ENERGY STRATEGY OF BULGARIA

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IV. INTRODUCTION

IV.1 Energy sector status: The reform is to be implemented

In the energy sector, Bulgaria is confronted with a series of major challenges stemming from both objective causes and circumstances and the delay in carrying out the reforms during the years of transition.

Bulgaria is heavily dependent on energy as it imports more than 70% of its primary energy sources. The only significant domestic energy source is low-quality lignite coal with high content of sulphur. Bulgaria is mainly reliant on energy sources from Russia: oil, natural gas, high-quality coal and nuclear fuel. This structure of the energy balance causes concern in terms of the security of energy supply. The European Union whose dependence on imports is less (about 40%, but with a trend towards increasing this share up to 70% in 20 years' time) is making strenuous efforts in two key areas:

- Reduction in specific energy intensity per GDP unit in economy; and
- Utilization of local renewable energy sources (RES).

Along with that, a significant potential for improving the security of supply lies in the growing mutual dependence in the context of using Bulgaria's key geographic location for the increasing transit of Russian and Asian resources (natural gas, oil and electricity) to the west and south, as well as of the opportunities for diversification of energy sources and suppliers.

Despite its scarce domestic energy potential, Bulgaria's economy differs from other economies (both developed and Central and Eastern European economies in transition) in what can be called energy extravagance. That is why the key strategic objective of the economy and, more specifically, of the energy sector should be rational use of energy sources. This objective is evident and has always been declared as a priority, even back in the times of planned economy. However, the absence of market mechanisms has not made it possible so far to achieve marked results, although significant scientific and technical potential has been mobilized for the attainment of this objective. Energy consumption and energy balance can only be streamlined under competitive economy and energy market. Endorsing this vision, the Government in its *Program for Governance* has declared the establishment of a competitive energy market as a top priority for the energy sector.

However, the establishment of an up-to-date and market-oriented energy sector calls for a series of prerequisites that have been missing up to this date, namely:

- Normalization of energy prices in line with the justified full economic costs and phasing out of the subsidies for generators;
- Financial recovering and establishment of energy companies operating on a commercial basis
- Properly functioning regulatory authorities and mechanisms
- Market rules and structures
- Appropriate legal framework.

Integrated actions need to be undertaken in the above areas in order to compensate for the backlog, or, to put it briefly, the reform in the energy sector **is yet to be implemented**.

IV.2 Strategy of 1999

The National Strategy for Energy Sector and Energy Efficiency Development till 2010, adopted by the Council of Ministers and endorsed in principle by the National Assembly in 1999, sets long-term universal objectives reflecting the needs of the country for secure energy supply, energy efficiency, environmental protection and nuclear safety.

The means to achieve these ends, as they are outlined in the Strategy, are also universally accepted: a legal framework in line with the *acquis communautaire*, orientation towards market principles, competition and privatization.

The policy thus declared, however, has failed to yield the expected results for a series of reasons which in general could be defined as inconsistency between objectives and actions.

It was expected that the Energy and Energy Efficiency Act endorsed by the National Assembly in 1999 would bring in clarity and institutional division between the key functions: assets management, formulation of the government policy, regulation and operation. All that, as well as the expectations for compliance with the European policy principles, has not been implemented. The Act preserved the government control and planning of investments, failed to clearly distinguish the functions of the planning and regulatory bodies, leaving the latter in a weak position, failed to resolve the conflict between the ownership and the energy policy, introduced a non-market single-buyer model in the electricity and gas sectors.

In 2000, organizational changes were made through which the vertically integrated National Electric Company (NEK) was unbundled and 15 autonomous generating, transmission and distributing companies were set up. This change, made before the adoption of the key documents regulating the relations between and among electric companies, is subject to review as it is not in line with the trend for the increasing integration of the European electric companies, which is currently taking place in the context of the opening of the European electricity market and regionalization of the trade in electricity. The changes made were meant to become a step towards commercialization of the energy sector and creation of a competitive environment. Nonetheless, the delay in the development of trade rules has led to the replacement of the organizational with an administrative monopoly.

Through the establishment of the State Energy Regulation Commission (SERC) in 1999, the requirements of the EU *Internal Electricity Market* Directive 96/92/EC for the establishment of an independent regulatory body were met just formally. In practice, SERC was isolated from the energy management processes, which were entirely centralized within the State Agency for Energy and Energy Sources.

The commitment to normalize prices and to discontinue subsidies was replaced with the "freezing" of prices, postponement of unpopular pricing decisions, non-transparent forms of subsidizing, and rather than achieving financial recovery and setting up of energy companies operating on a commercial basis, all that resulted in a financial collapse of district heating companies and the coal mining industry. It should be pointed out that the current status of these companies is a result of the inconsistent pricing policy pursued by

almost all the Bulgarian governments after 1991. The pricing policy was mixed with political considerations, while the social policy was too sluggish to succeed in the alleviation of the impact of price increases.

Despite the widely-recognized rule, stemming from the experience of those countries where the energy sector reforms have already been implemented, that such reforms can only be successful if the creation of a stable legal, regulatory and institutional framework precedes the launch of restructuring and privatization, the sequence chosen in Bulgaria was exactly the opposite: the organizational restructuring and privatization took place before the establishment of a regulatory body and introduction of regulatory and market rules and structures.

IV.3 New energy strategy

To fulfill the task of the implementation of rapid reforms in the energy sector, it is necessary to develop a new energy strategy that will be capable of reflecting the changed environment and the new vision in the following aspects:

- Bulgaria's energy sector is transforming from a closed system into a part of the dynamically integrating energy market
- The key measure will be the competitiveness of Bulgaria's energy on the regional Balkan market, as well as on the future integrated European energy market
- The efforts aimed at specific, reliable and environmentally-friendly energy supply will be successful only if combined with measures for the utilization of the huge potential for energy efficiency
- The regulatory body should take its due dominating position among the energy institutions and assume an active role in the development and implementation of regulatory and market rules and structures.

The former practice of breaking laws and breaching the commitments made by the government, as well as of making discretionary decisions incompatible with economic expedience, sharply increased the political risk and impeded private investments in the energy sector.

For this reason, the government intervention will be limited to the task of creating transparent and unbiased rules encouraging commercial activity and safeguarding public interests, while investment decisions will be determined by the expected demand and investors will be those to shoulder the large share of market risks.

At the same time, the experience worldwide has demonstrated the need for careful drafting of laws and other regulations, as well as for pursuance of a well-defined strategy for privatization and attraction of new investments. The failure to meet the basic rule prescribing that privatization should be done under clear-cut, pre-set rules can lead to severe backlash. The wrong combination of market mechanisms and price control can also have a harmful effect.

V. OVERALL ENERGY POLICY

The efficient functioning of the energy sector is vital for any economy. Energy is present as an essential component in any end product of industry or services. For this reason, the

development and implementation of a strategy for economically viable, secure and environmentally-friendly energy supply is a fundamental prerequisite for the attainment of national objectives aimed at a significant and sustainable economic growth and eradication of poverty. Failure to undertake timely actions in this sector leads to the risk of turning it into a heavy burden for the economy as a whole.

V.1 Through competitive energy to competitive economy

For the past decade, an essential reappraisal of the energy policy has been taking place, more specifically, a review of the government role in the provision of energy services. Radical institutional, regulatory and structural reforms are being carried out all over the world with the main goal of deregulation (replacement of regulation with competition) that will improve industrial efficiency and quality of services. The countries where such reforms have been implemented are reaping significant benefits – both economic (cost minimization) and social (shift of the savings to end prices). At the same time, the energy sector liberalization (expansion and gradual opening of the market for a growing number of consumers) is an integral part of the overall philosophy of modernization of national economies and free movement of goods and services.

The evolvement of an increasingly integrated European energy market makes it necessary to rethink the national energy strategies that, to a large extent, are losing their traditional borders and are becoming part of a common European strategy.

Taking into account these trends, as well as the requirements of the European directives, it is envisaged to undertake a set of actions aiming to establish and develop an internal energy market in Bulgaria. These actions should meet the following basic requirements:

- They should be introduced and implemented gradually so that both energy companies and consumers could adjust to the changing environment
- Their pace should be higher than that of the EU Member States, due to the fact that the different degree of the development of national energy markets represents a major obstacle to the genuine equality of economic agents on the single energy market of the European Union.

V.2 Reforms – attracting investments – privatization

1. Reforms

The energy sector reforms in the countries with properly functioning market economies began in mid-90-s and consisted mainly of deregulation through creation of a competitive environment and ensuing changes in the behavior of private or state-owned energy companies formerly regulated by independent regulatory bodies.

