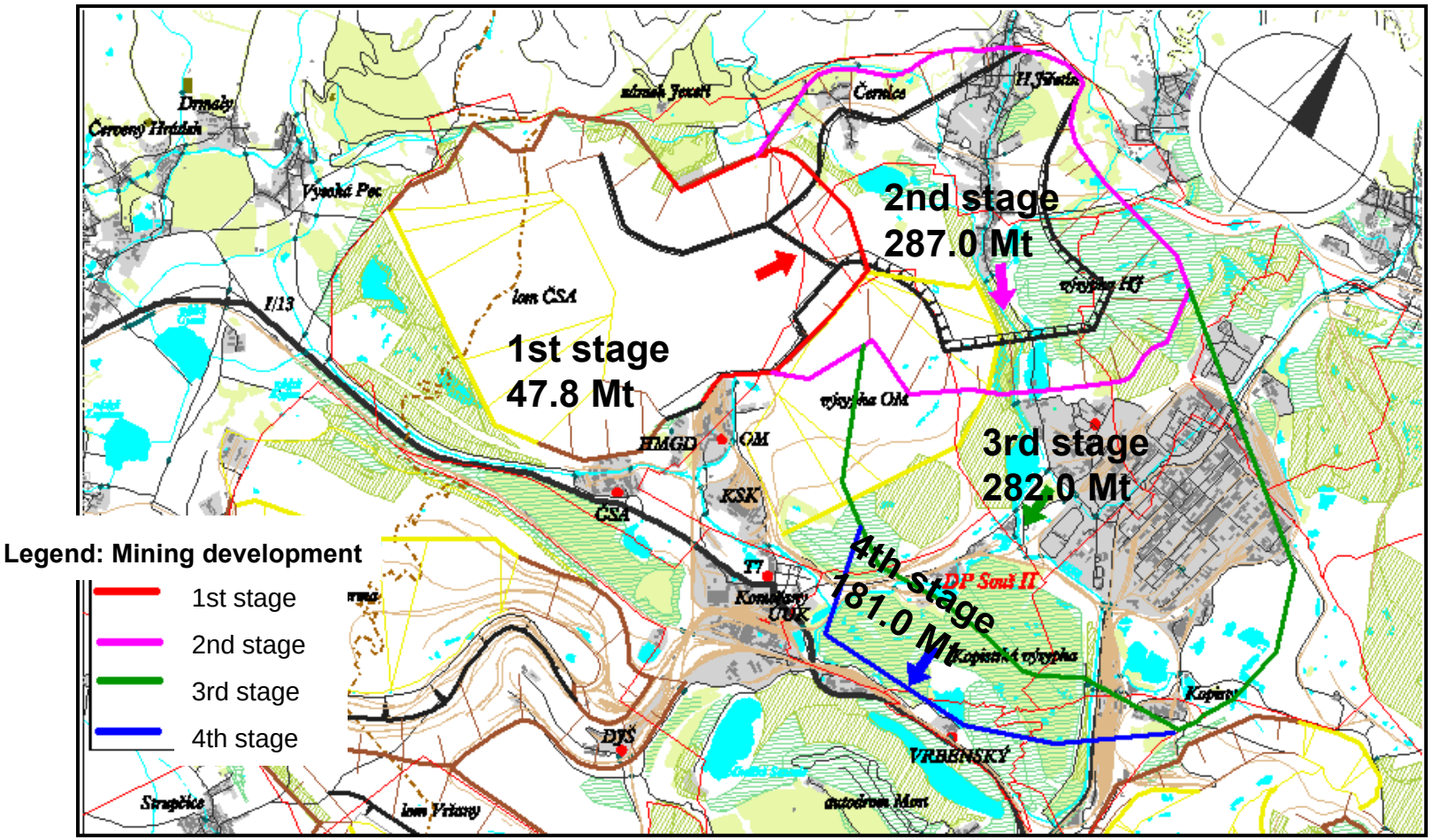
Strategic Energy Review II – Important issues left to the Council

