

Center for Energy Efficiency



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Case Studies of Power Sector Reform in Developing Countries**

BULGARIA POWER SECTOR REFORM

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Abbreviations and Acronyms

BGL	Bulgarian Leva (Bulgarian national currency)
BGN	Bulgarian Leva New (denominated Leva, BGL 1000= BGN 1)
BSP	Bulgarian Socialist Party
CO₂	Carbon Dioxide
CEC	Commission of the European Communities
CEE	Central and Eastern Europe
CHP	Combined Heat and Power
CMEA	Council of Mutual Economic Assistance
COE	Committee of Energy
COM	Council of Ministers
COP	Commission on Prices
DH	District Heating
EU	European Union
EUR	Euro (The single European currency)
GDP	Gross Domestic Product
Gg	Gigagram
GHG	Greenhouse Gas
GWh	Gigawatt hours
HPP	Hydro Power Plant
HV	High Voltage
IMF	International Monetary Fund
kWh	kilowatt hours
LV	Low Voltage
MW	Megawatt
MWh	Megawatt hours
MOEW	Ministry of the Environment and Water
NEC	Natsionalna Elektrieska Kompania (National Electric Company)
NGO	Non-Governmental Organisation
NO_x	Nitrogen Oxides
NPP	Nuclear Power Plant
NSI	National Statistical Institute
SAL	Structural Adjustment Loan
SDR	Special Drawing Rights
SEERA	State Energy and Energy Efficiency Agency
SG	State Gazette
SNAP	Support for National Action Plan
TPP	Thermal Power Plant
UDF	Union of Democratic Forces
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollars
USEPA	United States Environmental Protection Agency

USTDP	United States Trade and Development Program
VAT	Value Added Tax
WB	World Bank

INTRODUCTION

This report has been prepared in the framework of World Resource Institute project “Case Studies of Power Sector Reform in Developing Countries. It was developed on the basis of field studies, publications in the central and specialized press, interviews with experts from the power sector, international financing institutions and NGOs, as well as EnEffect’s own studies. The objective of the authors was to cover the entire range of organizational, technological and social issues and problems of the process of restructuring of the Bulgarian power sector and the role of the international financing institutions in the selection of the model of restructuring and the course of implementation of the reforms. The study touches upon some problems of the centralized district heating as well, insofar as they are related to the power sector or pose some kind of challenge of a technical or social nature for the reform in it. The aim was to present as independently as possible the positions of the various stakeholders in the restructuring process. The quite brief period of time since the start of the actual transformations in the National Electric Company and in the power sector in general (April 2000) does not allow the formulation of final evaluations on the impact of the changes made. This might be possible by the end of the forthcoming heating season that will be the most reliable test of the success or failure of the management decisions.

Sofia, December 2000

1. THE SOCIO-POLITICAL CONTEXT OF THE REFORM

The real structural and economic reforms in Bulgaria started in 1991 through the application of a stabilization program based on a restrictive monetary and budget policy and a policy of severe curtailing of the level of income of the population. The alleviation of the budgetary restrictions in response to the growing social tension in 1992 and 1993 was not accompanied by a comprehensive structural reform, privatization or improved management of the state-owned enterprises. In March 1994 the first currency crisis broke out and brought about an almost double exchange rate of the US Dollar to the national currency (BGL) as compared to the 1993 level, as well as a leap of the inflation rate to some 90% average annual rate. The attempts to apply anew the principles of the original stabilization program of 1991, somewhat consolidated by new administrative measures, produced no results.

The economic stabilization during the first half of 1995 gave grounds to the central bank to reduce the basic interest rate from 72% in the early 1995 to 34% in August 1995. The increased crediting from the budget and the low interest rates caused further devaluation of the local currency (BGL). The drop in the hard currency reserves at the end of 1995, the forthcoming payments on the foreign debt at the beginning of 1996 and above all the failure of the government to negotiate a new stabilization agreement with the IMF undermined the confidence in the financial system. A considerable share of the “bad” credits, lent by the banks mainly to large state-owned enterprises, created difficulties in the settlement of due payments among the enterprises. This led to an acute crisis of confidence in the banking system, the gravest manifestation of which was the panic-driven drawing of private deposits by the population in 1996. The confidence crisis took even graver forms in the early 1997. The political instability after the resignation of the socialist government in December 1996 aggravated the negative expectations of the economic entities. In the atmosphere of panic and aversion from the BGL, the demand for national currency shrunk heavily despite the attempts for coping with the crisis. Inflation rose to hyper inflation levels (February 1997 – 240%), BGL devaluated (with more than 500% with regard to the US Dollar from 31 December 1996 until 12 February 1997), and the collapse of the market went parallel to an almost full domination of the US Dollar in payments.

The economic crisis abated with the attainment of a political agreement (February 5, 1997) between the governing Bulgarian Socialist Party and the other parliamentary political parties to hold pre-term parliamentary elections. The urgent measures taken by the interim government with respect to the economic policy, as well as and the resumed dialogue with the international financial institutions created prerequisites for recovery of the confidence in the national currency and institutions.

After the parliamentary elections of April 1997 the newly appointed government of the Union of Democratic Forces (UDF) made its objective to bring to a successful end the transition to a market-oriented economy through accelerated privatization and a stable macroeconomic policy. One of its first actions was to introduce a Currency Board as of July 1, 1997. The local Bulgarian currency was pledged to the DEM at a ratio of DEM 1 = BGL 1000 or DEM 1 = BGN 1 after the

denomination of the local currency of July 4, 1999. The purpose of this action was to improve the financial discipline in the state, to achieve a balanced state budget, and last but not least to sign a long-term agreement with the International Monetary Fund.

On May, 1997 Bulgaria signed a 3-year agreement with the IMF for support of the medium-term program of the Government for the period July 1998 – June 2001. In the framework of this program, the country was supposed to obtain 627.62 million SDR worth in 12 portions (2 in 1998, 4 each of the next two years and 2 in 2001), the first being due upon the signature of the agreement. The agreement requested liquidation or privatization of 50% of the long-term assets of the enterprises of the branch ministries and municipalities during the first quarter of 1999. The agreement envisaged implementation of a reform in the energy sector, establishment of independent economic entities and dismantling of the subsidies from the state budget. The objective of the new economic program of the Government for the period 1998-2001 was to accelerate and intensify the structural reforms and privatization in the real sector and the budget sphere.

Despite the deterioration of the international situation around Bulgaria, in 1998 the economic development proceeded in a positive direction. The GDP increased by 3.5% in 1998. The data by quarters reveal, however, a certain slow down of the growth rates during the second half of 1998. The 1998 data show a trade deficit of USD 316 million against a positive trade balance of about USD 380 million for the preceding year.

In 1998 the privatization of banks and enterprises went on. Because of the post-effects of the financial crisis on other emerging markets, the rate of privatization was slower than the governmental estimates. Measures were taken for consolidation of the financial discipline in state-owned enterprises. The general state of the banking sector remained relatively stable. However, the volume of newly lend credits in 1998 was limited.

The deterioration of the external factors had a very negative impact on the possibilities for increase of Bulgarian exports in 1999. The diminished interest of foreign investors in the emerging markets and in particular on the Balkans after the Kosovo crisis acted as a further hindrance to the attraction of direct foreign investments that were regarded as a key element of the Bulgarian prospects for mid-term growth.

Despite the financial stabilization the growth rate in the real sector in the year 2000 was far from sufficient. The banks continued to be extremely cautious in lending credits to enterprises. In actual fact, entire sectors of the national economy, including the energy sector, were deprived of local bank financing. It was under such a macro-economic environment that the reform in the energy sector was supposed to start during the second half of the year 2000.

2. THE PRE-REFORM PROFILE OF THE BULGAIAN POWER SECTOR

2.1. Structure and capacity of the power sub-sector

The power generation facilities of the Republic of Bulgaria, with small exceptions, were constructed during the period of socialist development. The principal development task of the sub-sector was supply of cheap energy to the extensively developing national economy, based on the import of cheap energy carriers from the Soviet Union. Nevertheless, the sector could barely cope with the ever-growing demand of the energy-intensive industrial and communal sectors. System breakdowns became a common practice in 1988. Rationing of power supply was introduced for households and the public administration. Irrational energy use and energy waste used to be a normal practice. The socialist economy responded to the emerging shortages in the only typical for that system way – by constructing new capacities. NPP “Kozloduy” was expanded by two new 1000 MW units. Construction of a new NPP “Belene” was started, where more than USD 1,3 billion have been invested prior to the freeze of construction works in 1991.

The installed electricity generation capacity in Bulgaria currently amounts to a total of 12,668 MW, as follows (Table 1):

Installed electricity generation capacity in Bulgaria

Table 1

Generation Plants	Capacity	Relative share
TPP	6,556 MW	51,7%
NPP	3,760 MW	29,7%
HPP	1,920 MW	15,2%
Pumping HPP	432 MW	3,4%

Source: National Strategy for Energy and Energy efficiency until 2010

Prior to the reform, the National Electric Company (NEC) owned 11,062 MW or 87,9% of the total installed capacity. Outside the system of NEC there is some 1,606 MW electricity generating capacity, co-generation (heat and power) thermal power plants (TPP), owned by district heating companies that supply heat for the human settlements and large industrial enterprises. In 1998 the total available capacity nationwide was 11,132 MW.

The hydro-power potential of the country has a strong seasonal nature, depending on the multi-annual climatic cycles, and for that reason no reliable forecasts can be made about its share in power generation. The annual power output of HPPs varies from 2.53 TWh in 1998 to a maximum of 3-3.5 TWh in a year of mean precipitation rate.

The development of electricity demand in the Republic of Bulgaria is characterized by much greater fluctuations due to the instable and dynamic socio-economic situation in the country during the 1990's. The forecast for the gross electricity demand of the *National Strategy for Energy and Energy efficiency until 2010* is drawn up in two versions (scenarios) – a baseline and a minimum scenario, that correspond to the baseline and minimum scenarios of development of GDP and energy consumption. These two scenarios outline the limits of the most probable

development of electricity demand after the year 2000. Despite the drop in power consumption in 1998 compared to the 1995 figures, both versions envisage a considerable growth in the domestic demand in the coming years as a result of the rapid revival of the national economy that is currently estimated to have reached approximately 70% of the 1989 level. (Table2).

Gross electricity demand**Table 2.**

Year	Baseline version		Minimum version	
	Demand GWh	Maximum load MW	Demand GWh	Maximum load MW
1991	40731	7556	40731	7556
1995	41151	7632	41151	7632
1998*	38064	7257	38064	7257
2000	46660	8634	42660	7906
2005	56479	10149	51979	9601
2010	61696	11368	56996	10513

Source: National Strategy for Energy and Energy efficiency until 2010

* NSI, Energy Balances 1998

The following circumstances have been taken into consideration when determining the development of electricity generation capacities:

- The country possesses an adequate technical and technological base for considerable industrial production, which is currently operating under hardly 50-60% of its real workload capacity;
- When favorable economic conditions emerge, industrial production, respectively industrial electricity consumption, may increase quite fast;
- Under an accelerated economic growth the living standard of the population will also grow, hence electricity consumption by households will increase as well.

Data on actual power consumption in the country for the last year and the current year indicate, however, that the estimates of a rapid increase in power demand at the very first signs of economic growth have not materialised. The reasons are related above all to the structure of growth in which services and light industry predominate, while traditionally energy-intensive sectors, such as the chemical industry and metallurgy, continue to diminish their relative share in the GDP. In this sense the domestic demand in Bulgaria is developing closer to the pattern of the minimum option of the forecast. Therefore, it is necessary to elaborate a new forecast for the electricity demand of the country taking into account of these two factors and to review the investment requirements of the sub-sector.

Studies indicate that there is a considerable electricity shortage in the region, which means that in case of unforeseen increases in electricity demand the Bulgarian power system hardly rely on assistance from abroad. The baseline scenario for the power demand forecast does not take into

account the earlier closure of Nuclear Units 1 and 2 of the *Kozloduy* Nuclear Power Plant, which according to the agreement reached with the EU should take place in the period 2002-2003, i.e. about 3 years before the elapse of their service life¹

New power generation capacities, MW

Table 3.