The Bulgarian energy sector is not ready for deregulation because the introduction of economic regulation as a form of management is at an embryonic stage. Moreover, a large number of energy enterprises are still financially unstable, energy prices for household consumers are still being subsidized, and transfer of property has not been performed. **This situation provides Bulgaria with a unique strategic chance: to compensate for the delay in the reforms within the span of several years and to reach such a degree of the development of market relations in the energy sector that**

would be comparable to that of the EU Member States. To this end, concurrent actions should be undertaken, mainly in the following areas:

- ♪ financial restructuring: establishment of financially viable commercialized companies
- ♪ institutional changes: enhancement of the role, autonomy and influence of the regulatory body (SERC)
- ♪ commercial restructuring: transition from administration to regulation and introduction of clear regulatory rules for the market players
- ♪ deregulation: introduction of clear and sustainable market rules and a clear schedule for the opening of the internal and external market to competition, including delegation to SERC of the powers to enforce market rules
- ♪ legal changes: discussion and adoption of a new energy law which would ensure a legal framework for the successful implementation of the above areas of the reform
- ♪ privatization: transfer of ownership aiming to attract investments and to bring the management practice in line with up-to-date standards.

2. Role of the regulatory body

It is the regulatory body to whom the crucial role belongs in the implementation of reforms in the energy sector. The widespread view that full liberalization will take place in the nearest future, which is construed mainly as *laissez-faire* in the energy pricing, is based on insufficient awareness. With the establishment of a wholesale electricity and natural gas markets, the consumers of medium and low voltage will continue purchasing energy from distributing companies that by virtue of their recognized right to monopoly in serving a designated territory will remain subject to regulatory control. For the very same reason – presence of monopoly – transmission prices will remain regulated rather than market-based and the transmission service will be provided only by natural monopolies, namely by electric and gas transmission companies (the National Electric Company and *Bulgargas*). Even with the introduction of a retail market, where customers will have the opportunity to choose their suppliers, the price for energy will include a regulated component related to the costs incurred by the transmission company. The regulatory body will play a particularly important role in the development and implementation of the future market model, as it will be the body formulating market and pricing rules for the balancing market. The methods of regulation will also become more complex and the impact of regulatory decisions more significant at the stage of the forthcoming privatization in the sector. Therefore, putting market structures in place will not diminish the significance and functions of the regulatory body, but will rather lead to the transformation of their type.

3. Investments

Similarly to other Central and Eastern European countries in transition, Bulgaria needs large-scale investments in the energy sector, which would make it possible to implement the necessary reconstruction, replacement, upgrading and expansion of the existing capacities and the construction of new capacities, thus compensating for the inertia typical of the investment policy for the past 12 years.

The reformed energy sector is capable of attracting a sustainable flow of significant foreign capitals, which will be mainly relied upon because of the limited financial capacity within the country.

As the investments will have their bearing on the costs and, respectively, on the energy prices, the main challenge for the government in the following several years will be to avoid focusing on attracting investments for the sake of its own (as it was typical of the previous strategy), but to provide, instead, the appropriate sequence of those investments, making sure that bigger projects will be implemented only after a stable legal and regulatory environment and market structures are put in place. Thus it will become possible to achieve the following:

- Reduction in capital costs and in the rate of return required by investors
- Allocating in a balanced manner the market and price risks between the government and the investors
- Cessation of the practice of signing long-term power purchase agreements that represent a major barrier to the introduction of an integrated competitive energy market and concentrate the burden of the prevailing risks mainly on the government, respectively on the end users.

The limited investment capacity of the state (direct financing, revenues from privatization of energy assets or loan guarantees) will be used in the next several years for projects and areas of activity where economic benefits are significant, but the existing legal, regulatory or other barriers are still making such projects less attractive for foreign investors at this transition stage. This applies, for example, to energy efficiency projects where changes in the tax law are needed to create an environment favorable for companies providing energy efficiency services.

4. Privatization

As it was pointed out, the energy sector needs significant investments for the improvement of the existing infrastructure whose current status is a result of low levels of investments during the past decade. Privatization represents a powerful instrument through which this goal can be achieved. For this reason, the government intends to step up to the maximum the pace of the privatization processes in all energy sectors.

In the main energy sectors – electricity sector, heat supply, gas supply and coal mining – partial privatization has been carried out, mainly of companies providing secondary or ancillary activities. The total number of commercial companies is 104, out of which 77 are yet to be privatized. Earlier this year the *Maritza-East 3* TPP (840 MW) was established and granted a license as a joint venture with the majority stake belonging to the US company *Entergy,* which represents the first large-scale privatization deal in the energy sector. The joint venture has entered into a fifteen-year power purchase agreement with NEK that performs the functions of a Single Buyer.

The experience of other countries demonstrates that privatization in the energy sector is most successful when it is carried out after the creation of an appropriate legal and regulatory environment and introduction of market structures and rules that are stable and clear. Successfully implemented reforms are a mechanism to gain confidence of foreign investors and to ensure the needed especially large investments in energy at low risk premiums and under diversified risk. However, due to the significant delay in the energy

sector reforms, these processes need to be carried out more or less concurrently and, besides, the approach adopted for and applied to the privatization process will be quite cautious, analogous to that applied to the investment process.

In contrast to other European countries, Bulgaria has made privatization possible prior to the creation of the necessary reformed environment .

In the privatization process, the following goals will be pursued:

- Attraction of the investments necessary for ensuring efficient, secure and environmentally-friendly energy supply
- Introduction of up-to-date management systems and successful integration of privatized companies into the evolving electricity market through attraction of strategic investors
- Attainment of long-term competitiveness of the Bulgarian energy
- Generation of revenues for budgetary needs.

Maximization of each individual goal is not feasible. It is necessary to seek a balance between and among them. Hence, in the context of an evolving integrated energy market, the goal of budget revenue generation through setting high selling prices for assets will be subordinated to the long-term objective of attaining competitive internal prices for energy. In this vein, it is envisaged to use also part of the revenues generated through privatization of energy assets for the financing of energy projects with a considerable economic and social impact.

Successful privatization will to a great extent depend on the preparation of the enterprises for privatization. Such preparation will be carried out jointly with the Ministry of Energy and Energy Resources in its capacity of the acting owner of state-owned enterprises, the State Energy Regulation Commission as a regulatory body, the Ministry of Economy and the Privatization Agency and will be focusing on the following aspects:

- Financial consolidation
- International financial audit
- Consulting assistance
- Business environment (regulatory and market rules).

The former privatization practice will be thoroughly revised along the following lines:

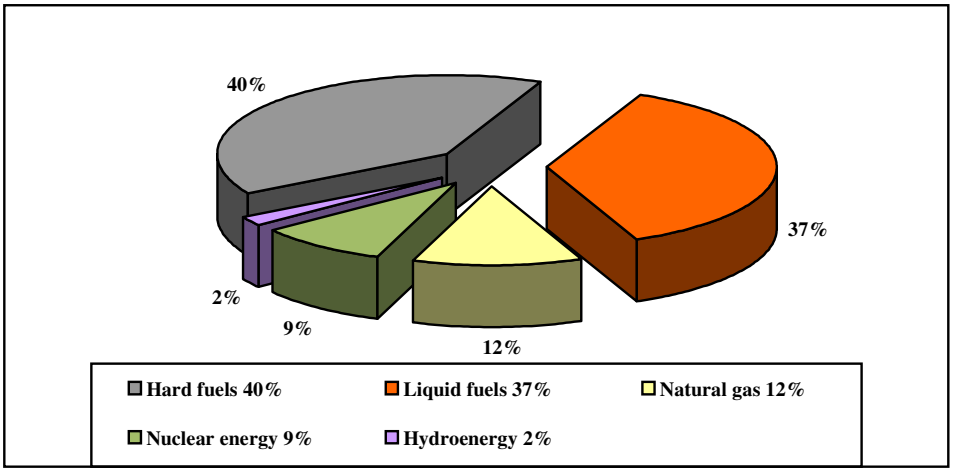
- The reform and privatization will be carried out under a well-defined chronological sequence and only after the creation of prerequisites for successful deals that will preserve the company's type of business
- The sales will be made in an open and fair process; the practice of the establishment of joint ventures will be used solely for the building of managerial capacity needed for the operation in a market environment
- Privatization of generating enterprises will be carried out after the approval of an indicative market structure under which they will operate and of a schedule for opening of the internal and external energy market
- Due to the complex nature of the transformation process and the significance of electricity for the national economy, a separate strategy for the privatization

of the energy sector will be developed in a timely fashion and submitted by the Council of Ministers to the National Assembly for endorsement.

V.3 Security of energy supply

Bulgaria's primary energy balance is well structured in terms of diversity of the energy sources used, but at the same time there is heavy reliance on import:

The primary energy balance structure (70% import)



The security of energy supply does not imply the maximum use of local resources or minimum import, but decreasing the risks in the production and supply through diversification of energy sources by type and location and taking into consideration the long-term regional and global trends on the energy sources market.