Access to resources

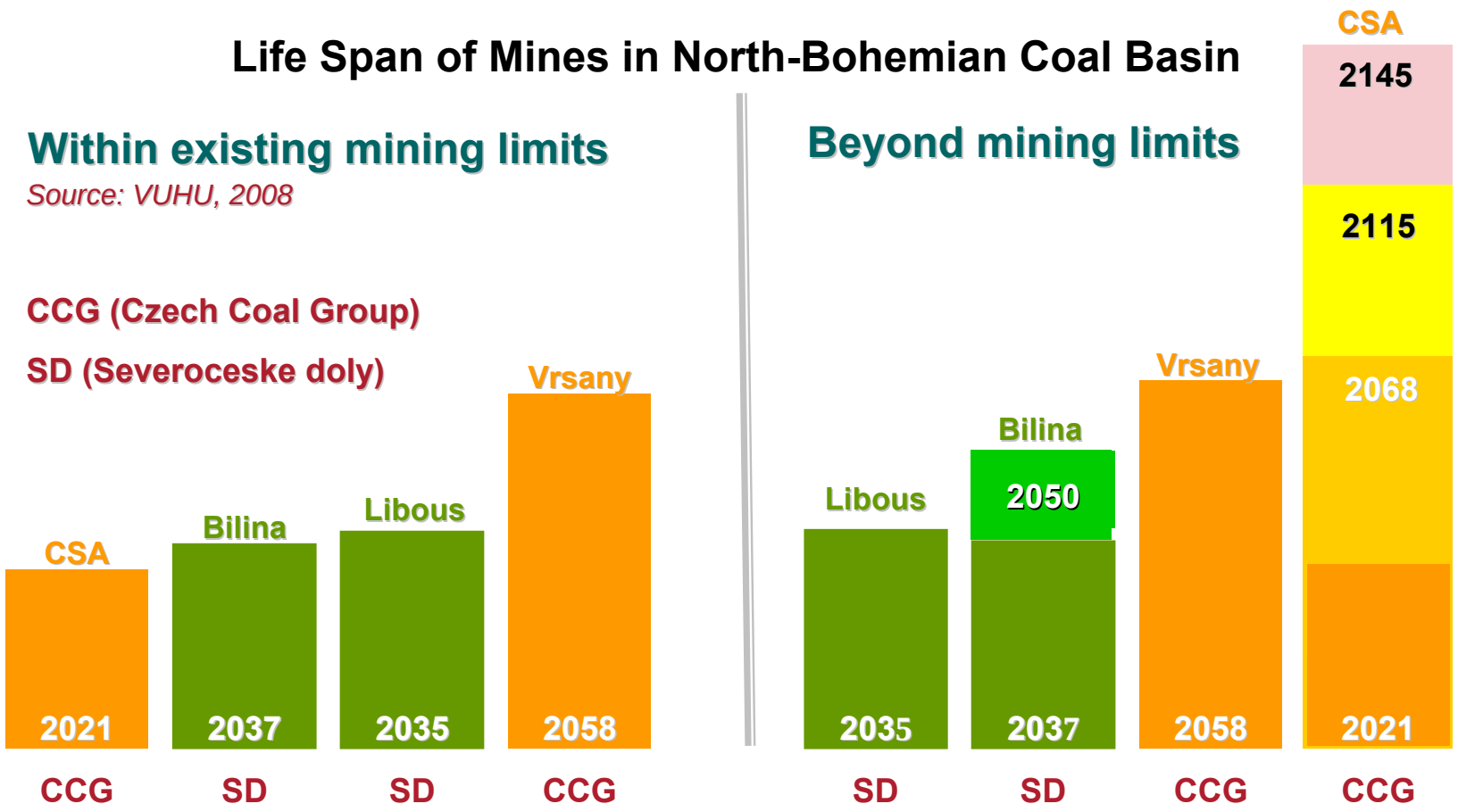
- Member States should emphasize that assuring access to resources is a common task of the EU, Member States and industry in order to secure energy supply
  - No hasty closing down of mines on the basis of short-term considerations
  - The legal system must secure that access to resources (opencast and underground) remains possible also in practice – this refers mainly to regional planning as well as environmental approval procedures

Access to resources - Czech Example

ČSA surface mine
beyond the mining limits - 750 Mt of brown coal



Access to resources - Czech Example



Strategic Energy Review II – Important issues left to the Council

Continuous modernisation of power generation

- EURACOAL shares the objective of making CCS technically mature and economically viable as from 2020
- However, new coal-fired power plants remain important for security of electricity supply – in the short, medium and long term
- A 1,000 MW BAT coal or lignite power plant replacing an older one could alone save 2,5 to 3 million t CO_2 annually and therefore contribute a lot to EU climate protection objectives for 2020 – a clear statement by Council on this aspect would be useful

Continuous modernisation remains important

Germany – STEAG AG / EVN AG

DUISBURG - WALSUM 10

- New 750 MW hard coal-fired power plant
- Efficiency: > 45%
- 2010

Continuous modernisation and efficiency increase are a precondition for CCS.