New capacities	1999-2005	2006-2010
Total	2100	1730
Incl. Chaira Pumping HPP	430	-
As a result of rehabilitation of TPPs	430	-
Replacement capacities in Maritsa-Iztok 1 TPP	900	-
New TPP running on imported coal	-	600
New nuclear capacity	-	600
New HPP	-	280
Gas turbine upgrade of HPPs	240	250
Peak gas turbine power plants	100	-

Source: National Strategy for Energy and Energy efficiency until 2010

2.2. Institutional Organization

The Committee of Energy was created immediately after the fall of the totalitarian regime in Bulgaria (November 10, 1989) as a body of the Council of Ministers. It was responsible for implementation of the state policy in the energy sector, comprising of coal mining, import, export and distribution of natural gas, electricity generation, transportation and distribution, as well as control on the efficient use of energy. The sphere of competence of the Committee of Energy has changed many times. In September 1999 the Committee of Energy was transformed into a State Energy and Energy Resources Agency (SEERA) with all its previous functions fully retained.

In January 1992 a National Electric Company was set up with the Committee of Energy. The structure of NEC remained unchanged until April 2000 when the formal start of the reform was launched. Under pressure from the IMF and the World Bank, the work on accounting separation of the activities on power generation, transmission and distribution was accelerated in the beginning of 1999—as a preparatory phase for the implementation of the energy sector reform. The separation of the accounting procedures provided opportunities for accurate identification of the production costs of power generation, transmission and distribution and hence for establishment of the tariff prices for the purchase and sales of electricity in the future.

¹ *The strategy for Development of the Energy Sector by 2010 envisages decommissioning of Nuclear Units 1 and 2 of Kozloduy NPP in 2004 and 2005. According to the Memorandum signed on 29 November 1999 between Bulgaria and the European Commission it has been agreed that the decommissioning of Nuclear Units 1 and 2 of Kozloduy NPP should be carried out by 2003..*

2.2. Power pricing policy

Until mid-1997, the prices of energy carriers changed every month due to the abrupt changes in the exchange rate and the high inflation rate. They were set up on the basis of a specific methodology, which reflected the impact of the exchange rate and inflation, however the final objective was to maintain a certain predetermined price level in hard currency expression. The prices were subject to approval by a State-Public Commission, whose membership also included representatives of public organizations and the syndicates.

With the introduction of a Currency Board in 1997, the application of this methodology was practically abolished as a result of the stabilization of the macro-economic indicators of the country. Upon approval of the Action Plan for Development of the Energy Sector during the period 1998-2001, the Government made a decision to discharge the State-Public Commission on the Prices of Energy Carriers. The grounds for such an action were the Plan for Development of the Prices of Electricity, Coal and Heat contained in the Action Plan and agreed with the IMF.

The specific characteristics of electricity prices, typical not only for Bulgaria, but for the majority of the countries with economies in transition as well, are the lower tariff rates for households compared to those for industry, in the context of a reverse ratio of the respective supply costs. Overcoming of this pricing disparity is a prerequisite for implementation of the plans for structural reform of the power sector and the creation of independent power distribution companies.

3. THE POWER SECTOR REFORM

The Energy and Energy Efficiency Act (1999) provided a new legal framework for regulation in the energy sector. Correct pricing and tariff policy was one of the main preconditions for implementation of the structural reform and for attraction of local and foreign investments in this sector.

3.1. The new role of the National Electric Company

The real restructuring of the National Electric Company started in April 2000 when seven new Sole-Proprietor Joint-Stock Companies with state-owned assets, specialized in power distribution, and three independent power generation companies, including the *Kozloduy* Nuclear Power Plant were separated from the National Electric Company and registered as legal entities. In June 2000, several more power generation facilities were registered as Sole-Proprietor Joint Stock Companies through separation from NEC, such as TPP *Maritsa-Iztok 2* and TPP *Maritsa Iztok 3*. Thus ending the existence of any legal obstacles to privatization of certain shares.

As a result of the transformation the National Electric Company will no longer performed electricity distribution activities. NEC transformed into a national power transmission company, performing in the capacity of a “Single Buyer” and single exporter of power. Only the units that continued to be exclusive state property will remain within NEC. Planning, investments, dispatching and sales of electricity were set up as different divisions. The main objective of the formation of these divisions was to avoid overlapping and marring of responsibilities. NEC will perform the function of a “Single Buyer”, i.e. purchase electricity from the independent producers and sell it to the utilities that in their capacity of distributors will sell the power to the end-users – enterprises, public sector consumers and households. The Energy and Energy Efficiency Act allows for the power transmission company to sell electricity directly to end-users (mainly enterprises) that are directly coupled to the high-tension transmission network, i.e. without the intermediary of the electricity distribution branches.

The TPPs as independent producers, on their part, may sell electricity directly to privileged consumers. This means that one enterprise may sign a contract with a power plant for direct supply, bypassing NEC. Under this scheme, NEC will be obliged to transport the electricity along the transmission network and collect a charge for it. A mandatory condition in this case is that the enterprise as a direct buyer will get the statute of a “privileged consumer”. To this end, the privileged consumer should meet certain qualification requirements that will be formulated by the Council of Ministers.

3.2. The State Commission on Energy Regulation

In the early autumn 2000, a State Commission on Energy Regulation was set up as an independent regulatory body with the Council of Ministers at the recommendation of the IMF and in compliance with the provisions of the Energy and Energy Efficiency Act. It was envisaged that it would be an independent regulatory body, possessing the respective influence and independence, both institutional and financial, in order to make decisions on prices of energy carriers and to deal with licensing and the issue of permits for energy facilities and activities on the basis of professional assessments. The memorandum signed between the Government and the IMF reads: “We shall consolidate the independent regulatory commission in order to ensure a well-functioning energy market. By the end of March 2000, we shall clearly define the functions

of the commission and the mechanism for financing of its activity, we shall allocate budget funds in order to enable it to perform its inherent functions until the time a new permanent financing mechanism shall begin to function and we shall seek for agreements with experienced regulatory agencies from Western Europe to mutual benefit”². In practical terms, however, the Commission was not able to perform its functions because of limited funds and staff. By the end of 2000, following the changes in the Government, the State Commission on Energy Regulation was even left without a boss. It was as late as by the end of May 2000 that a President of the Commission was appointed—with a term of office until September 10, 2004. With the start of the real restructuring of the NEC in May 2000 the State Commission on Energy Regulation obtained additional assistance from the budget and from a number of international programs for the pursuit of its activities. Nevertheless, it is as yet behind schedule with respect to the design and approval of the required regulations and by-laws.

3.3. Tariff prices of electricity

In compliance with the enforced “Single Buyer” model, internal prices have been introduced between the various power producers and the single buyer on the one hand, and between the single buyer and the distribution companies, on the other hand. The current tariff prices for electricity are in force as of 1 August 2000. Re-calculated in USD/MWh at an exchange rate of BGN 2,11/USD, including V.A.T., the current end-user prices are as follows:

End-user prices for electricity (USD/MWh)

Table 4.

24 h. zones	Industry HV	Industry LV	Households
Peak zone	57,8	77,3	-
Daytime zone	36,0	47,9	42,2
Night time zone	21,8	29,4	22,7
Single-scale tariff	44,1	58,8	42,2

The prices include 20% V.A.T.

Source: Regulation No 259, December 30, 1999, in force January 1, 2000, last revision SG No 83 in force August 1, 2000.

The average sales price at these tariff prices covers the operational costs of the National Electric Company, however it is below the long-term marginal costs of the company, which in different studies vary from 39 to 50 USD/MWh.

The contracts currently used for purchase of electricity from independent producers during the period of transition are of one-year validity. The purchase prices of energy will change periodically. The objective is that they should guarantee an adequate profit for energy producers.

Experts from NEC are of the opinion that Bulgarian export prices for electricity are quite favorable. They indicate as a corroborating example that the European power export prices range

² IMF: *We postpone the division of NEC, The Capital, February 7, 2000*

between USD 22 and USD 25/MWh, while Russia through dumping sells at prices below USD 20/MWh.³

NEC export prices for power

Table 5

Country	(USD/MWh)
Turkey	35
Greece	30
Serbia	30,5
Kosovo	30

The prices are less V.A.T.

Source: The Standard daily, November 6,2000

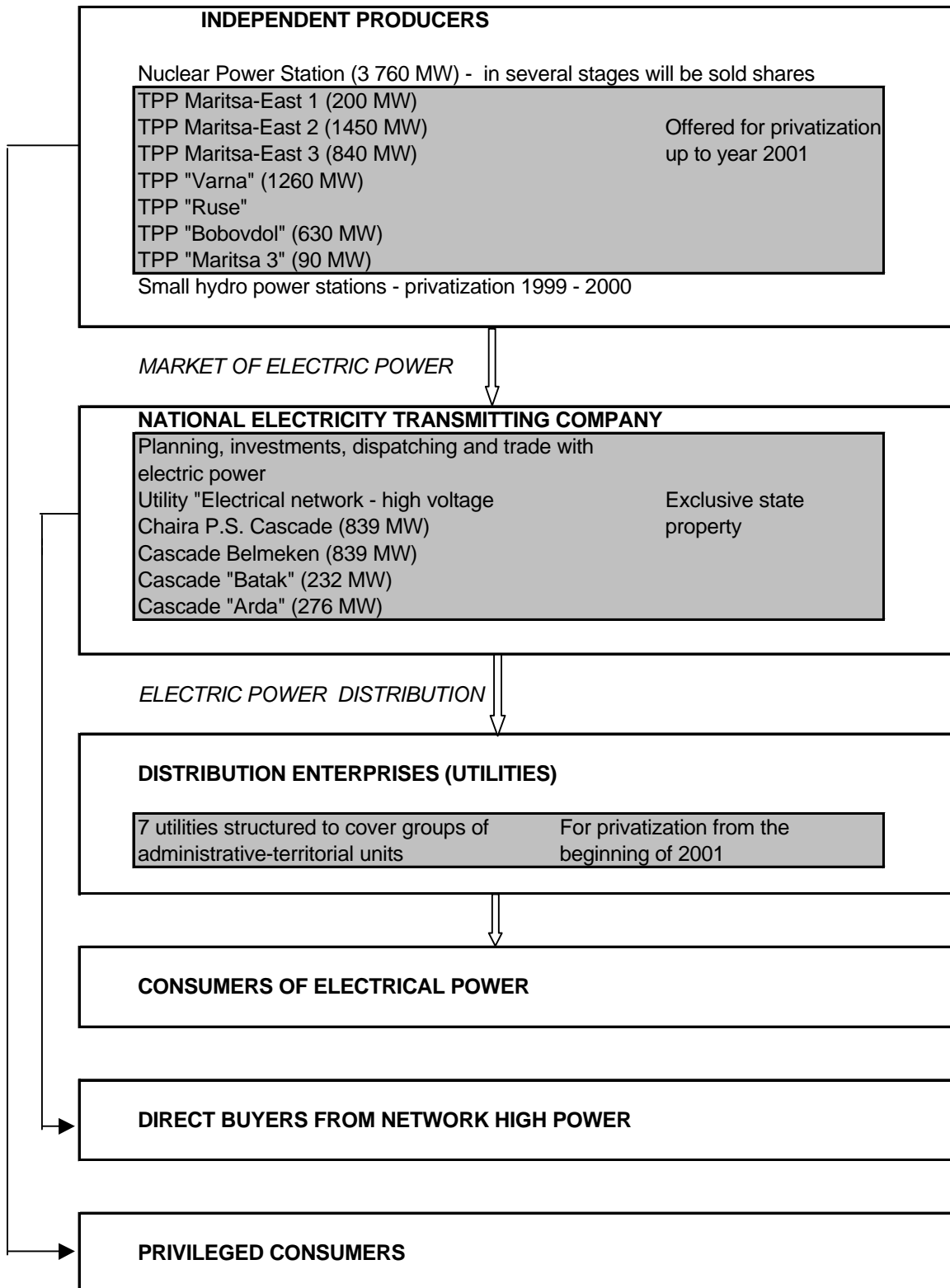
The prices at which NEC exports electricity are below those of industry in the country, even discarding the fact they are less V.A.T. Although the law allows exemption from V.A.T. on energy for export, in real terms this means that domestic consumers pay a higher price for their power consumption. It is not a secret that in order to sustain its export capacity NEC purchases electricity from relatively more expensive power producers such as *Maritsa 3* at about USD 70/MWh and *Bobovdol* at about USD 56/MWh, which furthermore causes considerable environmental pollution. For Instance high-grade arable land is being ruined for coal mining in the area of *Maritsa Iztok*. Unless a free market for electricity is introduced in Bulgaria, it will probably become obvious that Bulgaria does not have capacities for power export. A price above 3.5 cents/kWh is not sellable at all, even on the deficit-stricken market on the Balkans. In practice, the Bulgarian's domestic power needs come from more expensive power plants in order to export the cheap power produced at *Kozloduy* NPP (2.2 cents/kWh). Thus is Bulgaria subsidising the economies of the neighbor states on the account of its domestic consumers?

