Planned investments in new hard coal mines and coal fired power plants in Poland: energy security, energy efficiency and low emission for the long term

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Forecast on global demand for energy and energy sources

Global production of electricity according to New Policies Scenario (up to 2035)

- **2009**: 20,043 TWh
- **2020**: 27,881 TWh
- **2035**: 36,250 TWh

Source: IEA
UE dependency on fossil fuels import

Production and consumption of electricity in Poland

Source: H. L. Gabryś, „Energetyka”, March - April 2012
GROSS ENERGY CONSUMPTION FORECASTS

Source: PSE, MG, PKO DM
Characteristics of Polish energy sector in the year 2011

Structure of electricity production in Poland in 2011, %

- Coal fired power plants: 43.52%
- Lignite fired power plants: 32.81%
- Heat and power plants: 15.32%
- Industrial power plants: 4.11%
- RES: 4.24%

Source: H. L. Gabryś, „Energetyka”, March – April 2012
COST OF POWER PLANT DEVELOPMENT IN MILLION EUROS PER MW

- Hard coal: 1.6 million euros
- Gas: 1.1 million euros
- Atom-PGE-2010: 4.75 million euros
- Atom-Moodys-2009: 5.4 million euros
- Atom after Fukushima 2011+: 6.7 million euros

DEMAND FOR STEAM HARD COAL [MILLION TONS]

RELATION BETWEEN STEAM COAL CONSUMPTION AND GDP IN POLAND

THOUSAND TONS

GDP*1000
THE BIGGEST HARD COAL PRODUCER IN THE EUROPEAN UNION

Polska 58.5%
Wlk. Brytania 14.1%
Niemcy 10.0%
Rep. Czeska 8.7%
Hiszpania 5.1%
Rumunia 1.7%
Bułgaria 1.9%

KW S.A.'s hard coal production amounted to 30.2% of the EU's production.

129.5 mln tons - Hard coal producers in the EU

Source: Annual Report 01.06.2012
CONSIDERABLE PRODUCTION POTENTIAL

- Annual production capacities: about 40 million tons
- 60 thousand employees
- Total annual revenue: over 13 billion Polish zlotys
- High investments: 1.3 billion zlotys (the year 2012), of which over 50% for OHS improvement
- Rationalization of production costs
- Repayment of more than 88% of liabilities inherited from the past coal companies which were transformed and united under KW S.A.
- Considerable financial assets (shares and stocks of other companies - tourist companies, heating companies, training, protection of property and mining services’ companies - including majority shares and control packets)
- Effective management
Three business lines

Increase of Company’s value as a result of strategic initiatives’ implementation:

- Development of a coal-fired power plant with the highest possible energy efficiency
- Development of a new hard coal mine in Lublin Coal Basin
CHALLENGES FACING THE POWER ENGINEERING AND COAL SECTOR IN POLAND

- It is not possible for Poland to implement radical changes in fuel mix structure in the segment of energy generation in the short term period.

- The structure of power capacities of Polish power engineering and rich hard coal resources decide that coal should guarantee the energy safety of the Country.

- Currently, one of the most essential problems of KSE are old, low-efficient power capacities.

- In the years to come, significant amounts of financial resources should be used for development of new and modernization of already existing power engineering utilities.

The pillars of energy safety of Poland:

- Effective functioning of domestic power engineering system and electricity market.
- Fulfilling the domestic demand- ensuring the continuity of domestic energy carriers supplies including, above all, coal.
THE MOST IMPORTANT UNDERTAKINGS AS A GUARANTEE OF MAINTAINING THE COMPETITIVENESS OF KWSA’S COAL AND FUTURE OF POLISH MINING INDUSTRY

- Diversification of revenue
- Stable coal sale to the company which will be co-owned by KW S.A.
- Partial dependency from the coal market supply and demand fluctuations

Development of global steam coal prices
- Influence on the financial standing of the Company
- Increase of KW S.A’s competitiveness by development of new production capacities

Complimentary relation between the resource (coal) and product
- Ensuring the additional market for coal - long term contracts guaranteeing profitability in the long term prospect
- The decrease of economical risk of the whole system related to the instability of the hard coal market

Construction of a power plant
- Ensuring the stability of production
- Increasing the resource base
- Improvement of economical efficiency of production

Construction of a new mine
Development and construction of a new mine in the Lublin Coal Basin
WHY IS IT WORTHWHILE TO INVEST IN THE REGION OF LUBLIN?

