



PARAMETERS OF COAL SUPPLY IN SERBIA

PARAMETRI SNABDEVANJA UGLJEM U SRBIJI

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Abstract: This article focuses on coal supply for industrial and individual consumers, especially regarding the relevance of transport distances for prevailing market prices.

Key words: coal, transport distance, market price

Apstrakt: Ovaj rad tretira snabdevanje tržišta široke potrošnje ugljem, sa fokusom na proučavanju uticaja transportnih troškova na stvarne tržišne cene.

ključne reči: ugalj, transportna distanca, tržišna cena

1 INTRODUCTION

On going transition process in Central and Eastern European countries brought up the question of maintaining production of coal in existent mines, as well as carrying out activities in the area of exploration, reconstruction and potential opening or closing of the operations. The delicacy of the situation is especially affected by high production costs, energy source substitution, decrease of coal consumption, transformation of economic activities and ownership, enhanced requirements regarding environment protection etc. The above-mentioned factors caused closure of a number of coal mines, employment reduction and social restructuring, but also questioned the remaining reserves and mines.

Owing to the well-known circumstances, Serbia is at the very beginning of transition at the time when transition process is almost finished or at least far advanced in other ex-socialist countries. The most critical and urgent problems in Serbia have already been solved in the neighborhood. Current position and future role of coal mines belong to this category.

1 UVOD

Tranzicioni proces u zemljama srednje i istočne Evrope u velikoj meri je otvorio pitanja dalje proizvodnje uglja u postojećim rudnicima, kao i u sferi istraživanja, rekonstrukcije i eventualnog otvaranja ili zatvaranja pogona. Na složenu situaciju posebno su uticali: visoki troškovi proizvodnje, supstitucija energenata, smanjenje potrošnje uglja, promena načina privređivanja, vlasnička transformacija, pooštreni zahtevi po pitanju zaštite životne sredine i dr. Sve to dovelo je do zatvaranja mnogih rudnika uglja, otpuštanja radnika, socijalnih restrukturiranja, a otvorilo je i pitanja kako i šta raditi sa preostalima rezervama i rudnicima.

Sticajem poznatih okolnosti, Srbija se našla na početku tranzicionog procesa u trenutku kada je on skoro već završeni ili je daleko odmakao u zemljama u bližem i daljem okruženju. Tako, već razrešeni problemi u drugim zemljama, u Srbiji su aktuelni. Jedan od njih je svakako i položaj i uloga rudnika uglja.

This article attempts to reveal some of the facts related to coal production and consumption in Serbia and to support, to a certain level, resolving of this complex issue.

Ovaj rad ima za cilj da rasvetli neke činjenice vezane za proizvodnju i potrošnju uglja u Srbiji i da na taj način, u meri u kojoj je to moguće, doprinese rešavanju ovog izuzetno kompleksnog problema.

2 COAL PRODUCTION

Production of coal in Serbia can generally be divided into two broad categories. One refers to lignite production for thermo power plants and will not be the subject to this article. Second category is coal production aimed to satisfy the needs of industry and households (coal as consumer good). Industry and households use lignite, brown and mineral coal and anthracite. Consumers are supplied from opencast coal mines in Kolubara and Kostolac coal basins (lignite) and from underground coal mines Resavica.

This year's coal production and import are presented in tables 1 and 2.

Table 1 Coal Production in 2002, Jan 1- Oct 31

Tabela 1 Proizvodnja uglja u 2002., Jan. 1 - Okt. 31

Source	t
Opencast coal mines	1,301,644
Underground coal mines	456,709

Table 2 Coal Import in 2002, Jan 1- Oct 31

Tabela 2 Uvoz uglja u 2002., Jan. 1 - Okt. 31

Type	t
Brown coal and lignite	162,293
Mineral coal	17,463

All coal mines are currently operating as part of Electric Power Industry of Serbia (EPS). Necessity for reforming and restructuring EPS also implies redefining the role and the position of coal mines. Spin off in EPS also relates to the assignement of Public Utility for Underground Coal Exploitation - Resavica. Moreover, production of coal as consumer good from opencast coal mines will need to be treated in a different context.