It is expected that the restructuring of NEC will cause an increase of electricity prices for end-users *in par* with the power supply costs, in order to guarantee adequate rate of return of the potential investors. This will entail a substantial increase of the tariff prices for households. The plan of electricity price development envisages periodical changes in the tariff prices for industry and households, so that by 2001 they become equal and reach the level of USD 40/MWh less V.A.T. How will this development cope with the growing export at lower prices?

³ *We are looking for guarantor of the export of electricity to Yugoslavia, The Standard daily, November 6, 2000*

Chart 1

STRUCTURE OF POWER MARKET IN BULGARIA



4. THE ROLE OF THE IMF AND THE WORLD BANK IN THE PROCESS OF POWER SECTOR RESTRUCTURING

During the first years of transition to market economy, Bulgaria obtained considerable technical assistance from foreign sources, targeted to facilitate the restructuring and market orientation of the energy sector. Technical assistance was provided by a variety of sources. It was not, however, subordinated to some kind of general structure. On the other hand, the frequent changes of governments (every 2 years on the average) and above all, the unwillingness of those in power to assume the responsibility for such a radical reform led to decision-making delays and the ignoring of recommendations. The nearly full replacement of the middle and senior management team of the Committee of Energy and the NEC with each change of a new government led to real information gaps and the absence of continuity on the part of the Bulgarian partners. This altogether diminished the efficiency of the assistance and rendered impossible its implementation.

Parallel to technical assistance for restructuring of the energy sector, Bulgaria was obtaining technical assistance for upgrading and improvement of the nuclear safety at NPP *Kozloduy*. This assistance was relatively better used, to a large extent due to the threat of sanctions and the wish to keep the plant in operation for as long as possible.

The non-nuclear technical assistance to the power sub-sector was quite broad and extensive (approximately 15 studies) and was provided primarily by the PHARE Program of the Commission of the European Communities (CEC), the US Trade and Development Program (USTDP) and USAID. Thus technical assistance was aimed at analysing additional investments needed in the power sector to improve both long and short run efficiency and stability (including rehabilitation needs), the likely future levels of demand, organisation of the sector (including the organisational structure for setting electricity tariffs), reduction of pollution created by power plants, and the development of recommendations on tariff structures. These studies were mostly completed between the end of 1992 and late 1993. They were designed to provide the COE with, inter alia, a more detailed least-cost investment plan for the sub-sector including timing and cost of rehabilitation, an estimate of NEC's long-term marginal costs, organizational recommendations, and recommendations on how electricity tariffs should be set. The Government awaited the results of these studies before finalizing its plans for the sector.

4.1. The role of the World Bank

In 1992, the Government agreed with the World Bank on a medium-term strategy, which was aimed at addressing, in an integrated fashion, the key issues impeding the efficient operation and development of the energy sector.

As per the agreed strategy, the Government launched a number of initiatives in the power sub-sector under financing from, inter alia, CEC, USAID and USTDP. These included the preparation of:

- (1) a load forecast for the medium and long-term;
- (2) a least-cost generation and transmission expansion program;
- (3) a tariff study;
- (4) a study for the reorganization of the sector; and

(5) a feasibility study for the rehabilitation and retrofitting of the thermal power plants.

Pending the recommendations of these studies, the Government gave high priority to promoting the efficient operation of the power system and reducing the cost of supply through the completion of ongoing projects and commercializing the operations of NEC.

This package is fully consistent with the Bank's *Country Assistance Strategy for Bulgaria* since the CAS emphasises the importance of the electric and telecommunication infrastructure of the country. The medium term strategy also follows from the Bank's recent *Energy Strategy Study for Bulgaria*

through more realistic prices and energy saving investments thereby reducing energy imports, pollution and costs; (2) expanding domestic production and reducing costs of this production, thereby reducing imports and costs; and (3) substantially improving safety and reducing the environmental impact of the electricity industry.

The *Bulgaria Energy Project* (No 11250-BUL) was designed to support this overall medium term strategy by assisting the electricity sub-sector. The particular components were chosen because: (a) they could be implemented rapidly; (b) would have a major beneficial impact on the Bulgarian electricity grid by increasing efficiency and stability; and (c) would maximize the impact of the Bank's financial resources toward the needed strengthening of the Bulgarian power system. Also, by improving the efficiency of the electricity sub-sector, the project fits well with the environmental strategy contained in The Bulgarian *Environmental Strategy Study* 10142-BUL), a joint product of the Bulgarian Government, the US Government and the Bank. Finally, the Project will increase the safety of two major hydroelectricity dams in Bulgaria, *Chaira* and *Belemken*, and a secondary dam.

Loan and Project Summary

Borrower: Natsionalna Elektricheska Kompania (National Electric Company)

Guarantor: Republic of Bulgaria

Amount: US\$93 Million Equivalent

Terms: Seventeen years, including a four-year grace period, at the Bank's standard variable interest rate.

The Project has the following objectives: (1) improve the operating efficiency and reliability of the power system, thus reducing supply disruptions; (2) improve voltage control and frequency regulation; (3) realign the level and structure of electricity tariffs to rationalize consumption of electricity, reduce imports, reduce the population associated with electricity generation, and mobilize resources for NEK; (4) improve and depoliticize the tariff setting system by establishing an independent regulatory mechanism to set electricity tariffs; (5) reduce the need for electricity imports or other high cost sources to meet peak demand; (6) reorient the operations of NEC along more commercial lines; and (7) strengthen dam safety at the Belmeken and Chaira dams and the associated saddle dam.

The Project comprises three major components. The first one is to improve the supervisory control and transmission network systems of NEC. The second one is to complete units 3 and 4 of the pumped storage project at *Chaira*, which is owned by NEC. The third one is technical assistance, primarily to help NEC in operating more efficiently and in a more commercial

manner. These components were chosen because they could be implemented relatively rapidly, would maximize the impact of Bank funds (by complementing projects underway), and would have a major beneficial impact on the electricity sub-sector.

The Project follows from the Bank's recent gray cover *Energy Strategy Study* (Report 10143) and *Environment Strategy Study* (Report 10142) for Bulgaria. These reports, especially the *Energy Strategy Study*, outline an approach to improving the problems in Bulgaria's energy sector by increasing energy conservation and the efficiency of energy usage, and by encouraging domestic production of energy. This project, building on the studies, would: (a) increase efficiency in electricity production, transmission, distribution and usage; (b) improve the stability of the electric grid; (c) improve voltage and reactive power control; and (d) increase domestic output of electricity relative to imports.

The major risks to the Project are related to three sources. The first risk is that, for the Project to succeed, the Government must be willing to increase electricity tariffs substantially and to create an independent regulatory mechanism to set these tariffs in the future, both of which will be politically difficult. The second risk is the willingness of the Government to increase NEC's depreciation or reduce taxes in order to provide it with sufficient funding to carry out more of its investment program. Finally, the Beneficiary (NEC) is a new organization with very limited commercial experience, having been spun-off from the government at the beginning of 1992. This lack of experience will require a fairly high degree of involvement in this project by the Bank in the first couple of years.

*Estimated Project Cost**Table 6*

	Local	Foreign	Total
(USD million)			
<i>Chaira</i> Pumped Storage	10.4	29.9	40.3 ⁴
Improvements in Control and Transmission Network Systems	6.0	35.5	41.5 ⁵
Technical Assistance	0.3	6.2	6.5
Total Baseline Costs	16.7	71.6	88.3
Physical Contingencies	2.0	6.9	8.9
Price Contingencies	10.8	6.7	17.5
Total Project Costs	29.5	85.2	114.7
Interest During Construction	3.5	7.8	11.3
Total Financing Required	33.0	93.0	126.0

In fact the above risks for the successful implementation of the project turned out to have been correctly identified. In early 1993 the conservative UDF Government, attained a non-confidence vote and was replaced by a Government dominated by the Socialist Party and the Movement for Rights and Liberties. Thus the entire management team of the Committee of Energy and the National Electric Company were released. Without explicitly opposing the implementation of the project, the New Government in fact proceeded only with the utilization of the resources under

⁴ - Excludes over \$300 million spent by Bulgarian authorities.

⁵ - Excludes \$35 million already spent by Bulgarians on control systems.

the second project component - "Finalizing the construction of units 3 and 4 of the pumped storage project at *Chaira*." The third component, "Technical assistance to help NEC in operating more efficiency and in a more commercial manner", was almost entirely suspended. The then management of the Committee of Energy and NEC defended this by the fact that the Bulgarian power system had been built up under the conditions of a centrally planned economy in such a way that a real commercialization of the sector was impossible. The generating capacities performed strictly defined functions to take up a specific load - the base load, the medium load, and the peak load. It was said, the power system was unfit for competition because the generating capacities occupy a specific niche in electricity supply. This conclusion complied to a large extent with the actual conditions in Bulgaria. This fact, however, did not mean that introduction of market-based principles of operation of the sector was entirely impossible. The socialist Government that came to power after the elections at the end of 1994 proceeded with a policy of state intervention in the economy and of partial restitution of past management principle. Despite the periodical increase of electricity prices, with the use of a specific methodology to take account the exchange rate and inflation, they continued to fall short of reflecting the market-based relationships in the sector and were still the result of politically-driven decisions.

There has yet been no reasonable explanation for the delay of the work on the first component of the project ("Improvement of the supervisory control and transmission network systems for NEC") during the period 1993-1997, since what is meant is the technical system whose role had obviously been underestimated. This component was expected to be finally implemented in 2001 using the rest of the loan, lent by the World Bank in the framework of this project.

The third component of the project was implemented in May 2000 with the registration of the generating capacities of NEC as shareholding companies and the creation of State Commission on Energy Regulation. It should be noted that the socialist governments that were in power during the period 1994-1997 have also contributed to the implementation of this component through the considerable amount of preparatory work. It was oriented towards preparing the grounds for restructuring of the energy sector, for the accounting split of the property of the various enterprises, and raising responsibilities of individual power generation and distribution plants.

The decisive steps of the power sector reform in Bulgaria were made possible thanks to the political will to bring about real reforms of the conservative government of the Union of Democratic Forces, that came to power by the middle of 1997, and the IMF support for its policy. The unrealized components of the World Bank project were incorporated as mandatory conditions in the 3-year agreement signed by the Government in 1998 with the IMF for support for reforms in Bulgaria. It was at that moment that the IMF started to play a leading role in the implementation of the power sector reform, while the World Bank primarily performed analysis and monitoring of the results. This left, at the disposal for this effort, a still remaining small amount of initialized funding allocated in the framework of the 1993 *Bulgaria Energy Project*.

One of the conclusions made by the World Bank in its project under the working title *Bulgaria Country Economic Memorandum*⁶, developed at the beginning of 2000, was that the separation of the power plants from NEC would not lead to a competitive market of power. The European Commission requested the position of the Bank and of other international institutions in order to

⁶ **Bulgaria Country Economic Memorandum**, The Dual Challenge of Transition and Accession (Decision Draft) June 2000

develop its strategy for negotiations with Bulgaria in March 2000. A special section of the Memorandum was devoted to the energy sector. The memorandum noted that at present NEC (Transmission Company) has the sole legal right to import electricity, but this condition would have to be changed to meet compliance with the EU Electricity Directive. At such, eligible customers would find that it is cheaper to contract directly either within Bulgaria or from abroad for electricity, rather than buying at the published tariff from the single buyer. New Independent Power Producers (IPPs) may find it attractive to enter and generate using gas, possibly in CHP plants, and these IPPs may be able to significantly undercut the relatively high cost of lignite-based generation. If so, then the single buyer risks losing its most profitable customers, and would be forced to pass through the high generation costs to captive franchise households who would experience rapid increases in their prices. Alternatively, NEC risks a large deficit due to household prices that are kept at efficient levels, based on the revealed costs of the new contracts signed by the eligible customers. The conclusion is that the “single buyer” model did not allow real competition on the power market nor the formation of competitive power prices, and that the model contained a great risk for NEC. The lack of competition on the electricity market, however, contradicts the Copenhagen criterion that required a functioning market economy.

