

## **CURRENT PROBLEMS AND TRENDS IN OPENCAST COAL MINING IN BULGARIA**

### **BULGARİSTAN KÖMÜR AÇIK İŞLETMECİLİĞİNDE SORUNLAR VE EĞİLİMLER**

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#### **ABSTRACT**

The role and the problems of opencast coal mining in Bulgaria under market conditions have been discussed. The structural changes in coal mining industry have been pointed out as well as the difficulties in the fulfilment of the recovering regime under the conditions of monetary board. In spite of the great difficulties increase of coal production in the last year can be observed. The important further trends in opencast coal mining according to the developed in 1995 strategy of energy production until 2020 have been indicated. Attention has been drawn to the solution the recent problems in this field and the necessity of new qualification of mining specialists.

#### **ÖZET**

Bulgaristan kömür açık işletmeciliğinin pazar koşulları altında rol ve sorunları tartışılmıştır. Tekel idaresinin koşulları altında, sorunların aşılmasına yönelik rehabilitasyon rejiminin yanı sıra, kömür madenciliği endüstrisinin yapısal değişiklikleri belirtilmiştir. Büyük güçlüklerle karşın, son on yılda kömür üretiminde artış gözlemlenmiştir. 1995 yılında kabul edilmiş, 2020 yılına kadar geçerli enerji üretim stratejisine göre, kömür açık işletmeciliğinde önemli eğilimler verilmiştir. Mevcut sorunların çözümüne ve yeni kalifiye madencilik uzmanlarını gerekliliğine dikkat çekilmektedir.

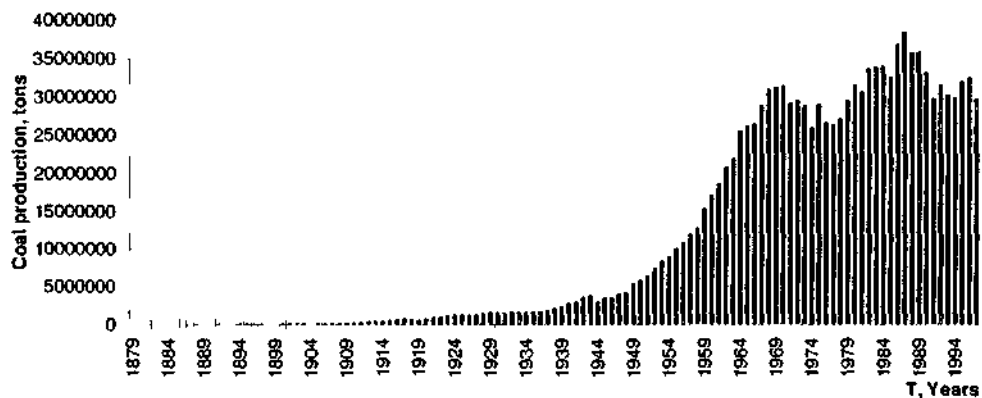
## 1. GENERAL DESCRIPTION

The analysis of the energy potential of the R Bulgaria definitely confirms the dominating role of coal as a row resource. It is entirely sufficient in a long-term perspective (>100 years) to satisfy the needs of the country for solid fuels in the fuel energy balance and the relative energy independence of national economy.

The production of own energy resources from solid fuels has no other alternative. That was confirmed by the energy crises in 1984/85 and 1990/91 bringing to a conflict situation in economical and social aspect.

Nowadays mine pits in R Bulgaria not only provide the Heat Electrical Stations (HES) with fuel but they also satisfy the technological needs and the briquettes for heating the population. That states coal as a strategic row material of basic importance in forming the national income.

At present the state has 100% monopoly of the coal production in Bulgaria. It is realized by 12 coal production trade companies in the frames of the Committee of Energy. Coal Production in 1997 was 29.642 million tons of which 88% are used for electricity and heat production (Figure 1).



**Figure 1.** Coal Production in R Bulgaria from the opening of the first mines until 1997

Opencast coal mining comprises about 90% of the total quantity while about 80% of it has been produced in "Maritza-Iztok" Mining Works Ltd (Figure 2). 0.280 million tons of huge solid fuel and 0.947 million tons of briquettes were given to the population to satisfy the needs of the market.

The relative share of the electricity produced by local coal is about 35%.