CCS – EURACOAL's overall position

- CCS is a promising technology within climate protection policies
- The demonstration project network proposed by the Commission / the Technology Platform must be set up as soon as possible
  - Project selection - criteria and modalities to be definitely established in the Comitology procedure
  - Encourage Member States to co-finance the projects from auctioning revenues
- Decisions on CCS obligations only after results of industrial demonstrations have been evaluated
- Retrofit with CCS after 2020: in some places, top efficiencies may be the best option; any retrofit is subject to proportionality
- Capture-readiness as defined in the CCS Directive is backed

Germany - RWE and Vattenfall

RWE: CCS DEMONSTRATION PLANT IN HÜRTH

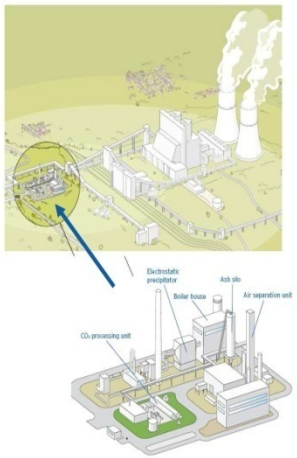
- Basic technology: IGCC (Integrated Gasification Combined Cycle)
- Electr. capacity: 450 MW_{gross}
- Capture rate: approx. 90% of CO_2
- Carbon capture: approx. 2.6 mill. t/a in deep saline formations in north Germany
- Commissioning: End-2014 with optimal underlying conditions

RWE Power has its own power plant and gasification know-how and RWE Dea has the basic know-how required for carbon storage.

VATTENFALL: OXYFUEL PILOT PLANT SCHWARZE PUMPE

Vattenfall 30 MW oxyfuel Pilot Plant in Germany

Worlds first pilot including the whole chain/components:



Air separation
Boiler 30 MWth
Ash treatment
Electrostatic precipitator
CO2 processing unit

© Vattenfall AB 10 VATTENFALL

Vattenfall 250 MW oxyfuel and 250 MW post combustion demonstration plant in preparation for 2015.

United Kingdom – A number of demonstration projects announced

KINGSNORTH POST-COMBUSTION

- Kingsnorth, e.on, 300 MW new post-combustion, 2014
- Ferrybridge, Scottish and Southern Energy, 500 MW retrofit, 2015+
- Tilbury, RWE nPower, 1600 MW new post-combustion, 2016
- Hatfield, Powerfuel Power, 900 MW new pre-combustion, 2012-14
- Teesside, Centrica etc., 800 MW new pre-combustion, 2013
- Killingholme, e.on, 350 MW new pre-combustion, 2016+