Based on this, attention will be focused on the following:

- Establishment of long-term cooperation with Russia (1/3 of the world reserves) for the increased transit of Russian natural gas via Bulgaria as a means to achieve more beneficial and guaranteed price conditions
- Utilization of Bulgaria's geographic location for the sake of increased security of supply of energy sources. Bulgaria is situated at a crossroads of Europe through which transit gas pipelines are laid from Russia to the south and which connects Greece and Turkey with the European electric grid. If in the future gas pipelines are laid from Central Asia to Bulgaria and, farther, to Central Europe, this country can turn into an alternative East-West corridor diversifying the reliance of Western Europe on imported natural gas. Nonetheless, due consideration should be given to the fact that the combination of the natural gas price indexing and the so-called oil indices, along with supplies contracted under a take-or-pay condition turn the natural gas market into a market of limited competition and security
- Opening of the electricity and natural gas markets for import, which will make it possible for Bulgarian consumers to benefit both from the agreed competitive prices and also from the compliance with European technical

standards guaranteed by the importers. The intentions declared in the strategy of 1999 to preserve the dominating role of Bulgaria in the export activities in the region, in the context of limited and monopolized import represent a contradiction to the principle of reciprocity enshrined in the Directive and should be revised timely and in the consumers' best interest

- The well-developed energy infrastructure and favorable geographic location are conducive to Bulgaria's positioning as a dispatching and market center on the Balkans in the context of the forthcoming emergence of a regional energy market.

Unlike in many EU Member States and applicant countries where the local coal-mining industry has no perspectives in economic terms, in Bulgaria the **local lignite coal has a strong position as a resource for electricity generation.** This, combined with its importance for the security of energy supply, determines the significant role of the *Maritza-East* complex of mines and power plants in the future development of the energy sector.

Renewable energy sources (RES) represent another local source that can help reduce reliance on import, improve the security of energy supply, meet the commitments to protect the environment and contribute to employment generation. Moreover, much of the RES (biomass, small hydropower plants, geothermal energy, etc.) have a significant resource, technical and economic potential. Nevertheless, being used irregularly and insufficiently, their share in the total gross energy consumption is negligible. A serious obstacle to their development is the higher cost of initial investments. To overcome the existing barriers, an Action Plan will be drawn up that will include an integrated approach and instruments for the promotion of RES, as well as a campaign for their accelerated development.

The improvement of the security on the supply side calls for investments in the reduction in transmission, distribution and end losses of electricity and heat, as well as for better efficiency and extended life cycle of the key power plants and thermal power plants. These projects are part of the investment and privatization priorities of the government.

Efforts to ensure security of supply can be successful only if they are accompanied by an energy-saving policy. And while on the supply side Bulgaria's room for maneuver is limited, the potential for energy saving is quite high. Efficient instruments will be introduced to utilize this potential. This will have a beneficial effect not only on the security of energy supply, but also on Bulgaria's foreign trade balance in which the import of energy sources amounts to 27%.

V.4 Energy efficiency: reduction in energy intensity

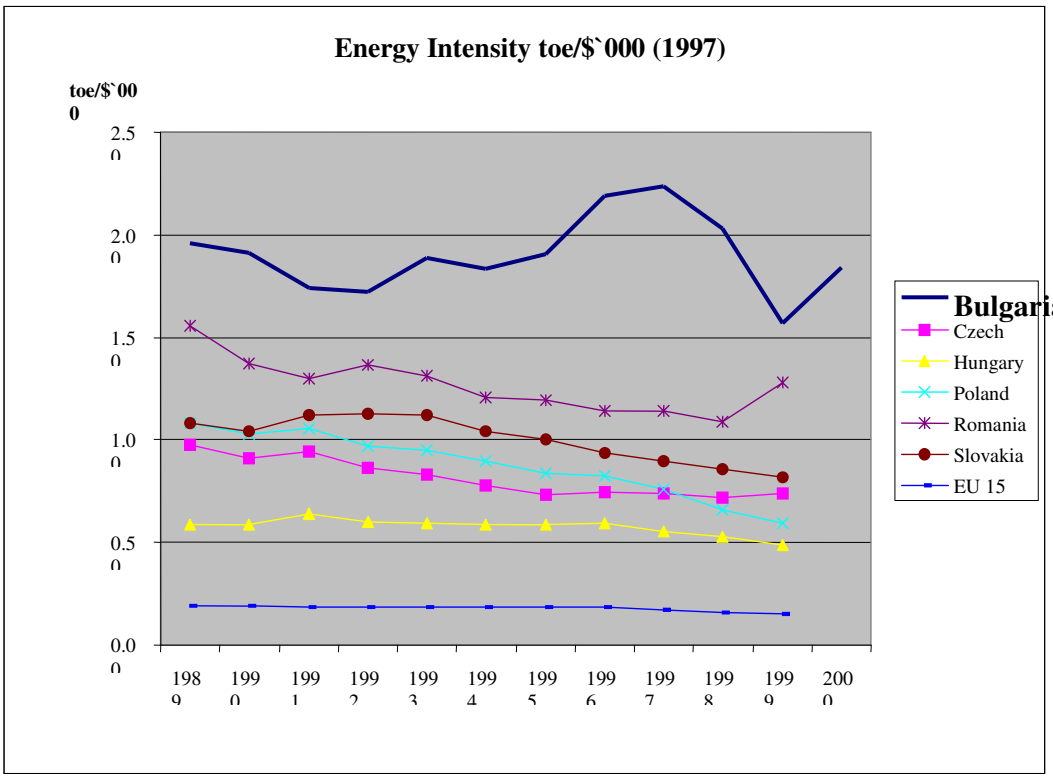
Energy intensity measured as an amount of primary energy sources per GDP unit (a ton of oil equivalent to US $ 1,000) is one of the key measures of energy efficiency and an important component of a nation's competitiveness. Bulgaria's place in Europe measured by this indicator can be seen in the following table and figure:

Energy intensity, in t.o.e./$1,000 of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Bulgaria	1.96	1.91	1.74	1.72	1.88	1.83	1.91	2.19	2.23	2.03	1.57
Czech R	0.97	0.91	0.94	0.86	0.83	0.78	0.73	0.75	0.74	0.72	0.74
Hungary	0.59	0.59	0.64	0.60	0.59	0.59	0.59	0.59	0.55	0.53	0.49
Poland	1.08	1.03	1.06	0.97	0.95	0.90	0.84	0.83	0.76	0.66	0.59
Romania	1.55	1.37	1.30	1.37	1.31	1.20	1.20	1.14	1.14	1.09	1.28
Slovakia	1.08	1.04	1.12	1.13	1.12	1.05	1.00	0.94	0.90	0.86	0.82
EU	0.19	0.19	0.19	0.18	0.19	0.18	0.19	0.18	0.17	0.16	0.15

The sharp drop in the value of this indicator for Bulgaria in 1999 is accounted for by the change in the methodology of GDP calculation.

For 2000 this indicator is 1.84 t.o.e./$ 1,000 of GDP. The contrast is evident. The market economies, as well as the transition economies in Central Europe have a significant edge in terms of energy intensity per production unit. The Bulgarian economy cannot be competitive until it continues to consume 10 times more energy than the economies in Western Europe and two to three times more than the Central European economies. Even more alarming is the fact that while in all other countries a sustainable downward trend can be observed, the Bulgarian economy continues hovering around the highest values reached by it.



In the early years of the transition, the aggregate consumption of primary energy dropped sharply in parallel with the drop in GDP. It has continued to shrink afterwards, but to a significantly lesser degree than the industrial production, the most significant drop having been witnessed in oil consumption.

One of the numerous causes for the high specific energy intensity in Bulgaria is the unfavorable energy balance structure of households. While the total energy consumption of a Bulgarian household is below that indicator in a series of other countries in transition, the consumption of electricity by a Bulgarian household is three times higher than that of a household in Romania, Slovakia and Lithuania and is even higher than in Turkey whose GDP per capita is twice as much as in Bulgaria.

The reasons for this alarming situation are both objective (the inherited structure and technological situation in the economy) and also resulting from the energy policy pursued so far, more specifically:

- The inconsistent policy of the Bulgarian governments towards the normalization of energy prices and the existence of price subsidies up to now, particularly in the energy services for the population. This results in the wrong price signals to consumers and in a lack of incentives for energy saving
- Postponement of the necessary investments accounted for by limited revenues (low prices) and leading to deteriorating efficiency of energy services (especially district heating)
- Too high electricity consumption by the population for heating purposes (given that electricity is the most costly form of energy) resulting from both low prices and the limited choice of other alternatives
- Delay in the introduction of household gasification due to the absence of an appropriate legal and regulatory framework
- Inconsistent policy and lack of an integrated approach to energy efficiency.

The strategy of 1999 envisages an inertial growth in the household consumption, continuing high reliance on electricity till 2015, and also introduction of other possible sources that is unsatisfactory in terms of its pace and scale. A certain but insufficient reduction in specific energy intensity is envisaged as well: by 2015, this indicator is expected to remain approximately twice as high as is the current level in the above-mentioned countries in transition with whose economies Bulgaria is to compete.