## 2. STRUCTURAL CHANGES AND PROBLEMS ON THE TRANSITION TO MARKET ECONOMY

On the basis of a complex analysis of : mining and geological and hydrogeological conditions, technical and economical decisions, elements of the production and management structure and trends for the market production a Ministry Council decision in 1996 stated the liquidation of 4 coal production trade companies with inefficient underground coal production and pessimistic further trends for development. As a result of the liquidation 3700 mining workers and specialists were dismissed which brought to the economy of hundreds of millions levas state subsidy. At present the second liquidation stage is being fulfilled concerning the infrastructure and the communications on the surface paralielly with ecological works for redressing the ecological equilibrium in the damaged regions. As a result of a project proved disadvantage of underground mining liquidation or conservation a stabilizing program has been worked out which is being successfully realized. The agreement of the creditors to space out their debts for 3 years provide the mines real chances for coming out from the liquidation list.

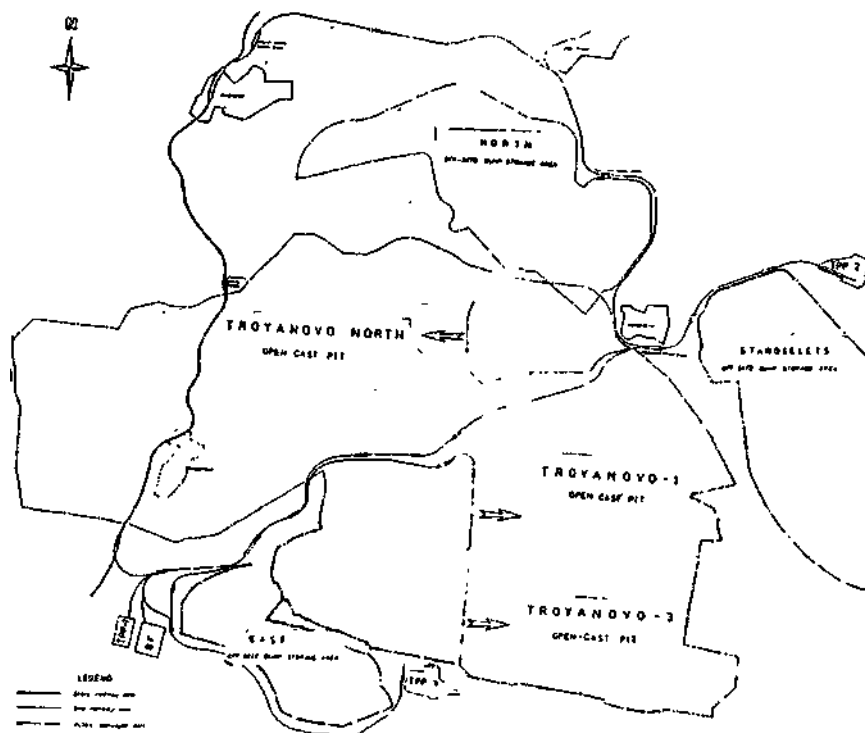


Fig.2. Sheme of the location of opencast coal mines "Maritza-Iztok"

Typical moment in the liquidation program is the foundation of modernized and renewed trade companies uniting efficient and sturdy activities concerning social problems and national interests, mines and areas of the closing mines which are able to develop and self-finance under market conditions. More than 1400 mining workers from the liquidated companies started working at such areas. These newly founded companies proved their sturdiness and efficiency in 1997. By a government decree in 1996 all the rest coal production companies are put under isolating financial control - abstention from investments which they are not able to finance. Stabilizing programs have been developed for the entire utilization of internal reserves. They include a complex diagnostic analysis of the present state and a package of technical and technological, management and financial measures for the improvement of the financial results in 1998. Their realization is a compulsory condition for survival under the new economical conditions.

The structural reform in coal production will continue on the basis of detailed analyses of the stage state of the companies in the recovering period. The difficulties under the recovery control come from the general macroeconomical state of the country which is characterized by the following:

- mining companies are working under the condition of monetary board;
- crisis in the supply of fuels affecting mainly opencast mines;
- fluctuation in electrical energy consumption due to delay in industrial production. It influences negatively on the coal market.

The main difficulties in the field of coal production are more economical than technological and are due to the following important circumstances:

- a 7 year delay in the investment potential of the coal production branch which decreased the possibilities for rehabilitation and new supplies of the main mining and transport machines and prolonged the period for coming into active work of key mining areas;
- working with market formed expenditures for materials, fuels, energy and labour and comparatively low fixed coal prices;

At present the investment policy is being formed by the combined principle of financing:

- companies own investments;
- preference credits at low percent interest for investments from a specially founded fund "Energy Resources";
- credits from "State Fund for Reconstruction and Development";

A new law is going to arrange the amortization policy and the revalorization of the long-term assets.