The preliminary *World Bank report on the energy sector and the environment in Bulgaria*, which was submitted to the Government at the end of November 2000, is a continuation of the Bank's efforts to support the reforms in our country. The study contains several scenarios for the development of the energy sector until 2015. Although the analysis has been ordered by the Government, most probably with the expectation that the World Bank is giving a signal to potential private investors that it is profitable for them to invest in the Bulgarian energy sector, the results have fallen short of the expectations. The main conclusion from the paper is that Bulgaria does not need new generation capacities in the coming years, which contradicts the plans of the Government, laid down in the *Strategy for Development of the Energy Sector until the year 2010*. Under the baseline scenario of the study, the demand forecasts are much below those of the energy strategy. Respectively, far less construction of new capacities is envisaged. Contrary to the 3,470 MW baseline of new capacities by 2010 in the State Energy Strategy, the World Bank baseline scenario envisages construction of only 2,015 MW by the year 2015. According to the study, it is only after the year 2006 that Bulgaria will need a new cogeneration plant of 450 MW. The biggest generation capacity envisaged by that time is TPP *Devnya* of 230 MW (which has been endorsed by the energy institution, yet it failed to be included in the official list of new projects). For years 2008, 2009, and 2013, three new power plants running on lignite coal have been envisaged and for year 2010, a new TPP running on imported coal. Several other cogeneration plants and a gas turbine of 10 and 25 MW capacity have been envisaged as well. But that is all. There is no new construction of nuclear units, and no mention of the *Gorna Arda* cascade, or the *Yadenitsa* Dam!

At the end of February 2001, the agreement reached with the IMF finalised projects for the construction of replacement facilities with *AES* and *Entergy* in the *Maritsa Iztok* area, which had not been envisaged in the World Bank study. This caused a certain confusion among the energy experts. This may have been the instance in which some discord between the positions of the World Bank and the IMF was noted with respect to the future development of the energy sector in Bulgaria. The explanation of this difference in the standpoints should be viewed in the political context of that point of time - the end of the 3-year agreement with the IMF and the forthcoming

elections in June. The IMF probably decided to spare itself undue disputes with the Government, taking account of the fact that in a few months time would, in any event, need to negotiate a new agreement with a new Government.

In the recent months, a considerably more active commitment of the World Bank to the amendments of the Energy and Energy Efficiency Act has been noted. A World Bank energy expert John Gulliver, who took part of the development of the very first draft of the law, is now actively working on the amendments, jointly with Governmental experts and the Commission on Energy and Energy Resources with the National Assembly. It is worth noting that during a previous mission to Bulgaria the staff member extended technical assistance under an assignment with the U.S. Agency for International Development (USAID). At present, however, the World Bank is directly involved in paying for the technical assistance rendered and hence in the future amendments. The Bank has declared more frequently its viewpoint on these required amendments.

In February 2001 the daily *Pari* published an interview with Salman Zahir, senior economist on energy with World Bank, who confirmed the serious commitments made. The interview reads:

"We have been working for some time with the Bulgarian Government on the Energy Act. The objective of the Cabinet is to set up a competitive energy sector and that is why we wish that the law gives a clear idea of the future structure of the energy sector which will contribute to attracting private investors. It will make an impact on the investments in the energy-intensive manufacturing facilities in Bulgaria as well. Anyone who intends to invest in energy generation would like to know what is the structure of the energy market, on what basis he/she should determine the selling price and what are the trade rules on that market. The most important components on which we shall work with the Government are abolishment of certain unclear points that still exist in the law. More specifically this means to clarify what is meant by a competitive market, to define more explicitly the policy of the sector - ownership, prices, investments, accountability of the companies, protection of customers from the monopolistic enterprises and introduction of clear institutional distinction between the structures that shall be responsible for formulation of the policies and determination of the state ownership rights and those responsible for regulation of the sector. There is another problem of a more fundamental nature that the Government should clarify through the law. It should be made crystal clear how big the political subordination of the sector will be. As you know, currently both the State Energy and Energy Resources Agency and the State Commission on Energy Regulation are subordinated to the Council of Ministers. The question is whether in the future the Government will resign of its current power of authority on the sector or it will continue to play some role."

The World Bank projects under implementation in Bulgaria are 12 in number and amount to USD 451.1 million. This has been written in a report of the financial institution of its activities in the country, published at the beginning 2001. In his interview for the daily *Pari* on January 7, 2001 Mr. Thomas O'Brian, Permanent representative of the World Bank to Bulgaria declared that the focus of the new strategy of the Bank would be raising the living standard of the population and

mitigation of poverty. Five new projects to the total value of USD 147.7 million were in the process of preparation. These projects were devoted to improving the welfare of children (USD 8 million), cadastre and real estates register (USD 26 million), upgrading of district heating companies (USD 60 million), mitigation of pollution of the river Danube (USD 7.5 million) and a second loan for agriculture (ASAL II, value USD 50 million). In addition, a project was being drafted for the private sector, however its value is not determined yet. To date, World Bank activities in Bulgaria total of 13 projects of a total value of USD 962.7 million). The WB representative office in Bulgaria also has obtained funds for financing NGO activities. The principal objective of this program for the year 2001 is to support the work of several local NGOs, active in the field of social services and particularly those engaged in social relations. The 2001 Program is oriented above all to the districts of *Smolyan, Vidin, Montana* and *Vratsa*, which feature an underdeveloped social capital and social care network, which is pointed in the strategy of the Bank. Of the total amount of the loans lent for the projects currently underway in Bulgaria, USD 93 million has been intended for projects in the energy sector, USD 95 million for rehabilitation of the railways and USD 24.3 for the social insurance system. In addition, the World Bank participates in a USD 7.4 million project to improve transport and trade in the Balkan Region. This comprises setting up of new border-crossing points and a customs information system. There are two WB projects for health care—one for the amount of USD 26.6 million and the other for the amount of USD 63.3 million.

The real parameters of the power sector reform have been elaborated in the 3-year Plan of Action in the Energy Sector, that is a component part of the 3-year Agreement with the IMF for support of the reforms in Bulgaria. In this sense, the reform should be viewed as an important element of the overall policy for achieving financial stabilisation in the country. A broad range of experts participated in its elaboration. However, during the whole process, the international financial institutions and the World Bank played the leading role.

4.2. The Role of the IMF

The selected model for implementation of the reform was approved by the IMF and the other international financing institutions and was legally provided for in the Energy and Energy Efficiency Act (1999). There were no substantial differences between the IFIs and the Government on this aspect. However, the IMF had considerable objections with respect to the state of preparedness of the regulatory framework in responding to the requirements of the new model. “The real restructuring of the energy sector should be postponed until the most important by-laws have been adopted”. This became clear from the memorandum signed between the Government and the IMF in February 2000. The IMF position was that “the legal division of the National Electric Company cannot start until the appropriate by-laws have not been approved”. “We shall not proceed with the division until an adequate regulatory framework is made available”, reads the memorandum. This stand shows that the IMF insisted that the restructuring should follow its natural and logical course from economic and legislative point of view: the legal framework and price regulations should be the first to be prepared, and then should follow the split of the electricity company into independent legal entities for energy generation, transmission and distribution, and then finally an effort should be made for privatization of these companies.⁷

⁷ IMF: *We postpone the division of NEC, The Capital, February 7, 2000*

The introduction of market-based principles of operation in the sector played a leading role in all versions regarding the implementation of the power sector reform. Prices, as the most important market mechanism, needed to be let free and begin to play their adequate regulatory function. As early as March 2000, the IMF insisted that the governmental decision on the freeze of energy prices should be cancelled. “The decision on the energy price freeze should be canceled. In my letter to you last month (March 2000), I mentioned the reasons that have led to this conclusion: the freeze will reduce the trust in the commitment of the Government to equalize the prices for households and industry; it will reduce NEC’s profit and the budget revenue and will undermine the governmental plan for privatization of the generating and distribution components of NEC”, wrote Juha Kahkonen, the IMF representative for Bulgaria. According to the representative, all the information that reached the Fund corroborated the views that the freeze was perilous. The freeze on the electricity prices for households, which were still below the full cost recovery levels, would give a wrong signal to the consumers to use electricity for space heating instead of the more efficient district heating or other available types of fuel, reckoned Kahkonen. With respect to the district heating companies, the IMF representative reminded the position of the World Bank that the freeze on end-user prices might be justified only in the context of a plan of action for restructuring of the district heating sector, that will be able to lead to dismantling of the subsidies for operational costs.

In actual fact, however, the reform started with an enforced freeze on electricity and DH prices for households. The IMF did not approve of the freeze on electricity and district heating prices and the legal division of the National Electric Company. This was stated in a letter dated April 27 from Juha Kahkonen that addressed to the Deputy Prime Minister and Minister of Economic Affairs.⁸ A day before, the president of the State Energy and Energy Resources Agency Ivan Shilyashki had already signed the orders for separation of the 7 electricity distribution branches (TPP *Rousse* and TPP *Maritsa-Iztok 1*). On the same date, April 27, the orders for the separation of NPP *Kozloduy*, the registration of the new NEC as a “Single Buyer” power transmission company, and the appointment of new Boards of Directors, were signed.

Kahkonen reminded that, “Prior to the legal division of NEC, key by-laws need to be developed and an agreement should be reached with the State Commission on Energy Regulation and the World Bank on the monitoring of the electricity company with the assistance of the State Energy and Energy Resources Agency. Insofar as we are familiar with the case, neither of these conditions has been met and for that reason it is too early to proceed with the division at that stage. We and our colleagues from the World Bank would be grateful if the Government manages to clarify what is the current level of the preparatory work and what are its plans with respect to the legal division.” At that time, however, NEC was practically already split. Kahkonen emphasised that the IMF shared fully the standpoint of the World Bank that demanded fulfilment of some conditions that would guarantee transparent and successful division of NEC.

The separate contracts between NEC and the generation and distribution companies in compliance with the demand forecast of the company and the approved by-laws should have been in place prior to the split. Action was needed also in the field of implementation of diagnostic audits of the available financial reports, and they should have been prepared for the final introduction of the internal instruments of control on the newly created energy companies by the

⁸ *IMF insists on transparent division of NEC, The Capital, May 8, 2000*

end of 2000. To this end, it was necessary to hire skilled auditors until the end of August 2000, noted the IMF representative. This letter showed once again that the Bulgarian Government and the IMF had quite different views on the reform in the energy sector. The Government neglected the advice of the Fund and the World Bank on several very substantial issues – approval of by-laws, liberalization of prices, promotion of the role of the State Commission on Energy Regulation, and signing of contracts between NEC and the companies for electricity generation and electricity distribution.

4.3. The IMF support for the reform in NEC

After the initial skepticism with respect to the state of readiness for restructuring of NEC during the first half of 2000, in July 2000, the IMF Mission unexpectedly evaluated the restructuring of NEC and the legal separation of the production, transmission, and distribution companies as progress.⁹ The July Memorandum noted that by the end of the year the documents on licensing of the power plants, the transmission company and the distribution companies would be ready for submission to the regulatory commission. The licenses should be issued within 6 months of the date of submission. The contracts between the single buyer, the generation plants and the distribution companies were expected to be signed in September. These contracts should cover the period until the end of 2000. The Government has undertaken the commitment that during the transition period until January 1, 2002, when electricity prices will be liberalized, NEC would not sign contracts for energy purchase for more than one year. Exceptions would only be made for contracts that obtained a special approval by the State Commission on Energy Regulation.

The IMF Memorandum stated that in order to ensure the financial viability of NEC during the period of restructuring in the next year, serious efforts should have been made for reduction of costs and careful increase of the prices for households. “We think that the measures related to optimization of distribution will produce an improvement of the finances of the companies by BGL 70 million during the second half of 2000”, stated the Memorandum. Additional savings were envisaged through better accounting control and purchasing from producers that had the lowest production costs. To augment of the revenue of NEC and to compensate for the price freeze the plan relied greatly on the agreement reached for increase of the export of electricity. It was expected to raise NEC profit by BGL 30 million this year and by BGL 7 million in 2001. In order to improve the situation of overdue payments, that occurred since May 2000, last the different companies entered negotiations for delayed payment with default payees whose debt exceeds BGL 110 million.

⁹ *The Government did not step back on the prices of electricity and district heating, The Capital weekly, Vol. 27, July 2000*

5. THE MAIN PROBLEMS THAT POWER SECTOR REFORM SHOULD RESOLVE

IMF experts pay specific attention to the important role of the State commission on Energy Regulation as the independent regulatory body that enjoys the appropriate influence and independence – both institutional and financial – to make decisions on prices or on the issue of licenses and permits for energy facilities and activities on the basis of professional assessments. In actual fact, however, the State Commission on Energy Regulation relies on funding from the state budget. It does not yet have sustainable financing sources of its own from issuing licenses. The Chairman of the Commission and its members are appointed by virtue of a decision of the Council of Ministers, so that in terms of institutional subordination it is not entirely independent.