The new philosophy in this area aims to overcome the inertia and to apply a proactive approach in order to ensure higher efficiency in all processes of energy supply (generation, transmission, distribution and consumption). Energy efficiency is not an end in itself, but a means to reduce costs, improve competitiveness, security of energy supply and environmental protection. To achieve this, the thrust will be placed on market forces, but also on result-oriented proactive measures:

- Promotion of investments in energy efficiency at the level of end users
- Support, including through government guarantees, for demand-side management projects with a significant social effect

- Promotion of more cost-effective alternatives to the use of electricity for heating and improvement of the access of the population to them [1]. Re-directing electricity to the high-technology needs of the economy and bringing down its price through the deferment of costly investments. Construction of efficient systems for gasification or district heating requires less investments than the construction of electric capacity necessary to meet the same consumption
- Elimination of the price distortion for different types of energy used for heating, so that the behavior of and decisions by the population could be governed by the right price signals that create incentives for energy savings. When the prices reflect the intrinsic economic costs, the price for electricity used for household purposes will be twice as high as that for heat and natural gas (50-60 Euro/MWh and 20-25 Euro/MWh, respectively)
- Improvement of the efficiency of energy transformation processes, promotion of cogeneration and reduction in losses.

Special emphasis should be placed on the unique nature of the investments in energy efficiency yielding multifaceted benefits not only to the individual consumer, but also to the country as a whole:

- Such investments improve the security of supply and reduce the need for import
- They reduce the needs for new investments in energy generation
- They have a favorable social effect, bringing down energy bills and needs for subsidies and defusing tension in the society
- They reduce the adverse impact on the environment

Based on all that, a National Energy Efficiency Review is in a process of preparation with the support of the World Bank. The Review will serve as a basis for drawing up an Action Plan for Energy Efficiency and an Action Plan for Renewable Energy Sources. The goal is to achieve a lasting tendency towards the improvement of the energy intensity indicators by means of a proactive policy for rational use of energy and energy sources.

V.5 Pricing policy: medium-term priorities

1. Reduction and phasing out of price subsidies for energy

The implementation of the government program for the improvement of the efficiency of the energy sector through creation of a market environment is being hindered by low, compared to the actual cost, prices for electricity and heating in the household sector. Despite the fact that the share of household gasification still remains insignificant, it should be noted that price subsidies are present also in the natural gas prices for the household sector.

Subsidizing of household prices is performed:

[1] The efficiency of the use of primary energy sources for heating purposes at the level of end users is estimated as follows: electricity – 20-25%, cogeneration plants – 65%, gasification – over 90%.

- For heat, through the central budget
- For electricity, through cross-subsidies from industrial to household consumers
- Through deferment of the needed investment costs and decapitalization of energy enterprises.

The gradual reduction and eventual phasing out of energy price subsidies and shifting them to the consumers in need represents the key prerequisite for the success of the projected market reforms and privatization in the energy sector.

2. Introduction of regulatory rules for setting energy prices under the single-buyer market model

The Ordinances on Setting and Implementation of Electricity, Heat and Natural Gas Prices proposed by the State Energy Regulation Commission and approved by the Council of Ministers provide a regulatory framework for the transition that will be carried out this year from administrative pricing of energy to standard price regulation under the *cost-plus* method (or *ROR - Rate of Return Regulation*).

The ordinances provide for a transitional pricing period within which the tariff rates for electricity will be re-balanced and the heat price subsidies for the household consumers will be phased out.

The parameters and principles regulating the Rate of Return will be set by the State Energy Regulatory Commission.

3. Introduction of regulatory rules for energy pricing according to the selected models for electricity and gas markets

In the future, the price regulation will preserve its significance in the centralized trade, at the same time partially covering the future energy markets, due to the presence of natural monopolistic structures. The following prices will be subject to regulation:

- Prices for energy transmission
- Prices of the balancing market of electricity
- End prices in case of licensing for supplying a certain territory
- Prices of power purchase agreements (long-term, medium-term or one-year) concluded with generators
- Prices for natural gas storage.

4. Electricity prices

a) Pricing policy in 1998-2001

Electricity prices for households in Bulgaria are the lowest compared to other Eastern European countries in transition.

This is reached in practice through cross-subsidies: household prices are still lower than the prices for the industry. This distorted ratio impedes the development of market structures and encourages the excessive consumption of energy for heating.

The re-balancing of tariff rates is the key step in the improvement of the competitiveness of the economy, GDP growth and employment generation. The table shows the dynamics of the prices between 1998 and 2001:

Electricity prices (Leva/kWh without VAT)

	1998	01.1999	07.1999	01.2000	07.2000	07.2001	10.2001
Cost of electricity supply – low voltage							0.084
Prices for businesses – actual	0.067	0.071	0.072	0.072	0.072	0.072	**0.072**
Prices for households – planned	0.042	0.054	0.059	0.071	0.076	0.084	0.084
Prices for households – actual	0.042	0.048	0.048	0.059	0.061	0.061	**0.067**

In 1998, upon consultations with IMF an action plan was adopted where a step-by-step price increase was envisaged so that the average tariff rates for households and industrial consumers could be equalized and reach the level of 4 cents/kWh without VAT (or 0.072 Leva/kWh at the exchange rate of 1.8 Leva/US $ by the middle of 2001). As can be seen in the table, those commitments have not been met, due to which the necessary price increases are yet to be introduced.

b) Indicative schedule for the increase in electricity prices for the household sector

Within the years 2002-2005, step-by-step increases are to be done, which will result in the following levels of the average electricity prices for household purposes:

First stage (2002): bringing the prices to the level exceeding the average price for businesses

Second stage (2003): bringing the prices to the level equal to that of the average price for non-household consumers connected to medium and low-voltage network

Third stage (2004): recovery of the costs for low-voltage electricity supply

Fourth stage (2005): prices are set under the *cost-plus* method.

According to approximate estimations based on the projected consumption structure and planned costs of electricity enterprises in 2002, the first three stages can be carried out through three increases a year, about 10% on an average each, whereby the average price for households will reach by 2004 the level of 0.090 Leva/kWh (or 4.1 cents/kWh at the exchange rate of 2.2 Leva/US $) without VAT:

Indicative electricity prices for 2002-2004 (Leva/kWh without VAT):

	2002	2003	2004
First stage	0.074		
Second stage		0.081	
Third stage			0.090

The specific decisions on the periodicity and the parameters of the prices lie within the competencies of SERC and will be based on annual regulatory reviews of energy enterprises.

Secure, efficient and environmentally friendly supply of electricity to the Bulgarian economy and consumers necessitates significant investments. This calls for a careful identification of the sequence of such investments so that an acceptable pace can be achieved in the modification of prices in the longer run. Emphasis should be placed on the need for introduction of priority investments, on social reforms and arrangements for the reduction in risk premiums on capital costs. Otherwise, the competitiveness of the economy and the well-being of consumers will be jeopardized. The same adverse effect will also be witnessed if the households have to continue using electricity or environmentally unfriendly coal for heating purposes because of lack of another alternative.

c) Introduction of socially-oriented double-rate (block) tariff for the household sector

To satisfy the basic needs of the population for electricity at an acceptable price, in parallel with the increase in prices a double-rate (block) tariff will be introduced under which the consumption up to a certain level will be paid for at the current prices, as follows:

- Up to 75 kWh daytime electricity – at the existing daytime rate throughout the year
- Up to 50 kWh night-time electricity – at the existing night-time rate throughout the five months of the heating season

The daytime double-rate tariff will apply to all household consumers who have no overdue payments to electric distribution companies, and the nighttime tariff – to all consumers except for customers of district heating companies.

The prices of the first rate will remain unchanged throughout the entire period of transitional pricing which should expire in 2004.

The amount of the annual increases in the second rate will be higher than the target levels of average weighed selling prices indicated in the above table. They will be set by SERC upon the approval of the necessary annual revenues of the electric distribution companies.

5. Prices for heat

a) Pricing policy in 1998-2001

The action plan adopted in 1998 provided for annual increases in prices for heat for household purposes so that the subsidies for generators would be ceased in 2001. For various reasons, this goal has not been achieved. The average annual prices (without VAT) indicated in the table below are significantly lower than planned:

Heat prices in 1997 - 2001

	1997	1998	1999	2000	2001
Leva/MWh	15.30	23.22	28.41	30.34	31.17
Exchange rate, Leva/US $	1.679	1.759	1.836	2.123	2.194

Due to the fact that those commitments have not been met, the necessary increases in prices are yet to be carried out.

b) Schedule for the increase in heat prices for household purposes

Under the Energy and Energy Efficiency Act, the Ministry of Energy and Energy Sources sets the ceiling of the selling price for heat for the district heating companies receiving subsidies from the central budget. This procedure will remain in place until the discontinuation of the subsidizing, after which the prices will be set by SERC under the standard regulatory methodology.

In accordance with the adopted regulatory rules, starting from the beginning of April 2002, a two-component tariff will be introduced for heat energy: price for capacity (Leva/cubic m heateat volume) and price for energy (Leva/MWh) within the framework of the currently existing single selling price of 40.051 Leva/MWh (VAT included). The two-component tariff will result in more even monthly payments and reduction in the share of expenses for heating in the budget structure of households during the heating season. Under the general conditions of the contracts approved by SERC, the customers are offered also the opportunity to pay by equalized monthly payments.

In 2002-2005, increases in heat prices for household purposes are to be carried out, thus making it possible to phase out the subsidies for generators by the end of the period. This will be achieved through annual 10% price increases that will be made upon the end of the heating season.