Proizvodnja uglja u Srbiji se generalno može podeliti u dve celine. Jedna se odnosi na proizvodnju lignita za potrebe termo-elektrana i nije predmet interesovanja ovog rada. Druga celina je proizvodnja uglja za potrebe industrije i domaćinstava (dalje: ugalj za široku potrošnju). Široka potrošnja podrazumeva kako korišćenje lignita, tako i mrkog, zatim kamenog uglja i antracita. Eksploatacija ovih ugljeva se izvodi na površinskim kopovima JP Kolubara i JP Kostolac (lignit) i rudnicima sa podzemnom eksploatacijom JP za PEU Resavica.

Ovogodišnja proizvodnja i uvoz uglja predstavljeni su u tabelama 1 i 2.

Few general questions depict the unknown in coal sector reconstruction process:

- Demand for coal as consumer good in Serbia, in general,
- Reconstruction of Resavica, as well as position and role of general consumption in the lignite sector,
- Privatization process regarding coal mines,

Svi rudnici uglja trenutno posluju u okviru Elektroprivrede Srbije (EPS). Nužnost reformisanja i restrukturiranja EPS-a podrazumeva i redefinisane uloge i položaja rudnika uglja. Izdvajanje sporednih delatnosti iz sistema znači i izdvajanje JP za PEU. Takođe, proizvodnja za široku potrošnju na površinskim kopovima će morati da bude tretirana u sasvim drugačijem kontekstu od postojećeg.

U nekoliko opštih pitanja mogao bi se sublimisati veliki broj nepoznanica koje karakterišu procese rekonstrukcije tzv. ugljenog sektora:

- Potreba za ugljem za široku potrošnju, uopšte u Srbiji;
- Rekonstrukcija JP za PEU, kao i mesto i uloga široke potrošnje u lignit-sektoru;
- Procesi privatizacije u rudnicima uglja;

- Position and scope of public administration engagement in carrying out processes of production, reconstruction and privatization of coal mines.

- Uloga i obim angažovanja državne administracije u provođenju procesa proizvodnje, rekonstrukcije i privatizacije rudnika uglja.

An undoubted answer to these questions can not be given in our opinion. That is the reason to accept this article as an attempt to partly support complex decision making process, having in mind the constraints.

Jednoznačan odgovor na ova pitanja, mišljenja smo, nije moguće dati. Zato i ovaj rad treba posmatrati kao pokušaj da složene procese donošenja odluka bar delimično pomogne, koliko to ograničenja dozvoljavaju.

3 GENERAL CONSUMPTION MARKET

3 TRŽIŠTE UGLJA ZA ŠIROKU POTROŠNJU

Demand for coal as consumer good in Serbia is not declining, on the contrary. This is reasonable considering oil, gas and foremost electricity prices. Beside the level of prices, there is a lack of adequate infrastructure in Serbia (pipelines, district heating etc.). Table 3 presents comparative costs of heating, based on current market prices.

Tražnja za ugljem za široku potrošnju u Srbiji ne opada, naprotiv. To je razumljivo s obzirom na cene nafte, gasa i prvenstveno električne energije. Pored cena, bitno je nepostojanje odgovarajućih infrastruktura u Srbiji u dovoljnoj meri (cevovoda, daljinskog grejanja, itd.).

General consumption coal market is characterized by:

Nekoliko karakteristika tržišta uglja za široku potrošnju:

- Both state and EPS price control regarding producers,
- Retail prices liberalization,
- Coal import liberalization,
- Customs tariffs in the scope from 1 - 5%, depending on coal quality,
- Production in Serbia insufficient to satisfy the demand for coal as consumer good.

- Proizvođačke cene uglja su pod kontrolom države, odnosno EPS-a;
- Maloprodajne cene su liberalizovane;
- Uvoz uglja je potpuno liberalizovan;
- Carinske stope su od 1-5% u zavisnosti od kvaliteta uglja;
- Domaća proizvodnja ne zadovoljava potrebe za ugljem široke potrošnje.

Review of real market prices shows considerable difference.

Uvidom u stvarne tržišne cene stiče se utisak značajnog dispariteta između proizvođačkih i prodajnih.

4 COAL SUPPLY ANALYSES

4 ANALIZA MOGUĆNOSTI SNABDEVANJA TRŽIŠTA UGLJEM

Inputs for analyses in this article are:

Ulazni parametri za analizu u ovom radu su:

- Real market prices,
- Transportation costs,
- Constraints regarding infrastructure, transportation means and directions, other energy sources prices and feasibility to use certain coal types.