The problem of the tariff prices at which electricity would be purchased from the independent generation companies is of particular importance. Producers would have to bear great responsibilities—they should generate predetermined quantities of electricity, to stick to a strict schedule that would be incorporated in the purchase contracts signed with NEC and to guarantee a certain quality of the generated electricity. Non-compliance on any of these requirements would entail sanctions for the power plant.

From mid-2000, when the division of NEC started, up until January 1, 2002, a transition period would be allowed during which the new relationships and the pricing mechanism shall be tested. It is a fact, however, that the reform started at fixed electricity prices for final consumers and during the transition period there would be no chance to test the market mechanisms in price formation. At that point the State Commission on Energy Regulation will start to implement effectively its role of state regulator of pricing after January 2002. The power plants will have to defend the structure of their prices before the Commission, while the Commission will rule on whether the prices of the different producers comply with the pricing rules, whether the least-cost requirement has been met, whether their operation is cost-effective, and so on. The State Energy Agency, in its capacity of owner of NEC, would perform the required monitoring. It would guarantee that the contract relationships and the prices that are determined by the single buyer (the power transmission company NEC) are aligned to the requirements of the approved by-laws for the transition period.

NEC should have enough money to purchase the contracted quantities of electricity from the producers, and the power plants on their part would need money to purchase fuel for energy generation. However, a serious shortage in turnover capital is projected. The independent power distribution companies should procure high rate of collection on bills for energy supply to the consumers. 30 to 35% of the power output is however lost in the transmission network and during power conversion from one tension to another or due to theft on the part of consumers. These losses need to be compensated through additional increase of the tariff rates. A large portion of the overdue payments to the power distribution companies belongs to municipalities and other institutions financed from the state budget. On the other hand, the budget relies on revenue from NEC operations in order to be able to secure assets needed for budgetary financing. Thus, a vicious circle emerges in which bank financing of temporary deficits in payments can not envisaged. The absence of such a mechanism for moderation of perturbations may disrupt the system, since at some point in time, the power plants will not have the money to purchase fuel.

Independent financing through the investment program of any individual plant would be barely possible because of the still persisting grave barriers to bank credits for investment projects.

The coal-mining sector continues to operate at very high production cost levels and NEC continues to indirectly subsidise the mines from which it purchases expensive local coal at prices above those of imported coal delivered via the Port of *Varna*.

It was been agreed with the IMF that two-thirds of the budgetary subsidies for the district heating companies would be remitted until the end of the 1999 - 2000 heating season. According to the current 3-year plan the subsidies for the district heating companies had to be dismantled in the second half of 2001 and regional prices for district heating had to be introduced. The subsidies for the district heating companies would be retained in the coming several years, and would be oriented mainly for investment purposes, according to officials from the State Energy and Energy Resources Agency.

There are serious concerns regarding the restructuring of NEC through mergers of different types of production facilities is a loss-making unit, for instance merger of TPP *Rousse-Iztok* with District Heating *Rousse*. There is an opinion in circulation that the mergers of TPP *Maritsa-Iztok 1* with the briquette factory in *Galabovo*, of TPP *Maritsa 3* with the *Marbas* Mines, of TPP *Bobovdol* with *Bobovdol* Mines and of *Pernik* Mines with TPP *Pernik* are in fact directed towards internal subsidizing of some production facilities for the expense of others and may lead to bankruptcy of the new joint structure.

In compliance with the strategic plan for decommissioning of the two oldest nuclear energy units, approved by the Government in July 2000, in the coming years Bulgaria will undertake actions for pre-term decommissioning of the units. The fulfillment of the program will be funded by the European Commission through a grant of EUR 200 million. The Agreement for allocation of the EUR 200 million grant was signed by the end of November 1999. At that time the Government promised EU that the first two 440 MW units of *Kozloduy* NPP will be decommissioned pre-term in 2002. After the technological decommissioning of the two units another 50 years will be needed for their complete decommissioning. During that period a total of USD 300-400 million will be spent. USD 100 million will be needed for the construction of an intermediate storage for the nuclear waste and for the actual switching off of the two units. Another amount of the same size will be spent in 2003-2007. *Kozloduy* NPP, however, which has been registered as an independent producer with 100% state property, does not have the capacity to make such huge investments. They cannot be realized without the direct intervention of the state as a party on any loan agreement. The registration of *Kozloduy* NPP among the first independent power generation companies in the country appears to be as an end in itself action, taking account of the fact that it is fully dependent on the state for its operations as well as for the upgrading of the two new nuclear units 5 and 6, in order to attain a nuclear safety level complying with the international norms and standards. An amount of EUR 212.5 million has been allocated by the European Commission to that effect. The entire program covers activities that will be implemented by an European Consortium with the participation of Simens, Evuroatom, Framatom and Atomenergoexport¹⁰

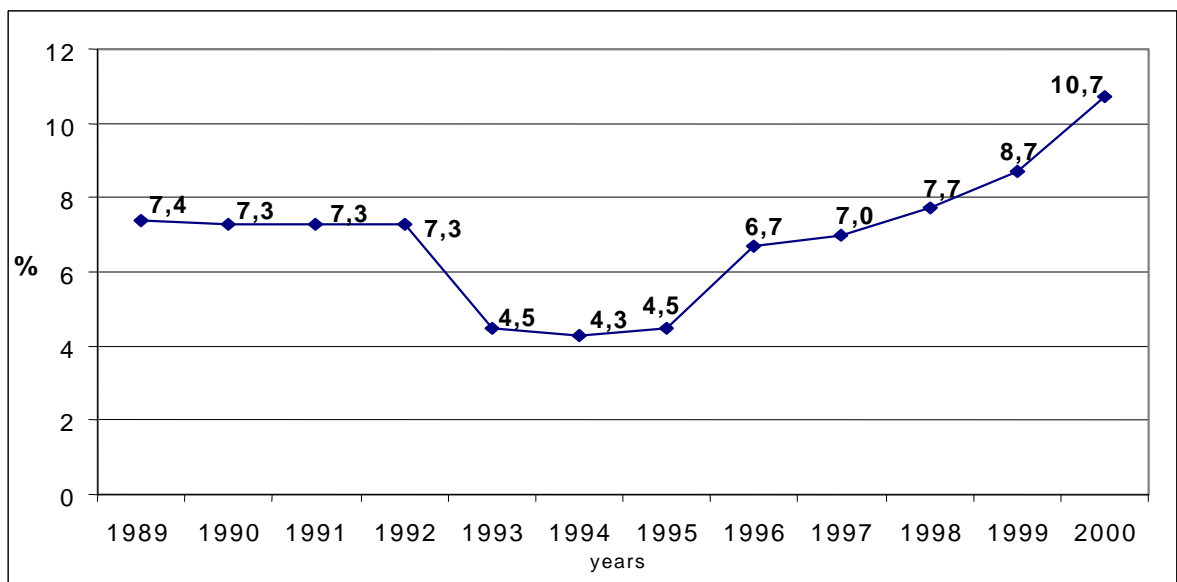
¹⁰ *Ivan Shilyashki, President of SEERA: The money for modernization of NPP is very important, The Pari daily, June 1, 2000*

6. SOCIAL ASPECTS OF POWER SECTOR REFORM

An analysis of the power sector reform process in Bulgaria logically leads to issues of its social and environmental aspects of reform—to what extent these aspects have been taken into consideration in the process of design of the parameters of the reform. This study has, however, revealed that environmental and social issues have not been considered directly in relation to the reform. Of course, other studies of the social impact of the transition to market economy have been conducted by a variety of independent researchers. The results of these, as well as the data of the national statistics, show a dramatic impoverishment of Bulgarian population in the past ten years. There is an obvious growth in the energy costs of the various households during the past 5 years. This relative share is particularly high for households with members that fall into the category of the socially deprived – unemployed and pensioners. Households with pensioner couples, in the last quarter of 1999, the relative share of energy expenses for was on average 14% of the total expenditure of the household, and therefore is ranked the second biggest cost item in their budgets. The payments under the same item for non-pensioner households were on average only 9% for the same period. In 1999, households consisting of members that were all unemployed spent on average 11% of their total expenditure for energy costs, while this share for families with two or three gainfully employed members was barely 7%.

The implementation of the power sector reform has not been accompanied by any changes in the legal framework for social assistance for inhabitants, in the context of anticipated further increase of electricity prices for households. The absence of new legislation may be due to the actual freeze on electricity and DH prices (in the beginning of 2000 until the end of 2001) as agreed upon with the IMF in January 2001, i.e. for a period of two years.

Chart 2. *Relative share of energy costs to total household expenditures*



Source: National Statistical Institute

The Government developed a program for target-oriented energy support during the autumn-winter heating season. In 1999, target-oriented assistance was extended to 12% of the population and 19.4% of the households. According to the data of the National Statistical Institute and the Ministry of Labor and Social Policy, the number of households that could qualify for this program as a target group averaged 630,000 for the six months of the heating season. These were households with an income of BGL 29.34 per month, whereby this only applies to solitary persons or families with all members unemployed. The fact that about 20% of the households in Bulgaria rely on social assistance for their energy costs indicates the true dimension of how low the income level is in the country. During the past three years the average salary amounted to barely USD 100. In fact, the Bulgarian citizen pays energy prices that are ever closer to the European ones, yet his/her income accounts for nearly 30% of the European one. Therefore, if one uses as a benchmark the EU standards for poverty, which assumes the poverty line below 50% of the average rate for the entire Union, then 92% of the Bulgarians would fall below the line¹¹. For this reason the increase of the minimum salary became the most discussed subject in the media. In addition to the grave economic situation, the citizens of Bulgaria view their low income as a real obstacle to Bulgaria's integration to the European Union. Comparatively, the existing democratic tradition of the transition to market economy in Bulgaria, and the political liberties and alignment of Bulgarian legislation toward European standards, are insignificant in the minds of the ordinary Bulgarians towards European integration.

The major problems in the talks with the IMF mission that visited Bulgaria in February 2000 focused on the increase of the minimum salary and subsidies and reform of the energy sector. While the Minister of Labor and Social Policy proposed a minimum salary of BGL 80 (in force for the anterior period – from January 1, BGL 90 as of July 1) and then BGL 100 as of the beginning of 2001, the IMF's position remained unchanged to the previously agreed level – BGL 70 and then BGL 72 from July 1, 2000. Finally, the IMF representatives agreed to a compromise – BGL 75 as of February 1 and BGL 82 as of October 1, 2000. The IMF was, however, of the opinion that the increase of income levels under the conditions of a fixed exchange rate would increase production costs and would obstruct exports, provided it is not accompanied with an adequate increase in productivity, and, last but not least, it would entail a rise of the rate of inflation. Since July 1, 1999 the average monthly old age pension reached 1/3 of the average monthly salary. Pensions in Bulgaria are, therefore, below the poverty line, as determined by the standards set by the International Labor Organization of 50% of the average monthly salary. The poverty of old people in Bulgaria is already a very grave social problem.¹²

The state of the district heating (DH) companies and the related coal mines were other issues of serious debate in the talks with the IMF mission because of the extremely important social significance of actions undertaken in these sectors. The partial or total disconnection of DH services by the population, which occurred during the past heating season, brought the issue of closing the district heating companies in small cities on the agenda. The loss of subscribers furthermore deteriorated the economic viability of these companies and made unfeasible further

¹¹ *Study of the Socio-Economic Faculty of the London School of Economics, announced by BBC*

¹² *Bulgaria and the European Union: The social dimension of the integration process, The Pari daily, June 1, 2000*

efforts on the part of the Government to invest in their upgrading. Despite this fact, the government has been negotiating a loan for exactly that purpose with the World Bank.¹³

In the context of a lack of real measures for restructuring and diminishing the losses of DH companies, the schedule for increase of heat prices as envisaged in the 3-year agreement with the IMF would produce only further growth of overdue payments of these companies to the budget, to the National Insurance Institute, and to Bulgargas (National Gas Supply Company). If the price of district heating is raised again the DH companies will lose even their currently limited number of customers. The household sector accounts for the largest share of heat consumption in this country. Last year this household share was 73.5% as compared to: 6.03% for industry, 7.41% for the public sector, and 13.06% for the budget organizations. Since 1990, heat consumption in industry dropped almost threefold. Thirty percent of the household consumers have resigned of the services of the district heating companies. Thus, finally it was agreed with the IMF not to increase the price for space heating for households after June 1 and to freeze the price until June 1, 2001.