6. Introduction of a block tariff for the heat for household purposes

To meet the basic need of the population for heat at acceptable prices, in parallel with the increase in prices a double-rate (block) tariff will be introduced, under which the consumption up to 250 kWh during the heating season will be paid for at the current prices by all customers who have no overdue payments to district heating companies and this price will be preserved until the end of the transitional period.

The prices of the first block will remain unchanged throughout the entire period of transitional pricing which should end in 2005.

The amounts of increases of the second block will be set in such a way that the target levels of the above-indicated average prices can be reached.

The concurrent implementation of measures for improved efficiency (substations and individual metering and controlling devices) will make it possible to keep the bills of households at the current level or at least to increase these bills to a significantly lesser degree compared to the increase in the price for heat.

7. Prices for natural gas

The changes in the natural gas prices in 1997-2001 are shown in the table below:

Natural gas prices for end users in 1997 - 2001

	1997	1998	1999	2000	2001
Price, Leva/1000 nм^3	172.42	179.65	150.05	214.60	256.92
Exchange rate, Leva/US$.	1.679	1.759	1.836	2.123	2.194

The existing practice of uniform prices for all categories of end users of natural gas will be discontinued through the implementation of the already adopted Ordinance on Setting and Implementation of the Prices for Natural Gas. Through the regulation of natural gas prices for end users under the *cost-plus* method, differentiated prices will be introduced for different categories of consumers and regulatory barriers to the development of the market of low-pressure natural gas will be lifted.

A key factor for commercial and competitive development of the low-pressure gas market, for restoring the competitiveness of the chemical industry and the production of chemical fertilizers, as well as for a rise in the interest in co-generation plants burning natural gas will be the forthcoming adoption of ordinances on access to transmission and transit networks and gas storage facilities which will allow for direct contracting between suppliers and eligible customers.

V.6 Social protection and social guarantees under the market orientation in the energy sector

Reforms in the energy sector, wherever they are carried out, are governed by economic motives. The strong focus on economic effects tends to overshadow the social policy considerations in the hope that the social problems will be solved once the economy is put on a commercial basis. However, apart from the requirements for security and quality of energy supply, the law also guarantees the right of each citizen to receive energy that will be sufficient for their satisfying basic needs and will be supplied at acceptable prices. In accordance with these requirements, the reform in Bulgaria evidently cannot be carried out without concurrent arrangements for social protection and social guarantees. So far the social policy has been limited to the use of the scarce resources available within the system for assistance to low-income families. This system falls short of utilizing all available opportunities, be they direct or indirect, and fails to provide adequate and efficient protection. The system will be expanded along the following lines:

- Guarantees for affordable energy for every Bulgarian citizen through an improved scheme for the provision of assistance to vulnerable groups during the heating season
- Introduction of new forms of social assistance, including socially-oriented tariffs for certain basic amounts of energy
- Improved access of the population to more economical forms of heating
- Alleviation of the negative effects of the restructuring and of the higher prices through improved efficiency of energy supply (lower costs) and of consumption (lower bills).

The measure of the success of this strategy will be an acceptable share of expenses for heating in the total income of households and the needed basic amount of energy supplied to each and every vulnerable citizen.

V.7 Environment

Emissions in the atmosphere

The energy industry is the main source of emissions of carbon dioxide and sulphur oxides in the country. Thermal power plants within the energy sector are also a relatively significant source of nitrogen oxides, non-toxic dust, dioxins and furans.

The coal-fired Thermal Power Plants (TPPs) emit about 80% of the country's emissions of sulphur oxides and about 60% of the emissions of carbon dioxide.

In 1995 Bulgaria ratified the UN Framework Convention on Climate Changes. In accordance with the Kyoto Protocol signed under the Convention in December 1997, Bulgaria made the commitment to reduce anthropogenic emissions of greenhouse gases by 8% compared to the emissions of 1998.

In case of the Kyoto Protocol ratification, in conformity with the commitments arising from the Protocol, strategy provides for the provisions to undertake in the following areas.

Electricity and heat generation:

- Preservation of the nuclear energy share in the overall energy balance of the country through construction of new nuclear capacities
- Increase in the share in the national balance of the electric and thermal power plants, using natural gas
- Priority construction of cogeneration plants
- Increase in the share of energy generated by renewable energy sources in the national energy balance through implementation of a preferential policy for their development
- Implementation of the rehabilitation of energy capacities in major TPPs which will operate after 2010 more than 20 000 hours

Distribution of electricity and heat

- Reduction of losses in the electricity, heat and gas transmission networks
- Gasification of the household sector whereby electricity, heavy fuel oil and coal consumption for heating purposes in the household sector will be replaced by natural gas.

To reduce the noxious emissions by the industry to the levels meeting the European requirements, the strategy provides for the following provisions:

- All new coal-fired power units to be supplied with desulphurisation facilities and low- NOx burners with the appropriate efficiency
- Al energy units subject to rehabilitation to be supplied with desulphurisation facilities and low- NOx burners with the appropriate efficiency

- Development of a Plan for Reduction in Emissions of Sulphur and Nitrogen Oxides by the existing TPPs by 2016, in compliance with the EU Directive 2001/80/EC.

Restoration of the deteriorated balance and creation of new environment in obtaining coal

In the operation of the deposits upon the open pit mining and upon the initial processing of the output raw materials, the time for the recultivation of the fields violated by the mining process should be shortened. The implementation of new technology solutions will result in the improvement in the soil fertility for agricultural and forest plants and will enhance the restoration of the violated areas.

In the underground coal mining, the ecological conservation of the debris from the coal mining and processing, and preservation of the waters clan will be supervised. In accordance with the cessation of the coal mining the recultivation and / or restoration of the violated fields will continue with the technical liquidation projects and the budget funds.

In the mining companies subject to privatization, these activities will be regulated in the submitting to concession contracts.

V.8 Principles of the overall energy policy

The government policy in the area of energy will be based on the following principles:

- Introduction of market relations in the energy sector, based on cost-reflective tariffs and free contracting
- The active role of the state in the creation of a clear and stable legal and regulatory framework for investments, commercial activity and protection of public interests
- Creation of a legal, regulatory and market environment prior to the implementation of new large-scale investment and privatization projects
- Pro-active energy efficiency policy as a means for improving the competitiveness of the economy, security of energy supply and environmental protection
- Efficient social protection through shifting government subsidies from the producer to the consumer, through energy efficiency measures and introduction of socially-oriented tariffs
- Positioning of Bulgaria as a reliable country for the provision of future transit of oil, natural gas and electric power and as a dispatching and market center in the region.

VI. SECTORAL POLICY

VI.1 Electricity

1. Key issues

The electricity sector is at the initial stage of restructuring. NEK is unbundled into 15 companies, but creation of a market environment calls for a series of vigorous measures:

- *Commercial restructuring.* The organizational unbundling has been the only step made so far, while new commercial relations regulated by SERC are yet to be introduced.
- *Commercialization of activities.* Non-balanced tariff rates, meaning that prices for the population are much lower than the cost of energy supply at low voltage, represent a barrier to the introduction of commercial incentives for efficiency and quality, particularly in distribution companies
- *Energy market.* Creation and development of a competitive market segment through the provision of direct access of generators to the network is a forthcoming task. The rules and prices that make that possible will be introduced by SERC this year.
- *Investment risk.* The Energy and Energy Efficiency Act represents a barrier to the policy for shifting the activity, respectively market risks in making investment decisions, from the state, respectively end users, to investors.
- *Privatization.* Lack of a comprehensive regulatory framework and market rules represents a barrier to successful privatization needed to attract investments and improve efficiency
- *Non-payment.* Systematic non-payment of electricity bills is stripping the energy enterprises of operational resources, hindering their normal operation, increasing their costs and exerting an adverse impact on the entire economy
- *Nuclear safety.* The prospects of Units 1-4 of the *Kozloduy* NPP and ensuring the country's energy and capacity balance
- *Electric power export.* Increasing the export opportunities through efficient use of the available capacities in the medium run.