- Stvarne trenutne tržišne cene;
- Troškovi transporta;
- Ograničenja infrastrukture, transportnih pravaca u smislu kombinovanja vida transporta, cena drugih energenata i mogućnosti korišćenja pojedinih vrsta ugljeva.

Table 4 presents some of the producers' coal prices:

U tabeli 4 predstavljene su neke proizvođačke cene uglja:

Table 3
Tabela 3

Source	Price	Unit	Amount			Annual costs (EUR/y)	Real heating costs (EUR/m ² monthly)
			Monthly	annually	unit		
Coal Banovici	90.02	EUR/t	0.65	3.9	t	364.13	0.51
Coal Vreoci dry	58.40	EUR/t	0.69	4.2	t	249.97	0.35
Coal Vreoci raw	33.03	EUR/t	1.29	7.7	t	264.34	0.37
Coal Rembas	100	EUR/t	0.65	3.9	t	390	0.54
Wood	36.67	EUR/m ³	1.97	11.8	m ³	446.19	0.62
Electricity directly			1,800	10,800	kWh	1185.47	1.65
Electricity TA			1,800	10,800	kWh	628.82	0.87
District natural gas	0.13	EUR/m ³	113	1,354	m ³	180.53	0.38

Table 4 Producers' Coal Prices (cube 30-60 mm)
Tabela 4 Proizvođačke cene uglja (kocka 30-60 mm)

Mine	Ibarski rudnici	Rembas	Bogovina	Soko	Jasenovac	Lubnica	Stavalj
Ex works (EUR/t)	49.34	37.68	40.66	35.13	27.52	25.78	25.39

On the basis of these inputs, an attempt was made to give a preliminary answer to the question of acceptable price level regarding all three participants: buyer (consumer), producer and trader.

Methodology used in this research can be characterized as if-then analyses.

Key determinant in this article refers to feasible transport of coal from coal mines to the customers (see Figure 1).

Having in mind that the prevailing market prices vary in the range from 75-100 EUR/t for similar coal categories, the backwards calculation for two different transportation distances (30 km in table 5 and 60 km in table 6) could suggest the level of producers' prices:

Table 5
Tabela 5

Alternative I	EUR/t	EUR/t
Retail Price	75.00	100.00
Sales Tax (20%)	12.50	16.67
Wholesale Price	62.50	83.33
Trader's Margin (10%)	5.68	7.57
Purchase Price	56.82	75.76
Storage Costs	1.50	1.50
Loading Costs	3.50	3.50
Transportation Costs (truck 10t, 30km)	3	3
Producer's Price	48.82	67.76

Na osnovu navedenog, pokušano je da se bar preliminarno dođe do odgovora koja je cena prihvatljiva sa stanovišta krajnjeg korisnika, kao i sa stanovišta proizvođača i trgovca.

Metodologija primenjena u radu se može okarakterisati kao tzv. ako-onda analiza.

Ključna odrednica u ovom radu odnosi se na izvodljivost transporta uglja od rudnika do potrošača. (pogledati sliku 1).

Imajući u vidu da se tržišne cene kreću u rasponu od 75-100 EUR/t za slične vrste uglja, kalkulacija unazad za dve različite transportne distance (30 km u tabeli 5 i 60 km u tabeli 6) mogla bi da sugerise nivoe proizvođačkih cena:

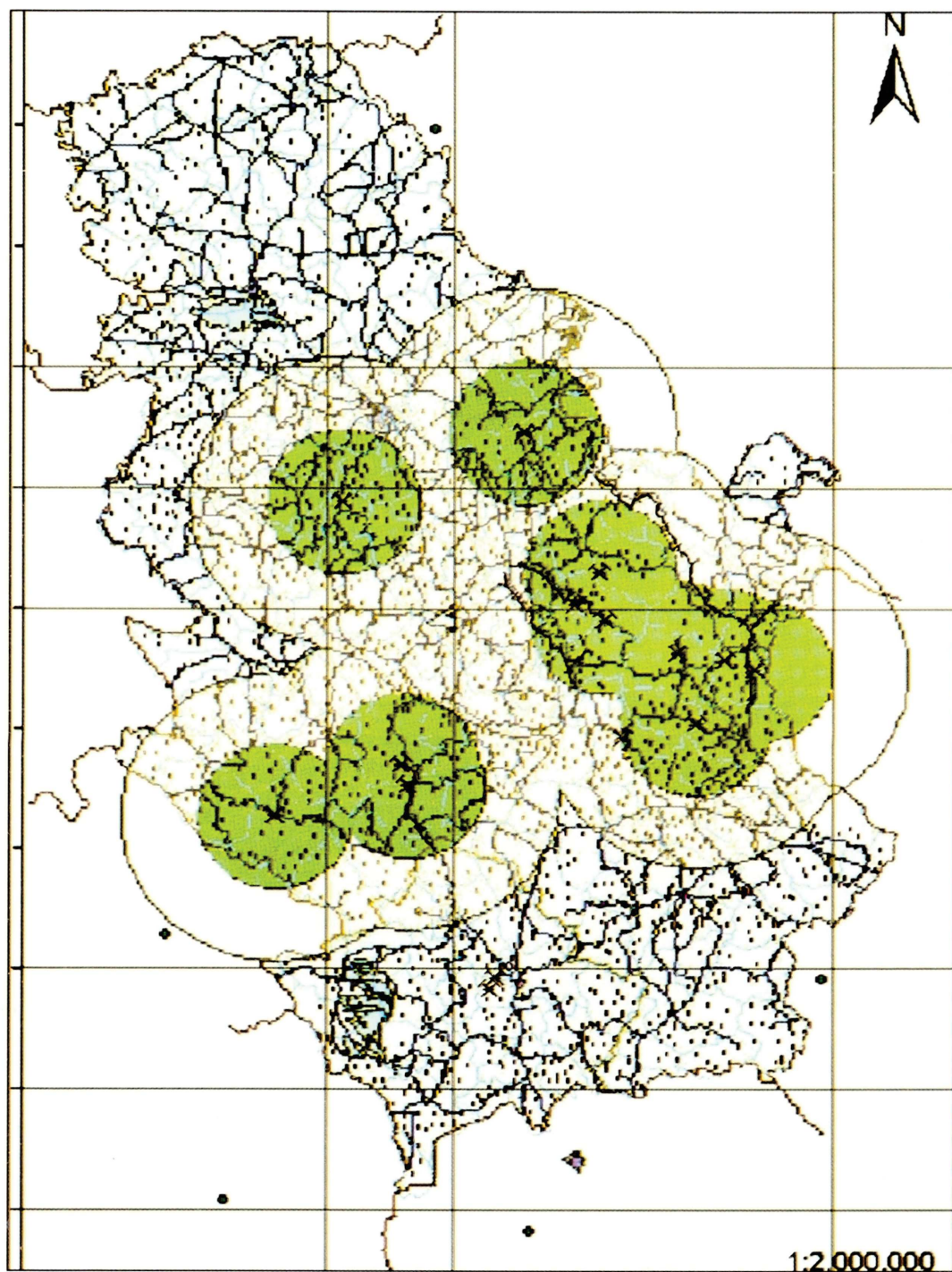


Figure 1 Scheme of feasible of coal transportation
slika 1 Šema izvodljivosti transporta uglja



-  30 km circle
-  60 km circle

Table 6
Tabela 6

Alternative II	EUR/t	EUR/t
Retail Price	75.00	100.00
Sales Tax (20%)	12.50	16.67
Wholesale Price	62.50	83.33
Trader's Margin (10%)	5.68	7.57
Purchase Price	56.82	75.76
Storage Costs	1.50	1.50
Loading Costs	3.50	3.50
Transportation Costs (truck 10t, 60km)	6	6
Producer's Price	45.82	64.76

5 CONCLUSION

Based on this analyses, a conclusion can be drawn that the increase of producers' prices is acceptable in almost all alternatives. However, results presented in this article are to be accepted with reserve. The results would be much more trusty if risk analyses was also included. But, since the aim of this article is basic insight in the parameters that largely determine the situation on Serbian coal market, we stand at the position that the level of presented information is adequate and satisfactory.

5 ZAKLJUČAK

Na osnovu ove analize, može se izvući zaključak da je povećanje proizvođačkih cena prihvatljivo u gotovo svim slučajevima. Ipak, rezultate predstavljene u ovom radu treba prihvatiti sa rezervom. Rezultati bi bili mnogo pouzdaniji ako bi bila uključena i analiza rizika. Ali, s obzirom da je cilj ovog rada da pruži bazične informacije o parametrima koji u velikoj meri determinišu stanje na tržištu uglja u Srbiji, stojimo na stanovištu da je nivo prezentovanih informacija adekvatan i zadovoljavajući.

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