The preliminary *World Bank report on the Energy Sector and the Environment in Bulgaria* (November 2000), was based on several elaborated scenarios and included the prospects for development of the sector until 2015. It indicates that during the 2001-2002 winter season an average Bulgarian family would have to spend USD 50 per month on district heating, or up to USD 70 for space heating by electricity, or up to USD 32 for any alternative sources of space heating (wood, coal or naphtha). After that point, prices would drop, since the Bank's long-term forecast envisages reduction of the price of natural gas that is the main fuel used by the district heating companies.

The study gives an indication of the considerable social price of the power sector reform. This fact has, however, not been made known to the general public. Because of the explicit disagreement of the Government with the results of the World Bank study on the energy sector and the environment in Bulgaria, it has been so far kept for official use only. Access to the study is forbidden for any independent researchers until it is finalized, which was expected to occur in February 2001.

¹³ *Not-for-attribution interview with World Bank official, Sofia, Sept. 19, 2000*

The European Agreement for Association of the Republic of Bulgaria to the European Union entered into force on February 1, 1995. At this time, the Bulgarian Government noted in a special declaration that the Agreement corresponds to the priority national interests for EU integration and declared explicitly the European orientation as a major priority for Bulgaria.

Bulgaria received the formal invitation to begin negotiations with the European Union on December 11, 1999 at the EU Summit in Helsinki. In February 2000, the country established its structure for the negotiations and started the discussions on the first chapters.

Since the very beginning of the transition to market economy, Bulgaria has been actively involved in all European initiatives related to the energy sector. Finally, the agreement reached with the EU in 1999 for pre-term decommissioning of two nuclear units at Kozloduy NPP were important factors for acceleration of the country's integration to EU. The EU member-states consider Bulgaria to be a serious partner in the efforts to improve nuclear safety—an issue on which global public opinion is very sensitive. Management of Bulgaria's nuclear power plant and nuclear safety has been central in the discussions regarding EU accession requirements. The most serious concern is the management of the old units of Bulgaria's nuclear plant *Kozloduy*, on the Danube River.¹⁴ Experts' estimates warn of certain basic safety features of the old blocks. The plant produces nearly half of the electricity consumed in Bulgaria and the closure of the four reactors

¹⁴ The plant includes four VVER 440/320 reactors.

would be extremely costly. The continued operation of *Kozloduy* has implications for Bulgaria's application for membership of the EU. Bulgaria has been invited to start negotiations in 2000, conditional on agreeing to close the old units of the nuclear plant. The government has agreed on early closure of units 1 and 2 before 2003, but without acceptable compensation measures for developing alternative sources of power for electricity and implementation of nuclear safety projects for decommissioning, including financial assistance from EU for the period of 2000-2006. Part of the EU grant assistance is conditional on confirmation of closure of units 3 and 4, which would have to take place before 2006, at the latest. The government is expected to complete a time-bound program for decommissioning of units 3 and 4 by July 31, 2000. The cost for closure of units 1 to 4 is estimated to exceed EUR 800 million.

The World Bank study *Environment Sector in Bulgaria. The Challenge of Preparing for EU Accession*¹⁵ (March 2000) makes an attempt at a financial assessment of the impact of the measures to improve the environmental indicators of the Bulgarian energy sector and their harmonization with the EU standards. It reads: "We have analyzed the potential impacts of these investments on households based on the Bulgaria Integrated Household Survey, conducted in 1997. For the analysis, we considered expenditures on "environment-related utilities", which comprises of drinking water, wastewater, electricity, gas, solid waste disposal, and heating"¹⁶.

The cost estimates assume that all capital investment is financed at 10% interest over 20 years. The analysis assumes that all capital and operating and maintenance costs are passed on to the consumers in the area where they are incurred.

For electricity, the price increase was estimated at 240% in the low-cost scenario and 300% in the high-cost scenario. In both cases, these price increases reflect the needs to cover additional environmental-related investments.

For space heating, the analysis assumes that urban households using coal for heating purpose would be obliged to use smokeless coal, representing an increase in the price of coal equivalent to 350%. All households using electricity for space heating would experience the same increase as mentioned above in their heating expenditures – heating is assumed to account for 50% of the electricity bill. Urban households using residual oil for heating would switch to smokeless coal, facing monthly heating expenditures of about BGN 14.0. All households connected to district heating would face price increases equal to 30% in the low-case scenario and 50% in the high-case scenario.

¹⁵ World Bank Study "Environment Sector in Bulgaria. The Challenge of Preparing for EU Accession", Draft March

¹⁶ Either district heating or heating with electricity, coal, wood, or fuel.

8. ENVIRONMENTAL ISSUES

8.1. Environmental issues of the period of transition

A number of studies on the state of the environment in Bulgaria during the period of transition have been conducted with support from the World Bank. They deal to one degree or another, with the impact of the energy sector on the environment and the measures that need to be taken to improve the environmental situation at the large power generation facilities. In particular, in the *Maritsa Iztok* area where low-calorific lignite coal is still predominantly used.

One of the first documents of strategic importance during the transition was the 1991 study produced by the World Bank in cooperation with USAID and USEPA outlining an environmental strategy for Bulgaria (WB Report No. 10142/ECA March 1992). In addition, to reviewing the major environmental problems, the strategy also defined a list of priorities and recommendations, summarized in the Plan of Action until the Year 2000. The main conclusion of the study was that the reasons for the poor state of the environment were rooted in the economic and management policies of the transition period. It was estimated that market reforms, and privatization in particular, would bring about tangible environmental improvements. Important institutional, legislative and other regulatory reforms in the Plan of Action were also recommended as essential to success. In the years that followed, the implementation of economic reforms was delayed. With the ensuing economic recession and the numerous social problems that arose, the liberalisation of prices in the energy sector did not advance at the forecasted speed. The level of economic and industrial activity experienced an abrupt drop. In 1993, the indices for industrial output diminished to 54% of the 1989 level. The impact of these factors, as well as reasons of institutional and financial nature, retarded the implementation of the Plan of Action.

A more recent study by the World Bank, “Environmental Strategy of Bulgaria: An Update and Next Steps” (WB Report No. 13493/BUL December 1994) made an assessment of advances in the state of the environment in the country during the past four years of transition. Generally speaking, the objective data showed a tangible improvement in the environmental situation. In one half of the “hot spots” identified by the previous study, a steady trend towards reduction in major air pollutants was noted when compared to the 1989 data, although the environmental risk of sulfur dioxide, particulate matter (dust, ashes), organic substances, and other harmful pollutants were still present in some isolated points and regions. The quality of surface waters also improved somewhat. In 17 of the 22 surveyed riverbeds, pollution had dropped considerably in at least on one of the three baseline assessment criteria. The forecast data indicates that if the recorded rate of reduction of emissions in the atmosphere and in water is retained, by 2000 satisfactory quality levels would be achieved complying with international standards.

However, the analysis of the major factors for the formulation of a relatively optimistic environmental forecast reveals one of the paradoxes of the period of transition. The sharp drop of the economic activity in general, and in particular, in industrial and agricultural sectors in recent years has produced a positive impact on the quality of the environment. It should therefore be projected, that the economic recovery and eventual growth and development, might undermine the progress achieved in this sphere and lead to a backslide of environmental conditions to those seen at the end of the 1980's.

The World Bank study *Environment Sector in Bulgaria. The Challenge of Preparing for EU Accession* (March 2000) is also of particular value because it makes for the first time an attempt to assess the financial impact of the measures for improvement of the environmental indicators of the Bulgarian energy sector and their alignment to the EU standards on pricing for energy carriers. It underlines the fact that the energy industry is the biggest source of air pollution – sulphur dioxide (91%), nitrogen dioxide (37%), carbon dioxide (53%) and dust (45%)¹⁷. Estimates by the State Energy Agency show that the total investment cost of meeting the EU requirements for stationary sources of air pollution up to year 2010 will range between EUR 1.6-2.1 billion. These estimates include environmental and non-environmental costs for the rehabilitation of thermal power plants (400 MW) and the retirement/replacement of 600-900 MW thermal power plant at *Maritsa Iztok 1*¹⁸. These estimates do not take into account EU accession requirements on nuclear safety and closure of the older nuclear plants.

The objective of the study above was not to evaluate the impact of the reforms on the environmental indicators of the power sector. This issue was dealt with specifically in the *Study of the World Bank on the energy sector and the environment in Bulgaria*, the preliminary draft of which was presented to the Government in November 2000. The new report reviews two scenarios for development of the energy sector. The energy efficiency scenario builds on reduction of electricity consumption, diversification of fuels with an increased share of natural gas, and cogeneration. World Bank experts theorise that the introduction of a policy of demand-side management and diminishing of technological losses would lead to a drop in electricity demand.

The environmental scenario envisages reduction of CO₂ emissions through "green dispatching" (i.e. switching on the power generation plants that do not produce harmful emissions). It is pointed out that the operation of the nuclear units should not be extended beyond their designed service life. This scenario comprises recommendations to stop electricity exports and to review the investment program of NEC.

We note that the two recent studies had been produced somewhat *post factum*--after the agreement with the EU for pre-term decommissioning of units 1 and 2 of NPP *Kozloduy* had already been signed and the real restructuring of NEC had become a fact. A substantial weakness is that they have not been made public, probably because of concerns that the very large investment requirements disclosed in the studies, would act as a signal of the new, still higher social price of the reforms above that already declared by the Government.

8.2. International commitments of Bulgaria for GHG emissions mitigation

Bulgaria joined the Annex 1 countries that signed the Framework Convention on Climate Change (FCCC) in Rio and ratified the Convention in March 1995, thus making a commitment to keep its GHG emissions below those in the baseline year. Pursuant to article 4 of the FCCC, Bulgaria

¹⁷ Data on dust comes from MOEW (1997) and other pollutants from NSI (2000).

¹⁸ A more comprehensive assessment of the financial liabilities of Bulgaria regarding the reduction of emissions of CO₂, NO_x and particular matters that includes all sources of pollution estimates that Bulgaria will have to spend 2.3 billion Euro between 1998 and 2010 to meet its international obligations as per the CLTAP (BUL-108).

adopted 1988 as a baseline year under the protocol with a commitment period (2008-2012) of an 8% reduction, amounting in real terms to 626,025 thousands tons of CO₂ equivalent.

The main portion of GHG emissions in Bulgaria is comprised of the energy related CO₂ emissions. This share is projected to increase further if the energy intensive production pattern is not replaced by energy-efficient options. That is why the focus of GHG mitigation policies and measures in Bulgaria is on improving energy efficiency and thus diminishing GHG emissions (mainly CO₂ emissions) in the energy sector. The primary focus on the energy sector does not eliminate opportunities in other sectors of the national economy, like transport, industry, agriculture, construction, etc.

The share of Bulgaria in the global anthropogenic emissions is about 0.3-0.4%. If this indicator is analyzed, Bulgaria is far behind the world's largest CO₂ emitters. But when comparing the emissions per capita and emission per GDP, Bulgaria ranks among the great emitters. The inventory of GHG emissions in Bulgaria starts with 1988, which is the baseline year for implementation of the UN FCCC in Bulgaria. The relevant emission information for this year is given in the First National Communication. The Second National Communication developed the inventory by adding information on the emissions in 1994 and 1995, as well as updating the information for the previous years from 1990-95. The inventory results were obtained within the framework of the Bulgaria Country Study Project and the follow-up stage Support for National Action Plan (SNAP).

The overall emissions for 1988 and for the 1990-1997 period are given in Table 7.

Total anthropogenic GHG emissions in Bulgaria [Gg]

Table 7

Gas	1988	1990	1991	1992	1993	1994	1995	1996	1997
CO ₂	96878	85278	67020	61037	63257	60390	63109	60291	59217
CH ₄	1412.7	1420	1358	1250	1117	826	901	852.3	892.4
N ₂ O	30.8	29.6	23.2	19.1	17.5	17.7	20.6	20.5	21.2
NO _x	486.35	250.8	191.4	179.4	183.7	162.8	161.3	133.0	142.7
CO	826.59	951.8	738	755	767.7	707.3	760.6	726.9	622.7
NM VOC	132.3	104.9	58.3	62.4	67.9	65.6	73.4	68.0	72.0

Source: National Action Plan to Mitigate Climate Change

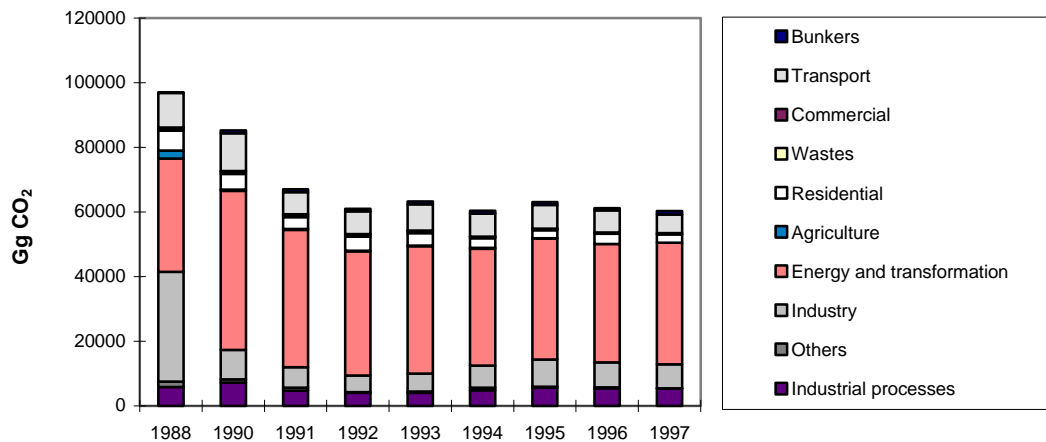
The analysis of the above table indicates a decrease in the fluctuations of the GHG emissions since 1992. In the period from 1992-97, the emissions stayed comparatively similar and lower compared to the previous few years.