2. Priorities

The unique nature of the forthcoming reform is that concurrently and in a short time it will be necessary to achieve the following:

- To introduce clear regulatory rules and efficient regulation of state-owned electric companies
- To privatize a large share of state-owned electric companies
- To introduce clear regulatory rules and efficient regulation of privatized electric companies
- To revise the complete disintegration carried out in the past, as well as the formerly introduced licensing for only one type of business, in order to achieve

competitiveness on the regional market (e.g., legal provisions allowing for the establishment of public utilities)

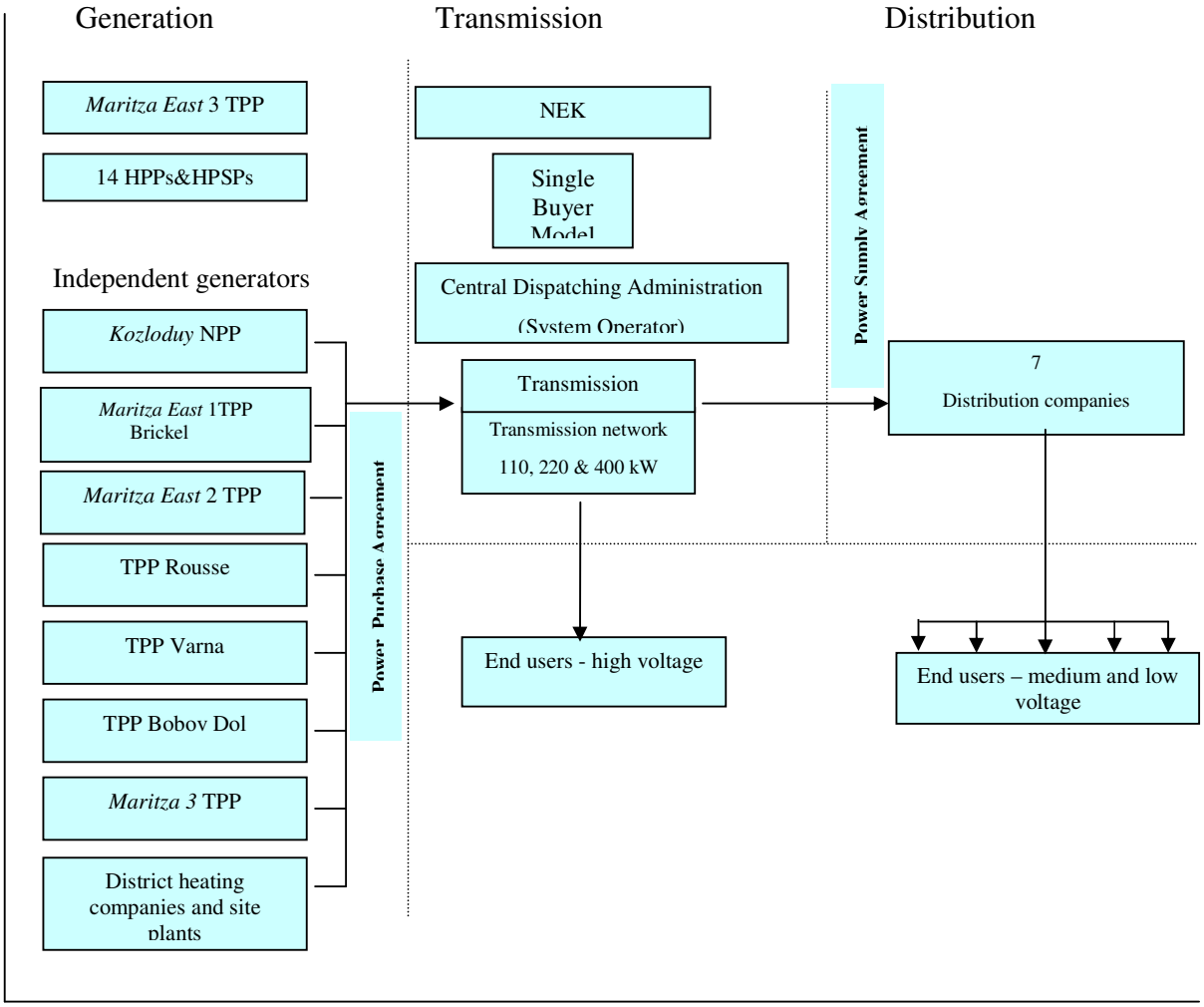
- Introduction of a competitive market model for the development of the internal and external electricity market operating under a pre-set and legally regulated schedule.

The successful results of this ambitious reform will depend on the coordination, mobilization and active involvement of all responsible institutions, commercial companies and on the support of the general public.

3. Electricity market

a) Current status

The electric grid of Bulgaria, unbundled into 7 generating, 7 distributing and one transmission company, is functioning under the *Single Buyer* model demonstrated on the following graph:



The electricity market will be introduced gradually by means of allowing electricity generators to have free access to transmission and distribution network (the so-called third party) and to contract freely with eligible end-users. Thus conditions will be put in place for the introduction of competition among generators (suppliers) and for a free choice of a supplier by eligible consumers. At the next stage a spot market will be set up as well.

b) Goals

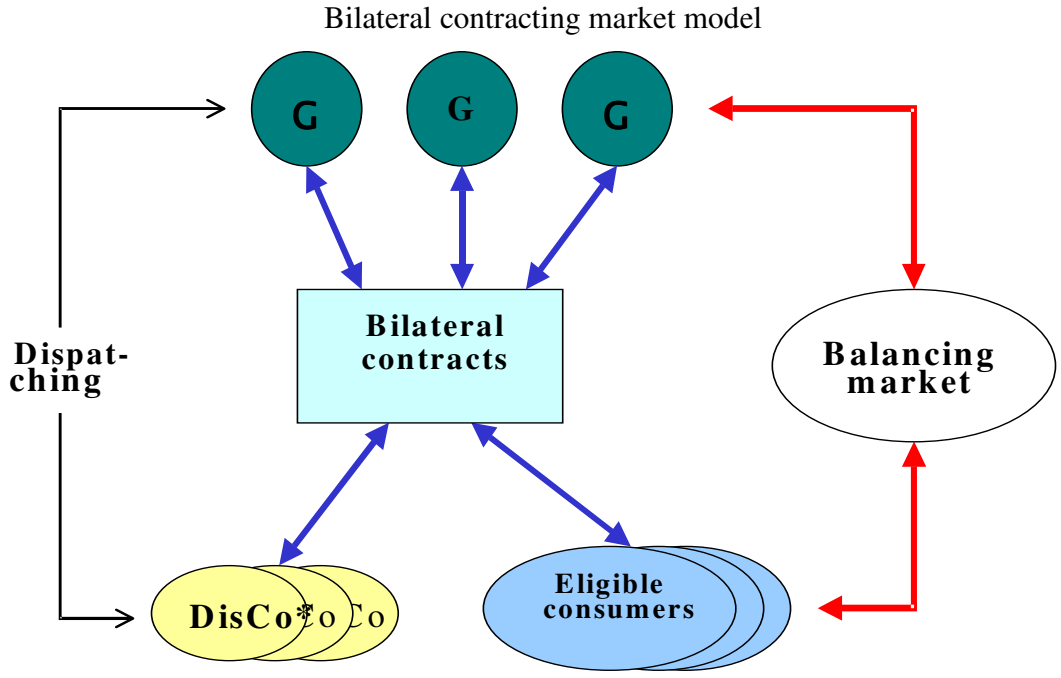
The electricity market is to be introduced in order to attain the following goals:

- Cost reduction and putting limits to price growth
- High reliability and quality of electricity supply
- Transparent and fair allocation of market benefits.

c) Market Model

Based on the global experience and the results of the implementation of different market models, as well as on the prospective establishment of a regional electricity market, the internal market will develop under the model of *bilateral contracting with a balancing market*.

A simplified scheme of this market design is shown in the next figure[2]:



* DisCo – distribution companies

Bilateral agreements will be freely contracted between generators and consumers. The dispatcher will allocate generation in accordance with the agreements and also will balance the system, based on the offers made by the balancing market.

d) Eligible consumers

The consumers who will have the right to conclude direct supply agreements with power plants will be selected based on a set of criteria out of which the key one will be the annual amount of energy consumed by them.

e) Market Establishment Plan

To establish an electricity market, it is necessary that relevant regulations and rules should be developed and relevant regulatory institutions put in place:

- Development of the market design: general conditions, players, administration, rules for power supply agreements, rules for ancillary services agreements, rules for the balancing market, reliability, commercial rules for metering, billing and settlement.
- Development of tariffs, including those for the balancing market and for transmission, system services and distribution of the directly contracted

[2] The liberalization of power market is under development with technical assistance of Canadian International Development Agency's SEETEC project

energy along with the development of rules for fair and non-discriminatory use of the transmission network

- Revision of the Grid Code so that it can reflect the requirements of the market model, particularly the dispatching rules and rules for the grid use
- Restructuring of NEK and setting up a separate Market Operator and Settlement structure
- Inclusion in the new energy law of definitions of market players, commercial relations between and among them, the Market Operator's functions, settlement of "stranded costs"
- Assessment of the needed simulating models, information systems and drawing up of terms of reference for the supply of hardware and software and the subsequent tuning of the hardware and software supplied
- Training of market players
- Test and start-up of the functioning market.

f) Step-by-step introduction of market relations

The market segment will be evolving through an increase in the number of eligible customers under a pre-set schedule reflecting the scheme of Bulgaria's accession to the European Union and the requirements of the EU Directive on Electricity. The initial opening of the market in 2003 will cover not more than 10% of the electricity, which will to make it possible to timely correct flaws and improve rules and procedures.

The functioning of the system will be tested and the necessary adjustments will be made in the model, procedures, regulations and hardware and software. After that, follow-up steps will be made to increase the percentage of the energy subject to direct contracting. This is expected to happen within the span of a two-year testing period, after which the pace of the opening will be stepped up so that Bulgaria's system can become fully compliant with the European directives by the time of the country's accession to EU.