### 3. TRENDS FOR COAL PRODUCTION DEVELOPMENT

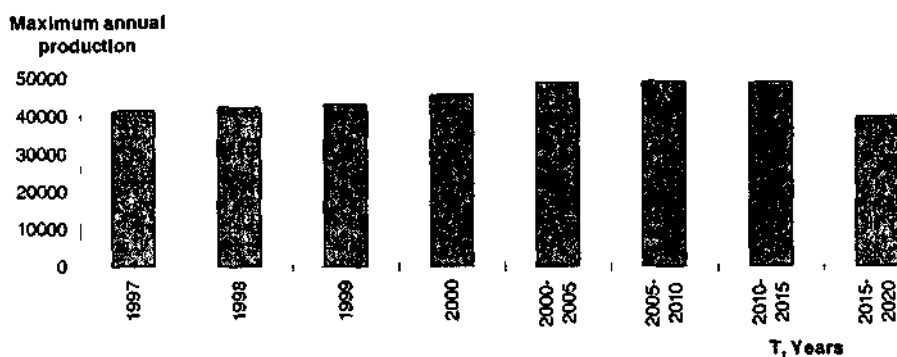
In spite of the pointed difficulties of the transition to market economy coal production in Bulgaria has a clearly defined short and middle-term perspective for development. According to the accepted in 1995 "Strategy for the Development of Energetics until 2010" by the Ministry Council and the decisions taken by the expert boards in 1997 the following main trends are being foreseen (1):

- stabilisation of the perspective powers for providing the coal market by developing opencast coal mining. The pointed growth of the total production in the period reaches 35-42 million tons per year coal, 1 million tons per year briquettes and 0.5 million tons per year huge solid fuel for the population;

- electrical energy is supposed to increase from 42 milliards kW/h to 54 milliards kW/h. That will be achieved by rehabilitation and innovation of the now working generating capacities and the building up of new displaying capacities;

- the total coal prime cost is decreased to about \$ 10 while the production of electrical energy is not expected to exceed 2.5 cents (kW/h) having in mind all expenditures; investments for rehabilitation and new building; serving the credits; hard amortization ; supporting the capacities; environmental protection etc. (2).

- the low level of specific expenditures of coal and electrical energy production in opencast mines is able to guarantee financial autonomy of mining companies as independent producers with a stable market, possibilities for serving investment credits and an income for the owner (Figure 3).



**Figure 3.** Development of Coal Production in R. Bulgaria until 2020

The greatest share has opencast coal mining and especially that of the Maritza-Iztok mines to realize these trends of development.

The growth of opencast coal production in the next year is connected with the solution of some serious current technical problems:

- restructuring coal production;
- developing a general strategy for rational regime and a calendar plan of mining works;
- applying suitable, safe and efficient technologies in reconstructed and newly built mines;
- operative planning and dispatcher control of mining works with the help of the latest achievements of electronics;

- developing efficient technologies for distant determining and average defining the coal quality;
- working out technologies and technical means for extraction of solid parts of the rock cover;
- controlling the stability of the slopes of mining works under complex mining and geological conditions taking into account the risk degree;
- rational distribution of the volume rock cover in time and place in the internal and the external waste dumps;
- environmental protection - finishing the ambitious ecological project by gas purification from sulphur oxides; decreasing the expropriation of areas and rapid recultivation of disrupted by mining works terrains;
- construction and application of highly producing powerful mining and transport machines and equipment;
- wide application of physical and mathematical modelling to study the formation and development of landslide and technological processes;
- developing automatized construction systems for management and control of mining works at maximum application of computers;
- working out a new regulating basis for expropriation (law of ownership of land), law of protection of bowels of the earth, addition to the law of protection of cultivable land, forests and pastures;
- fully and rational utilization of waste products from mining activities.

The increased level of technical and economical knowledge of the working specialists in coal production area is extremely important in order to solve these various and responsible problems. In this sense the role of the university of Mining and Geology, Sofia, is getting greater as it provides highly qualified staff for geological and explorational mining industry and environmental protection in Bulgaria and abroad. In this connection serious structural changes at the University should take place, developing new subjects corresponding to the requirements of the market and the European norms.

The successful and timely solution of these problems when designing and exploiting opencast coal pits is of enormous significance for their safe and efficient mining under market conditions.

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