A necessary remark concerning the GHG emissions from the energy sector is related to the changes in the power sector in Bulgaria. In the past the electric power system of Bulgaria used to have an electricity exchange with neighboring countries and the former Soviet Union. The total electricity exchange balance (import 4450 GWh, export 304 GWh) resulted in the import of 4146 GWh in 1988. In order to produce in its own plants the same quantity of electricity that was imported in 1988, the Bulgarian Electric Power System would have to consume more fossil fuel. The lowest cost production schedule that would allow these generating units to make up this,

deficit shows that an additional 6,321 Gg of CO₂ would have to be emitted. Fossil fuel combustion is the most important source of CO₂ in the country, accounting for more than 90% of the total CO₂ emissions. At the same time, energy production and transformation activities are the primary sources among the energy-related CO₂ emissions with a share of about 65-70%. This exceeds the total contribution of all other energy-related emissions.

The historical trends of CO₂ emissions and their allocation among stationary combustion, mobile combustion, industrial processes, agriculture and waste management in the period from 1988-97 are shown in Chart 3.

Chart 3. Historical trends of CO₂ emissions by sectors in Bulgaria



Source: National Action Plan to Mitigate Climate Change

Note: The 1988 data for industry comprise also the emissions from factory thermal power plants and boiler years. For the years after these sources are included in the data about the energy sector.

Stabilization of CO₂ emissions level was achieved in 1987 and 1988 due to the commissioning of a 1000 MW nuclear unit in NPP “Kozloduy”. In 1989 the first signs of an economic recession appeared, and a decrease in CO₂ emission occurred. It lasted until 1992, although the lowest level of GDP was achieved in 1994. From 1993 on, the CO₂ emission level was increasing due to the recovery of the national economy.

A long term forecast for GHGs emissions in Bulgaria has been developed in the framework of the National Action Plan to Mitigate Climate Change approved by the Government in June 2000. The forecast comprises measures to reduce GHG emission levels, proposed at the branch level. A methodological inter-linking and integration was made based on optimum technical and economic solutions. With due consideration of the fact that the energy sector is the largest source of GHGs in Bulgaria, a specific emphasis was laid on the development of energy supply and on energy consumption. The forecasts for GHG emissions are a direct function of the trajectories of change in primary and end-use energy and in the values of the macro-economic indicators of the national economy – GDP, demographic growth, growth rates of industrial production and the

non-material sectors, etc. Some of the demographic and macro-economic indicators taken into account in the drafting of the scenario are shown in Table 8.

Macro-economic indicators**Table 8.**

Indicators	%	1995	2000	2005	2010	2015	2020
Gross Domestic Product (GDP)	%	100	94	125	164	206	253
Production output index of:							
• Industry	%	100	93	131	167	207	253
• Construction	%	100	86	114	149	188	231
• Agriculture and forestry	%	100	91	123	165	211	263
• Transport	%	100	102	138	183	230	286

Source: National Action Plan to Mitigate Climate Change

With a view to reducing the degree of uncertainty, four different scenarios have been worked out in the course of forecasting: 1) *baseline scenario*; 2) *reduction of emissions from energy production*; 3) *increased energy efficiency*; and 4) *general reduction of emissions*. These scenarios ensure a corridor, limited by the forecast values of scenarios 1 and 4, within which the real change in GHG emissions is presumed to take place in the period up to the year 2020. Tables 9 and 10 show the forecast CO₂ emission levels according to scenarios 1 and 4.

CO₂ [Gg] emissions and sinks – Baseline scenario**Table 9.**

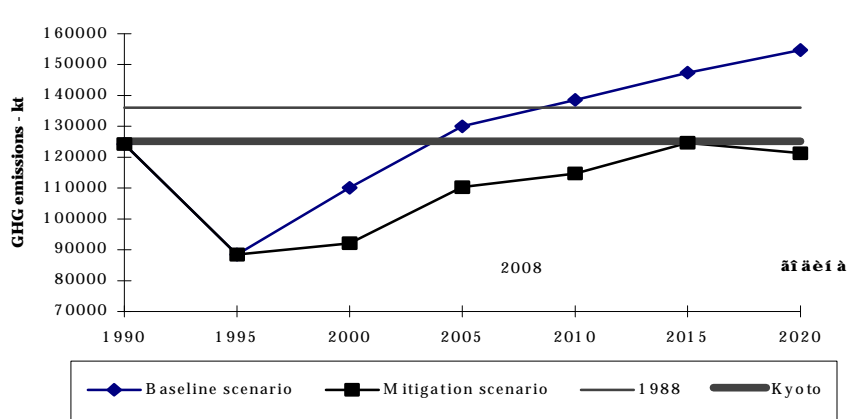
Sources and sinks	2000	2005	2010	2015	2020
Emissions and sinks total	67116	77043	82479	87594	91244
1. Energy	67118	76151	80418	84568	87650
A Combustion processes	67118	76151	80418	84568	87650
B Leaks	0	0	0	0	0
2. Industrial processes	6295	7108	8201	8992	9451
3. Solvents and others	0	0	0	0	0
4. Agriculture	0	0	0	0	0
5. Changes in land use and forestry	-7614	-7710	-7807	-7905	-8004
6. Waste	468	535	599	665	723
7. International road transit transport	849	959	1068	1274	1424
8. International bunkering	1142	1464	1625	2044	2428

Source: National Action Plan to Mitigate Climate Change

² absorption by forests.

This is an assumed average value based on the development of the forests that has been worked out as the most probable change in the balance of forest growth/clearing rate is expected after the restitution of forests and the new organization of forestry

The summary result of integration of the different measures into the various economic sectors, including the residential sector, may be identified as a reduction of the summary GHG emissions within the limits of 15 to 21% for the different forecast periods of the optimum scenario (i.e. the scenario with general reduction of emissions as compared to the baseline scenario). Chart 4 shows the forecast GHG emissions up to the year 2020 at the background of the country's commitments for the year 2000 (a level that is almost equal to that in 1988) and the first period under the Kyoto Protocol (2008-2012 – 8% reduction on 1988 emissions level).

Chart. 4. Forecast of the total GHG emission in Bulgaria by the year 2020

Source: National Action Plan to Mitigate Climate Change

The slow rate of rehabilitation in the Bulgarian economy and the deep structural changes in industry are apparent in on the level of GHG emissions. At this time, the data shows that Bulgaria is closer to the scenario of *general reduction of emission*, despite the fact that that only a small range of measures envisaged under the scenario has been implemented. It is assumed that in the coming years this trend will be maintained because the newly emerging private sector and the high prices of energy carriers will act as factors limiting energy consumption and promoting energy efficiency.

The priority importance assigned to the development of the energy sector does not mean that a reduction of the general GHG emissions in other sectors of the national economy (ie. industry, transport, construction, etc.) will be relegated to the background. On the contrary, a balanced development of both energy supply and energy demand will be sought with a view to achieving a solution that meets the long-term commitments of Bulgaria to reduce its GHG emissions.

9. THE ROLE OF NGOs IN THE IMPLEMENTATION OF POWER SECTOR REFORM

The reforms in the energy sector in Bulgaria may be said to be almost completely a product of the Government. In the initial stage of their design they consulted with the IMF, the World Bank and other donor organizations. During the final implementation stage, however, everything was in the hands of the State Agency for Energy and Energy Resources, and the other stakeholders were left in the dark. As it has been emphasized, the restructuring actions were not agreed even with the IMF. The syndicates and NGOs played an even smaller role in the design of the reforms. Their response to the little information that they did receive about the reforms was markedly negative. The syndicates insisted that a large share of the jobs in the energy sector did not comply with the hygiene and labor safety requirements. The second issue discussed at length by the syndicates referred to the huge losses in the distribution branch that, in their opinion, could not be covered in any way and would lead to the bankruptcy of the electricity distribution companies. According to officials from the syndicate *Podkrepa*, their calculations revealed that three more initiatives of the State Energy and Energy Resources Agency were not effective—the merger of TPP *Maritsa-Iztok 1* with the briquette factory in *Galabovo*; of TPP *Maritsa - 3* with *Marbas* Mines; and of TPP *Bobovdol* with *Bobovdol* Mines. In a special letter to the Parliament, the Prime Minister and the Deputy Prime Minister, the energy syndicates together said that the merger of companies with different production profiles would lead to the bankruptcy of the new structure. They considered that the President of the State Energy and Energy Resources Agency intentionally would mislead the Government and society about the applicability and effectiveness of the selected model for the restructuring of the NEC. Mr. Shilyashki was further accused of having intentionally concealed the estimates about the negative impacts on the sector proper and for the entire country pending the inability of the energy companies to function properly once his ideas were implemented.

The sharp negative reaction of the syndicates on the occasion of the restructuring of NEC did not go beyond the horizon of their own interests. Under the pretext of defending public interests they have been trying to retain as many of their privileges as they can—privileges that were quite substantial when compared to other sectors. The energy sector was the one that suffered least from the transition to market economy and along with the financial sector has been able to provide in recent years the highest salaries nation-wide—almost two times the national average. Furthermore, those employed in the energy sector were accustomed to excessive personnel benefits including inexpensive summer and winter holidays in some of the most exclusive Bulgarian resorts. Restructuring of NEC meant that this rich material stock would be privatised at the fastest rate, and in actual fact, it would have no real owner. Loss of privileges and the forthcoming unavoidable dismissals of the already inflated administrative and technical staffs were a threat to the syndicates.

Civic organizations, such as the Union of Consumers in Bulgaria and other NGOs defending the interests of the citizens during the transition to market economy, stood aside in the debates. One explanation for this may be the fact that the major issue of further increases in electricity and heat prices for households had been constantly postponed to an indefinite point in the future. They were simply incapable of formulating a standpoint from which to attack the reforms.

In Bulgaria there are more than 20 NGOs active in the energy efficiency and environmental fields. Most of them have been created in the framework of international technical assistance programs. Their activity is primarily centered on rendering support to municipalities that have expressed

marked interest in collaborating with the NGO community. The Government makes a limited use of their capacity and quite often manifests complete lack of interest. NGOs were involved on a higher degree in the capacity of providing expertise during the drafting stage of the Law on Energy and Energy Efficiency. It is considered that they have no direct role to play in the process of implementation of the power sector reforms.

10. PECULIARITY OF POWER SECTOR REFORM IN BULGARIA

The power sector reform was viewed by Bulgarian society as an indispensable action and used to enjoy considerable public confidence. The gradual disruption of the trade and economic relations with Russia and above all the termination of the Yambourg Agreement for the supply of cheap Russian natural gas resulted in general increase of the prices of energy. There was an evident need for concrete action to improve the sector's efficiency performance. The latter was considered also to be important with a view to the European orientation of the state and the will for integration and harmonization of the Bulgarian energy system to the European one. Several strategic documents were developed to address this: a Strategy for the Development of the Energy Sector (1996) and a National Strategy for Development of Energy and Energy Efficiency until 2010 (1999). They outline the estimates for the development of the sector under market-based economy. The parameters of the reform were specified to a higher extent in the 3-year Action Plan for the Energy Sector (1998), elaborated as a component part of the 3-year Agreement with the IMF in support of reforms in Bulgaria. The Agreement with the IMF had a decisive importance for the financial stabilization of the country after the crisis at the end of 1996 and the beginning of 1997. The energy sector reform was already considered to be instrumental for the resolution of problems not only within the sector, but also on a macro-economic level. In actual fact the reform was pushed forward by the general crisis of the Bulgarian economy and it was viewed as a means to overcoming the crisis.