Through the inclusion of distribution companies in the category of eligible customers, a wholesale electricity market will be shaped. The ultimate goal of the development of the internal market (long-term priority) is to establish a retail electricity market on which individual consumers will have the right to choose their suppliers.

The third party access to foreign trade operations (import and export) creates conditions for more intensive competition, respectively for lower prices. Therefore, another strategic task is to open the external market under a specific scheme and mechanisms preventing price dumping.

The presence of a normal tariff rate reflecting the intrinsic costs of electricity supply for different categories of consumers represents an important prerequisite for the introduction of efficient and fair competition. This goal will be gradually attained in the medium run.

4. Introduction of authorisation regime for construction of new capacities

On a free market, investment decisions are made by the investor and reflect his assessment of the demand for a certain commodity or service. The strategy of 1999 and the Energy and Energy Efficiency Act are imposing non-market investment decisions based on a centrally-planned approach and requiring approval by the State Agency of

Energy and Energy Sources (now Ministry of Energy and Energy Sources). Under the existing market model (single buyer), foreign investors have no direct access to end-users and hence insist on long-term power purchase agreements guaranteed by the government. The actions by the former government, when contracts for big investments were concluded before the introduction of market relations, concentrated the price and market risks entirely on the state, respectively on end-users. As a result, in case of negative developments on the electricity market the end price for electricity will inevitably grow. Moreover, the long-term agreements signed for the new *Maritza East 1* power plant (670 MW) and for the rehabilitation of *Maritza East 3* plant (860 MW) limit the future market segment to 40% of the total electricity consumption (taking into account also the base-load capacities of the nuclear power plant and cogeneration plants).

The philosophy behind the new energy law envisages the introduction of authorization regime for construction of new capacities under which the role of the government is limited to issuance of permits for construction of new capacities without assumption of any commitments to purchase this energy for the regulated segment. In parallel with the introduction of the authorization regime, a clear and legally regulated schedule of opening the external and internal electricity market should be developed as well. Thus the investor will be free to make independent decisions and shoulder the market risk resulting from them.

Concurrently with the authorization regime, a tender procedure will continue to apply to the construction of new capacities. The tender procedure will be used on the initiative of the System Operator in case of a forecast for imminent electricity shortages. In such a situation, long-term power purchase agreements will be signed with successful bidders. The government policy in tender procedures will continue the good traditions and will rely on two main sources:

- Nuclear energy and
- Local lignite coal.

5. Intensive use of available generating capacities

Due to the unreliable nature of long-term projections for demand and the dynamically changing electricity market, the government will be striving for deferment of large-scale projects and, at the same time, for preservation of the key role of Bulgaria in the region through a policy that does not require big investments:

- Extension of the economic life-cycle of key power plants and thermal power plants through privatization with the involvement of strategic investors
- Utilization of the energy efficiency potential in generation, transmission, distribution and consumption
- Provision of reliable energy exchange at acceptable prices (lower than those of new capacities).

The age structure of thermal power plants and nuclear units shown in the table below is not much different from that of the European countries and demonstrates the need for rehabilitation. Investments in rehabilitation have proved to be highly efficient all over the world and therefore will be attracted in the Bulgarian energy sector on a priority basis.

Age structure of power plants

	over 35 yrs.	31-35 yrs.	26–30 yrs.	21-25 yrs.	16-20yrs.	below 15 yrs.
TPPs	6.3%	27.1%	17.4%	25.5%	15.2%	8.7%
District heating TPPs	36.0%	23.0%	2.7%	19.2%	8.2%	11.0%
On-site TPPs	11.6%	29.0%	31.4%	6.7%	8.1%	13.1%
NPPs	0.0%	0.0%	23.4%	11.7%	11.7%	53.2%

6. Parallel processes of reforms and privatization

Privatization strategy will be oriented towards coordination of the reforms and the privatization processes, which calls for the following sequence:

a) Privatization environment

For a successful privatization, it is necessary to create an appropriate regulatory environment and to prepare energy companies for privatization. To this end, rules and ordinances pertinent to the regulation of prices will be drafted and approved along with indicative schedules for the opening of the internal and external market and for normalization of electricity prices for the household sector.

b) Privatization of distribution companies

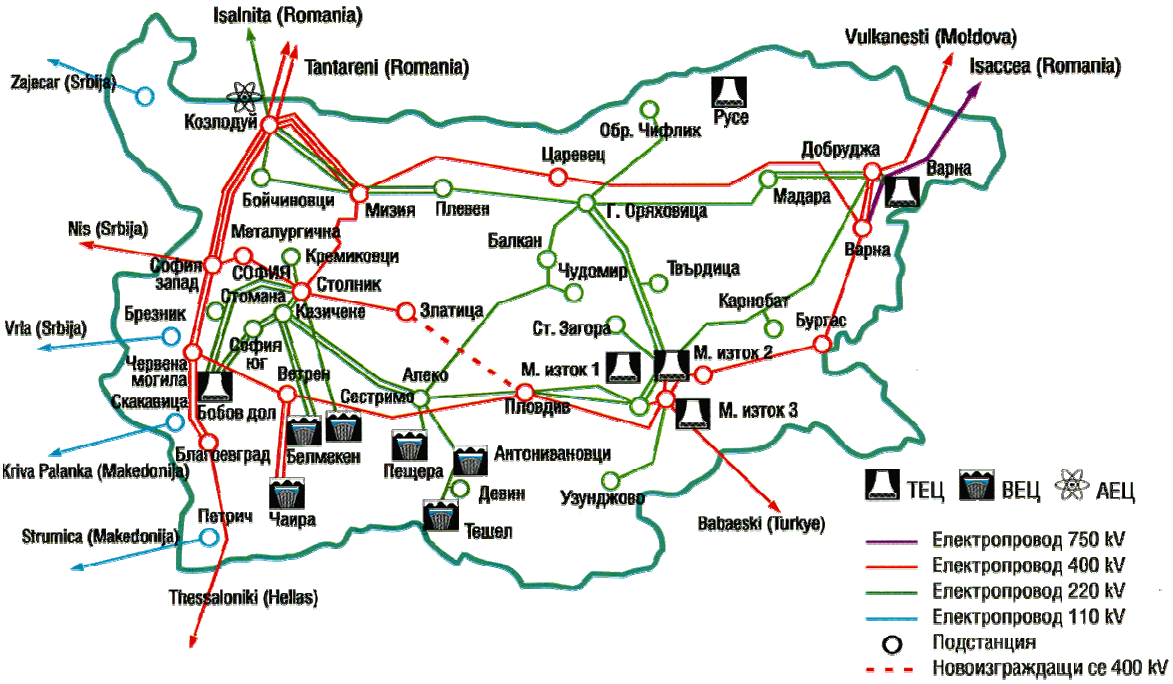
To reduce the sectoral risk, the privatization in the electricity sector will start from the privatization of distribution companies in 2002-2003. The successful privatization of distributing commercial structures, where direct linkage between suppliers and customers takes place, will bring down the non-payment risks for the electricity suppliers, respectively for the suppliers of fuel. Thus a more favorable environment will be created and the required risk premiums will be brought down throughout the entire supply chain in the process of subsequent privatization.

In parallel to that, a better, non-politicized type of management will be attained, as well as more efficient operation of enterprises, improved quality of service and rapid building of corporate culture.

c) Privatization of power plants

Privatization of power plants will start from the key power and thermal power plants and will involve strategic investors. In 2003-2004 sub-peak power plants in Bobov Dol, Rousse and Varna will be privatized. Once clear regulatory and market rules are put in place, no obstacles will exist to an open and fair process of selling of all plants without exception.

d) Transmission company



Due to the fact that the transmission company (the National Electricity Transmission Company) acts as an operator of the transmission company, power plants operator, wholesale trader and system operator, the restructuring of the company is high on the agenda, because this will result in its facilitated regulation and in the prevention of possible discrimination with regard to the free access.

7. Nuclear power and nuclear safety

a) Existing nuclear facilities

For the past decade, *Kozloduy* NPP has been providing 44-46% of the total average annual generation of electricity in of Bulgaria.

The Bulgarian energy covers about 45% of the constant deficit in the overall energy balance of the Balkan region, which is assessed as a significant contribution to the economic stabilization of the region.

Nuclear power has a major contribution in satisfying the needs for electricity of the economy and population on the national and regional level. It guarantees a minimum risk in terms of the supply of energy sources and maximum economic effect in the long run. Its reliability is very high and is not affected by meteorological conditions.

Implementation of the planned arrangements for safety upgrading within the declared timeframe, the achievements made in bringing the operational safety of the existing

nuclear facilities into compliance with the internationally accepted standards, assessment of the safety level by the regulatory body of Bulgaria and international verification on the part of the IAEA with regard to the meeting of the recommendations made for the solution to the safety problems encountered in 1991-1992 provide grounds for the conclusion that VVER-440/V-230 units are subject to modernization at an acceptable cost.