Czech Republic - ČEZ GROUP

NORTH BOHEMIA CLEAN COAL PROJECT

- New power plant
- 660 MWe & supercritical steam parameters
- Lignite
- 2015

HODONIN CO_2 SEPARATION PROJECT

- Existing power plant
- 105 MWe (2 x FBC, 1996-7)
- Lignite + biomass
- 2015

Poland – BOT and PKE/ZAK

BELCHATOV, BOT, PGE and others

- New 858 MW lignite-based, post-combustion capture, 2015, 1/3 CCS

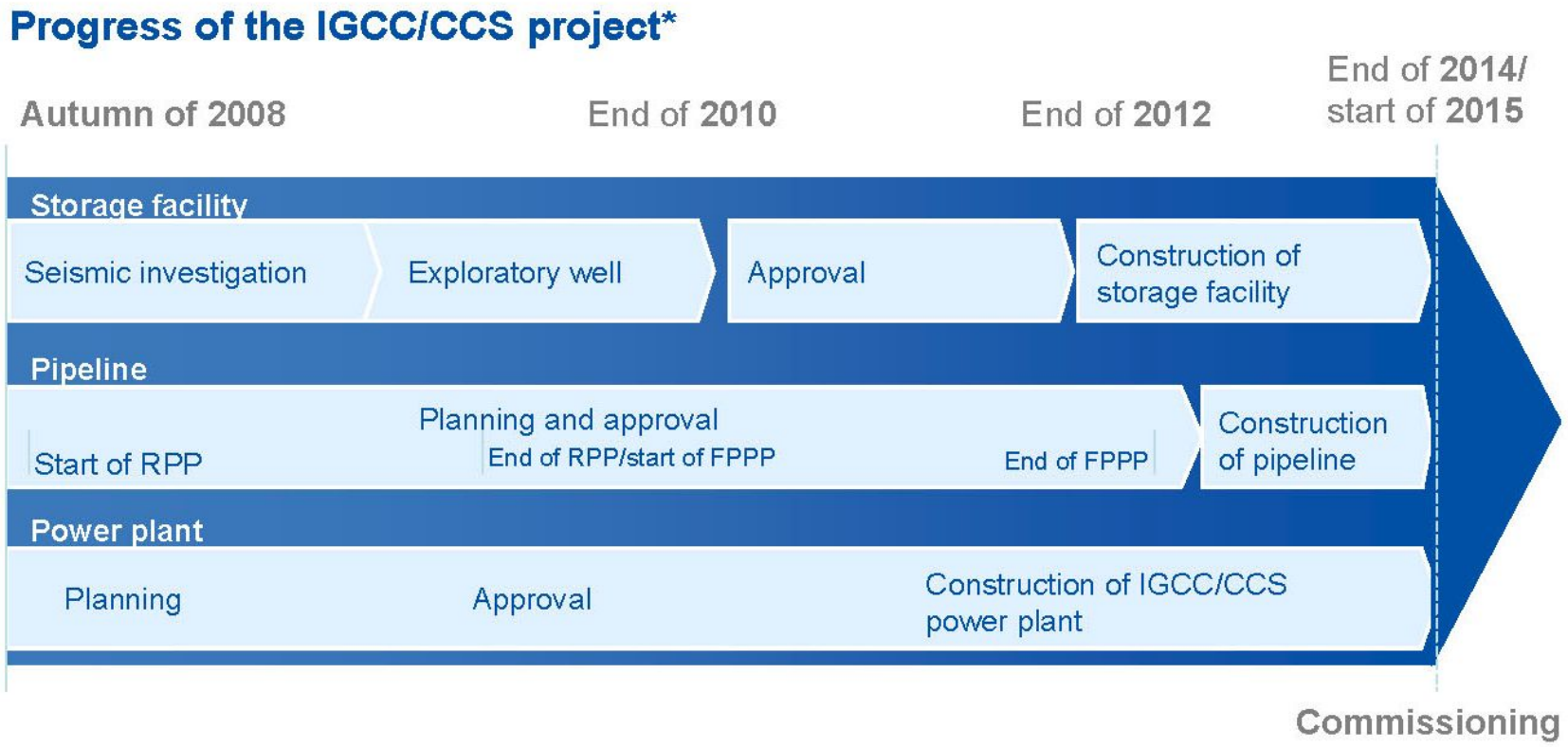
KEDZIERZYN, Poludniowy Koncern Energetyczny/Zaklady Azotowe Kedzierzyn