**BENEFITS FOR KW S.A.**

- Rich and unexploited deposits: geological reserves of Lublin Coal Basin: 9,266,397 thousand tons (KW S.A.: 1,034,514 thousand tons)

- More favorable geological structure of LCB deposits: nearly horizontal coal seams bedding, favorable geological structure—less damages on the surface

- Lower costs of mining damages reparation: no previous mining operations, no main communication routes in the area of planned mining activities, lower level of urbanization of the area: Lublin voivodship: 85 people per km², Silesian voivodship: 138 people per km²

- Lower level of natural hazards in the „Pawłów” deposit, which is planned to be exploited. It influences the level of safety of the miners.

- Opportunity of building a mine containing modern technological solutions and providing high daily production output – lower operational costs

- Goodwill of local authorities, which want to cooperate in the aim to develop their own region

- It is assumed that the costs of coal production will be low and comparable to the ones of LW „Bogdanka” SA.
DEVELOPMENT AND CONSTRUCTION OF A NEW HARD COAL MINE
COMPLETED TASKS AND CONSTRUCTION PLANS

INITIAL CONCEPT OF ACHIEVING THE FIRST OUTPUT FROM THE LONGWALL

<table>
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<tr>
<th>Initial assumptions</th>
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<td>Time of designing and construction</td>
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<td>Estimated costs of investment</td>
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<td>Hard coal production</td>
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<td>Employment</td>
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<td>i.e. about 5 million tons per year</td>
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The concept requires construction of a mine with one mining section and two main shafts, ventilation and input ones.

The production will be based on two highly efficient longwalls:
- length from 200m to 250m
- advances reaching up to 3 000 m
DEVELOPMENT OF THE „CZECZOTT” POWER PLANT
1000 MW POWER PLANT AT PIAST RUCH II COAL MINE (SILESIAN VOIVODSHIP) – COMPLETED TASKS AND FURTHER DEVELOPMENT PLANS

Initial assumptions

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<td>Estimated rate of return</td>
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<td>The project is to be implemented under the system of:</td>
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Development of a highly efficient power plant—about 45% of efficiency rate. It may reduce CO2 emission by over 30% in comparison to the existing power plants.
PLAN OF REALIZATION OF POWER PLANT CONSTRUCTION PROJECT

Projected location of „CZECZOTT” power plant

The arguments for the location:
• Post industrial area with the access to: water, energy, driveways, railway siding
• Main coal suppliers are located in the distance of only a few kilometers, KW S.A. owns a railway track connected with the place of future power plant
• We have already obtained from the PSE Operator the initial conditions of access of the future plant plant to the national energy grids

• KW S.A. does not have sufficient competence to complete the „Czeczott Power Plant” project on its own

• The project will be implemented as a joint initiative of KW S.A. and a business partner from energy sector

• EPC is a recommended form of business model however, change of method of financing is acceptable after election of a business partner

• The entity responsible for the investment - SPV company established by KWSA and business partner for the energy sector

• The investment shall be financed by equity and debt based funding

• Location – the area of a Piast Ruch II coal mine - former „Czeczott” coal mine
CONCLUSIONS

• Demand for steam hard coal will increase up to the year 2030 when it reaches the maximum level of 40 million tons

• According to the forecasts, in the year 2030 98 TWh of electricity will be generated from hard coal, the rest from lignite (43 TWh), RES (21 TWh) and gas (13 TWh)

• Since August/September 2011, there is a downward trend in the international coal market. The current price of coal, 86.2 USD per ton – February 2013, remains at the same level as the prices at the beginning of the year 2010.

• At the cost of gas of 300 USD/1000 m$^3$, the cost of energy generation from hard coal is lower than cost of energy generation from gas

• It is estimated that competitiveness of energy generated from hard coal in comparison to the energy from gas will be maintained, if CO2 emission fee does not exceed the level of 37-40 Euro

• There is a strong relation between hard coal consumption and the level of GDP in Poland
Thank you for your attention