Parallel to the creation of the strategic documents related to the energy sector reform, further efforts were made to develop a new legislative framework as a legal basis for restructuring, privatization and introducing market principles in the sector. For the first time a law on energy efficiency had been drafted with the objective of laying a legal foundation for this new type of activity in Bulgaria. Low energy efficiency was a grave problem for the economy as it diminished the competitive capacity of its products. A wide range of experts from almost all national institutions related to the sector in one way or another were involved in the drafting of these documents. Broad use was made of best practices abroad. The different versions were released for public discussion in the specialized publications and in the media. The goal-oriented efforts finally led to the design of several versions of the draft law by different teams. They were submitted to the Government to aid in drafting a proposal for the Legal Commission of the National Assembly. At that point, the experts of the Government and the State Energy and Energy Resources Agency (Committee of Energy) had the final say. They finally decided to combine the draft laws on energy and energy efficiency into a joint Energy and Energy Efficiency Act that was passed on July 2, 1999. The decision to incorporate the draft laws was taken primarily to save time in the parliamentary procedure. The achievement of the Energy and Energy Efficiency Act was that it provided regulation of the market mechanisms in the energy supply and energy distribution sectors by laying the foundation for legally binding policy for improved energy efficiency. Nevertheless, it does not provide adequate conditions for the promotion of competition, for the attraction of foreign investments, nor the success of transition to a market-based economy. It further creates a certain impression of an attempt to cast an air of legitimacy over the existing structure in the energy sector rather than to provide for real restructuring of the sector. The Act comprises general and specific sections regulating the operation of the subsectors

of power generation, heat and gas supply, as well as the issues related to energy efficiency. The provisions were left to general concerning price regulation, licensing, purchase and sales of electricity and were supposed to be detailed further in by-laws. The SEERA and the Commission of Energy Regulation had to design more than 20 ordinances to be approved by the Government. In this way the Government would have secured a significant future role in the management of the sector without limitations and control on the part of the National Assembly. Regretfully, more than one half of the envisaged ordinances have not been approved as yet.

The real implementation of the power sector reform started in May 2000 following a decision by the Government and despite the objections of the IMF, the World Bank and the EBRD. In actual fact, the requirements of the international financing institutions with respect to the existence of an approved regulatory framework and market-based prices for electricity and heat have not been met. Faced with *fait accompli*, the IMF and the World Bank, who acted as the chief advisors in the process of development of the model of the reform, approved the actions of the Government. Probably, the comprehension that a imperfect start is better than no reform at all has acted as the driving force.

What is clearly evident in the design and implementation of the power sector reforms in Bulgaria is the gradual shrinkage of the circle of institutions and experts that have the right to opinions or influence on it. Finally, it turned out that even the international financing institutions, which have been providing financial support for the reforms from the very beginning, have been discarded. The final decision to launch the reform was taken by the Prime Minister and the President of the SEERA. This course of development created an atmosphere of a lack of trust in the reform on the part of both the international financing institutions and the general public. By this act the Government made a unilateral national and international commitment that it had to defend in practice. This is one more example of the insufficient transparency in the implementation of reforms that Bulgarian political forces make broad use of, irrespective of the political party to which they belong.

The hurried actions of the Government may hardly be explained to an unbiased observer. The only obvious fact is that this was the most appropriate time of the year for starting a reform of this kind. A delay for one more year would mean a number of challenges for its implementation. Parliamentary elections were scheduled for June 2001. Provided even that the victory of the current UDF Government was guaranteed, formal procedures in June and July for the composition of the new Government and its approval by the National Assembly would caused further delays to implementation. This means that the most appropriate season for a reform of the energy sector, when the demand is the lowest, would overlap with the busiest political season—elections. Any responsible political party would hardly resort to a reform in the energy sector during the elections. This would have automatically resulted in postponement of the reform for one more year.

The evolution of the processes after the actual start of the reform shows that the political motives for its launching have overweight the economic considerations. As yet a number of regulations that have to be approved before the end of this year are not yet in place. Despite the more favorable conditions for privatization, created with the establishment of seven independent power distribution companies and several independent power-generation joint-stock companies, registered under the Law on Commerce, no fresh privatization deals have been concluded. There is no information about growing interest in the Bulgarian energy sector among foreign investors.

This is easy to explain, taking into account the incomplete regulatory framework for business in the sector. Stable pace is noted only in the process of privatization of small HPPs that evolved smoothly even prior to the reform. In this case, however, the stake is on small investments and firm legal guarantees are available, so that the single buyer would prefer to purchase their energy output because it has the advantage of being produced from renewable energy sources, i.e. at minimum risk.

The SEERA retains its leading role in the operative management of the sector and in the implementation of its investment program. Despite the registration of the power generation plants and power distribution companies as independent legal entities, in practice the rights of ownership of the capital are performed by the President of the SEERA on behalf of the state and he/she has the final say on any move on their part.

The State Commission on Energy Regulation, that was supposed to play an important role in the process of formation of electricity prices and to supervise NEC operations in its single buyer role, has not yet assumed its appropriate position, although the necessary funding has already been procured. The World Bank insisted on at least one more year of transition after the complex approval of the regulatory framework and the start of the reform. This year will serve to test all rules in operation. There is little probability that this requirement will be met and therefore the World Bank recommended that the NEC should refrain from signing contracts for purchase and sales of electricity of more than 1-year validity during the preceding year. In actual fact, however, the Government had already signed long-term contracts for purchase of electricity from Entergy and AES (3C) and for power export to Turkey. The Commission for Energy Regulation will most probably formally endorse these transactions and will place the energy market actors in an unequitable position at the very start of the commercial operations.

In Bulgaria there are technical conditions for the introduction of market-based schemes in the power sector, for instance free power market. In this case all power generation plants whose production costs are above the market price levels will have to exit the market and in this way the system itself will be optimized. This did not happen in practice because the single buyer model was chosen. The state, represented by NEC, has the sole rights to export electricity, maintains the domestic balance of the country by exporting cheaper power in ever growing quantities—(1998) Turkey 3.5 cents/kWh, (2000) Yugoslavia 3.05 cents/kWh, Greece 3.0/kWh, Bulgarian industry itself pays 4.0 cents/kWh and households—3.5 cents/kWh. There is justified concern that Bulgarian consumers subsidize foreign economies. Under these circumstances the Government may hardly insist on increases in the electricity price for households considering the potential political price of this action.

Power export has, however, some positive aspects for Bulgaria as well. It helps retain the workload in the energy sector and its potential to respond to increased local demand if the national economy begins to recover. One should take into consideration, however, that the deep structural changes in Bulgarian industry in the past 10 years would undermine significantly its power demand in the near and more distant future, even provided the national economy recovered completely. Energy-intensive sectors like metallurgy, machine tools engineering and chemical industry will never attain their pre-1989 level because of the changes in the markets for their production and the world market developments. Although the closure of obsolete energy capacities with high production costs would require increased investments, it is indispensable when considering electricity prices. The closure of these inefficient capacities will help reduce the

pressure caused by the EU for pre-term decommissioning of the small nuclear units of *Kozloduy* NPP. The more energy Bulgaria exports to the competitive European market, the stronger the political pressure on Bulgaria to resign of its nuclear power sector that turns out the cheapest energy.

The social impact of the power sector reform has never been the subject of specific studies. The social burden of the decisions made is usually judged by the feedback – the end-users' response. Unfortunately, the problem faced by Bulgarian end-users is related not only to the high cost of energy, but also to the low income of their households. In the majority of cases they have no choice in the mode of their energy consumption. Low-income households in Bulgaria, which account for 38% of the total, spend 14% of their income on energy. These income levels are below the officially recognized UN poverty threshold of USD 2/day.

The problem with the district heating has particularly disturbing social overtones. One half of the subscribers of district heating have resigned from this service because of inability to pay for it. A large proportion of the DH end-users is concentrated in the large housing estates, constructed during socialist rule under a large-panel technology for which significant heat losses are typical. On the other hand there are the modern air-conditioning technologies that successfully compete with the district heating in price because of their better flexibility. The increased electricity consumption of the latter, however, will stumble over the limited capacity of the low-tension power grid and the in-house systems that have not been designed for such loads. Studies of the World Bank demonstrated that upgrading of the district heating systems is the most efficient option for diminishing of the energy costs of households compared to the use of electricity or gas supply as alternative sources for space heating.

The agreed World Bank loan for modernization of the DH systems in Sofia and Pernik (supplying about 80% of all end-users of this service nationwide) has been at the disposal of the Bulgarian Government since 1999, however its application is being postponed. The reason put forward most frequently by the Government is the required state guarantee on it (for a period of 15 years) and the probability of privatization of these companies in the near future. Representatives of the World Bank shared their concern that if this loan is not utilized by the end of this year the allocated money might be re-directed to other projects. The probability of making use of this loan is diminishing, so that the social burden of the reform will have to be entirely taken up the inhabitants.

The reform in the Bulgarian power sector is already a fact. The success of the winter season of the year 2000 only demonstrated that things are not becoming worse with the start of the reform. Arguments should be sought in the accelerated privatization and the entry of strategic investors on the Bulgarian market. Without their presence in the country, it is obvious that we shall not be able to make plans for the rehabilitation of the power generation capacities and improvement of energy efficiency either in the near or in more distant future.

CHRONOLOGY OF EVENTS

The chronology of events covers the major points of time and regulatory acts related to the restructuring and privatization of the Bulgarian energy sector.

Date	Event	Source
December 1991	The European Energy Chart approved in The Hague	Signed by Bulgaria on 17 December 1991
October 1991	Law on Protection of the Environment	(SG, Issue 86 of 18 October 1991)
November 1991	Establishment of the Committee of Energy	of Ministers (Promulgated in SG Issue 96 of 22 November 1991)
November 1991	Establishment of the National Electric Company (NEC)	Decree No46 of 7 November 1991 of the Council of Ministers
May 1992	Law on Transformation and Privatization of State and Municipal Enterprises.	(Promulgated in SG Issue 38 of 8 May 1992)
April 1993	Interministerial Commission on State Energy Regulation	Decision of the Council of Minister
March 1995	Law on Ratification of UNFCCC	(Promulgated in SG, Issue 28 of 28 March 1995)
September 1995	Law on Prices	SG, Issue 87 of 29 September 1995
October 1995	Regulation for Application of the Law on Prices, on Setting of Fixed Prices for Electricity; and Ordinance for Application of Fixed Electricity Prices and Setting up of Fixed Prices for District Heating, etc.	Decree No194 of 06 October 1995 of the Council of Ministers
September 1996	Creation of Ministry of Energy and Energy Resources (Closing down of the Committee of Energy)	of Ministers of 5 September 1996 (SG, Issue.78 of 13 September 1996)
November 1996	Ratification of the Convention on Nuclear Safety by the National Assembly	(SG Issue 93 of 1996)
May 1997	Three Year Agreement with the IMF creating conditions for long term financial stabilization and economic growth	(SG Issue 38 of 13.05.1997)
May 1997	Creation of Committee of Energy. (Closing down of the Ministry of Energy)	(SG ,Issue 43 of 30 May 1997)
May 1997	Creation of National Agency for Energy Efficiency	Ministers of 7 May 1997

		of Ministers of 10 September 1999 (SG, Issue 82 of 17 September 1999)
September 1999	Decree ¹ 180 of the Council of Ministers on the Transformation of the National Agency for Energy Efficiency into State Agency for Energy Efficiency.	of Ministers of 10 September 1999 (SG, Issue 82 of 17 September 1999)
September 1999	Decree ¹ 181 of the Council of Ministers on the creation of a State Commission on Energy Regulation.	of Ministers of 10 September 1999 (SG, Issue 84 of 24 September 1999)
November 1999	Decision of the National Assembly concerning negotiations with the European Union on setting deadlines for stopping and decommissioning of Units 1, 2, 3 and 4 of <i>Kozloduy</i> NPP.	Decision of the National Assembly (SG, Issue 97 of 9 November 1999)
April 2000	Restructuring of the National Electric Company. Registration of independent electricity producers as a Sole-Proprietor Shareholding Companies. Registration of 7 independent power distribution companies,	Order No. SG-153 of 24 April 2000
May 2000	Ordinance on the formation and application of electricity prices and tariffs. In force as of 1 January 2002	(SG, Issue 37 of 5 May 2000)

May 2000	Decree on approval of the Ordinance for connecting producers and consumers to the transportation and distribution networks.	Decree ¹ 76 of 9 May 2000. (SG, Issue 40 of 16 May 2000)
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