- New 500 MW syngas and 250 MWel, polygeneration, 2014

Major coal CCS projects in other countries

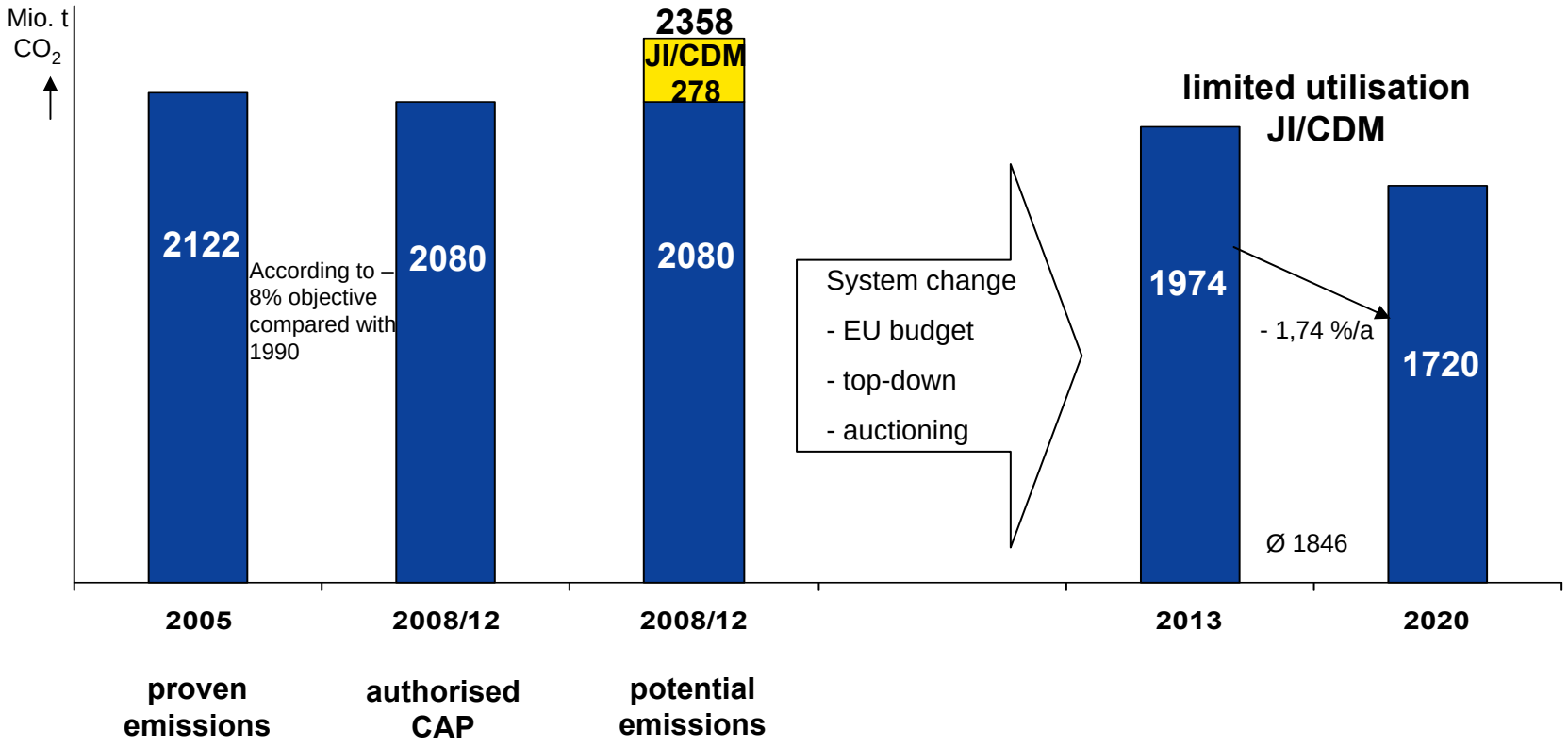
- **Spain**
  - La Robla/ León, UNION FENOSA, new 200 MWel (post combustion); Storage connected to the plant (Saline aquifer) – 2016/2017
  - ENDESA, 500 MWel oxyfuel (circulating fluidised bed) – 2015; 1 MW plant in operation; intermediate; 20-30 MWt test period in Ciuden
- **Bulgaria**
  - Maritsa, 650 MW new pre-combustion
- **Italy**
  - Brindisi, ENEL CCS 1, 242 MW retrofit, 2014
  - Brindisi, ENEL 2, 320 MW oxyfuel, 2016
- **The Netherlands**
  - A number of pilot and demo projects to be commissioned as from 2011

CO_2 transport and storage – CCS depends on approval procedure – RWE example



**Depending on the actual duration of the approval procedures.*
RPP = Regional planning procedure FPPP = formal public planning procedure

Other Issues for 2009 I – EU-ETS



- **Preparation of a possible Post-Kyoto Agreement including**
  - **"Comparable obligations" at least for other developed countries (i.e. also 20 % or very close to that)**
  - **If the EU objective > 20 %, much more JI/CDM to be applied *and* the focus must be on non-ETS sectors**
- **Clarification of the EU's JI/CDM rules; Comitology will be important – significant issues still open**

Other Issues for 2009 II – Industrial Emissions Directive (Draft)

- The rules for coal fired power plants are supposed to be moved from the Large Combustion Plant Directive (LCPD) into the Industrial Emissions Directive
- EURACOAL welcomes Best Available Technologies as the basis for plant operation permits, but will make sure that
  - Domestic coal with relatively high sulphur is not excluded from use
  - Emission Limit Values for SO_2, NO_x and dust do not go beyond BAT – they must be different for existing and new plants
  - There will not be any ELVs for CO_2

Conclusions

- Security of energy supply remains important
- In the decades to come, access to coal resources and continuous modernisation of coal-fired power plants remain essential for a secure, competitive and sustainable energy supply.
- Industry, policy makers and administrations must develop a CCS demonstration network, incl. infrastructure and financing issues.
- JI/CDM are positive for many – allow them to a large extent.
- Keep Emission Limit Values for “classical” emissions reasonable and affordable, also for high sulphur coals.

Coal will remain a part of the solution to Europe‘s energy supply.

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Thank you for your attention!

Photos courtesy of:

- **Czech Coal**
- **ČEZ**
- **PGE Elektrownia Belchatow S.A.**
- **RWE**
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