The decision on the decommissioning of nuclear facilities will be made based on a comprehensive analysis of the country's capacity to maintain and upgrade safety level and to operate the nuclear facilities in compliance with the national legislation and commitments arising from the Convention on Nuclear Safety. Other important factors that will be taken into consideration include the energy balance, the energy market liberalization and possible alternatives, as well as the economic, social and environmental effects of the decommissioning of nuclear facilities before the expiration of their technically justified and economically viable lifetime.

The decision on decommissioning of the nuclear facilities will be based on most careful assessment as this represents a component of the long-term state policy that includes the safety of nuclear facilities. The issues of the management of spent nuclear fuel and radioactive waste lie in the core of a separate strategy and will be updated in line with the new law on the safe use of nuclear energy.

To analyze the implications of the decommissioning of Units 1-4, an assessment will be made of the impact of the decommissioning in terms of the effects which the implementation of alternative strategies for energy supply will have on the economy and environmental protection. The need for the acceleration of putting new capacities into commission, which will be stemming from the early decommissioning of the nuclear units, will inevitably increase the cost of the electricity sector development and hence the prices for electricity. The difference among the total costs of alternative strategies represents the "cost" of one or another decision and this, along with the achieved level of nuclear safety, will serve as a basis for consultations with the European Commission.

b) Development of nuclear industry

The nuclear power sector is crucial for Bulgaria's energy and capacity balance. Moreover, it is on a state-of-the-art technological level and its productive efficiency is very high. The introduction of market conditions in the energy sector and the resulting from that increased competition represent factors which are external to the already adopted programs aiming to achieve a high level of nuclear safety of the existing nuclear facilities. Bulgaria appreciates the achievements of *acquis communautaire*, including the Treaty of the European Atomic Energy Community, as fundamental instruments for the improvement of the living standard in the Member States and the development of relations with other countries. Bulgaria will continue to harmonize its national legislation with Community law in the area of nuclear energy in the light of the EU enlargement.

A legal, regulatory and pricing framework will be set for the implementation of every single new project on a fair and genuinely competitive basis, taking into consideration such factors as the specific site, created infrastructure, nationwide training system, maintenance of qualifications of the staff and its certification, as well as capacity building in the organizations providing technical support in the field of nuclear energy.

To discharge its obligations in the area of environmental protection and reduction in CO_2, SO_2 , NO_x emissions and fly ash, Bulgaria will continue to rely on nuclear energy and to develop it further in compliance with the up-to-date requirements to safety, cost efficiency and reliability, nuclear safety and radiation protection.

c) Nuclear safety and radiation protection

Keenly aware of the significance of the safe use of nuclear energy, Bulgaria is discharging its obligations arising from the Convention on Nuclear Safety and is committed to maintain high level of nuclear safety and radiation protection. Nuclear safety is a matter of national security, the key responsibility for that being assumed by the operating country, while the enforcement of the legal and regulatory framework is within the competence of the regulatory body – the Committee for Nuclear Energy Use for Peaceful Purposes.

The Nuclear Energy Use Act is based on the general prerequisites for the enhancement of an independent and competent regulatory regime manifested in an easily understandable legislation on nuclear safety and radiation protection, in the existence of a stringent license regime and availability of sufficient resources and technical support for the regulatory body.

The operating organization will maintain the insurance for civil liability for nuclear damage, which is in compliance with the obligations arising from the Convention on Civil Liability for Nuclear Damage and the Joint Protocol on the Implementation of the Vienna and Paris Conventions. The discussion will continue on the clarification of the options and conditions for the ratification of the Protocol of Amendments to the Vienna Convention.

8. Regional electricity market

Bulgaria's grid is the main exporter of electricity to South-Eastern Europe and, along with Romania's system, it ensures the balance of capacities in the second synchronous zone. The natural evolvement of bilateral contractual relations leading to the establishment of a regional energy market is taking place in the context of the *REM* initiative of seven countries from the region (Albania, Bosnia-and-Herzegovina, Bulgaria, Greece, Macedonia, Romania and Yugoslavia) jointly with the European Commission. The project was launched in 1998 and is strongly supported by the international development agencies of the US and Canada, as well as by French and German companies.

The regional market representing part of the European energy market is expected to provide better opportunities for free trade and for marketing of the capacities of Bulgaria's power plants. To meet these expectations, in the context of competitive pressure from without, the power plans should improve their performance in terms of reliability, dynamic behavior and economic indicators, i.e. to accomplish the goals set by the establishment of the internal electricity market.

The National Electric Company will expand its links with neighboring grids through construction of new transmission lines. NEK will also improve its communications and information systems, relay protection and automated systems. Bulgaria will take an active part in the shaping of organizational and technical structures of the regional electricity market.

VI.2 Gas supply

1. Background information

The gas sector plays a key role in the economy of Bulgaria. A large share of natural gas is used for energy purposes mainly by thermal power plants and cogeneration units, and as raw material by the industry. Unlike in all other European countries, in Bulgaria the use of natural gas for household purposes is negligible. Its share in the energy balance amounts to approximately 12 %. In the recent years, the consumption of natural gas has almost halved.

Natural gas consumption in Bulgaria (in M nм^3)

Consumers' groups	1996	1997	1998	1999	2000	2001
Energy	1665	1524	1379	1336	1167	1136
Chemical industry	2435	1730	1297	996	1344	1214
Other industries	1562	1264	1064	**915**	821	694
Non-industrial	7	4	4	3	3	3
Distribution companies	62	72	47	74	82	93
Total	5731	4594	3791	3324	3417	3140

Transit gas pipelines going through Bulgaria's territory supply natural gas to the increasingly expanding market in Greece, Macedonia and Turkey. The local production is limited and for now Russia remains the only supplier. There are prospects for construction of gas pipelines from the Caspian region and Iran to Europe.

2. Key issues

For the past several years, the state-owned gas transmission company *Bulgargas* has incurred significant losses, the main reasons for which is the aggravating situation of the key consumers of natural gas, namely district heating companies and chemical industry. The challenges faced by *Bulgargas* can be described in the following way:

- The largest group of the *Bulgargas* customers – district heating companies – do not clear off their bills for the gas supplied to them because of their difficult financial situation resulting chiefly from the deferment of reforms in the heat supply sector
- Demand for natural gas by the industry is declining due to the loss of positions on the international markets
- Gas supply through low-pressure networks is underdeveloped despite the economic and environmental advantages of this alternative for heating and other for other household purposes
- Lack of an appropriate regulatory framework poses a barrier to investors' interest in the development of the market of low-pressure natural gas

- The amounts of natural gas supplies from Russia contracted till 2010 under take-or-pay condition are significantly higher than the actually needed for internal consumption.

3. Gas sector development

The growing use of natural gas is a global trend and one of the key means for the abatement of the adverse impact of the energy sector on the environment. Gas fuel contains virtually no sulphur and allows the introduction of state-of-the-art technologies for energy generation whose efficiency exceeds that of traditional plants by approximately 15%.

The development of the gas sector in Bulgaria depends mainly on the capacity to create an environment attractive for investments. In this regard, the following factors play a crucial role:

- Fair and stable regulatory regime
- Opportunities for access to the network on an equal basis
- Acceptable tax environment.

a) Key directions

The gas sector will develop in the following directions:

- Step-by-step opening of the market in compliance with the EU Directive
- Establishment of the market for low-pressure natural gas and introduction of natural gas into households for local heating plants and direct burning as a competitive and highly efficient alternative to electricity
- Broadening of the range of opportunities for the transit of Russian gas to neighboring countries through an increase in the transmission capacity of the existing pipelines and construction of a new gas pipeline to Yugoslavia
- Active involvement in international projects and programs for construction of gas pipelines from Iran and the Caspian region to Western Europe
- Prospecting and exploitation of local hydrocarbon fields.

b) Objectives

Two far-reaching objectives are pursued through the development of the gas sector:

- Improved security of the energy supply of the country through an increase in the natural gas share in the primary energy balance structure
- Abatement, as a result of the high efficiency of gas technologies, of the adverse impact on the environment and human health.

The improved security of energy supply will be a result not only of the source diversification, which is expected in the medium run, but also of the increased interdependence between interests of exporters, transiting countries and importers - not only of natural gas but also of electricity and other resources.

c) Priorities

To attain the above objectives and in line with the requirements for the creation of an attractive environment for investors, the following measures will be undertaken:

- Completion of the accounting unbundling of the *Bulgargas* functions, i.e. supply, transmission, storage and distribution, as a prerequisite for the introduction of clear and appropriate tariffs for transmission and storage
- Introduction of differentiated selling prices for different categories of natural gas consumers
- Speeding up of the opening of the natural gas market through allowed access of third parties to the transmission network on a non-discriminatory basis and through the provision of large consumers with the opportunity to directly contract supplies, including also supplies from other countries
- Competitive offering of permits for the accelerated development of the market for low-pressure gas
- Positioning of Bulgaria as a country that can be relied upon for the future transit of oil and gas, which will be achieved through introduction of a clear and appropriate market structure and regulatory system and through guarantees for non-discriminatory access to the transmission network and storage facilities.

Given the presence of a single supplier and a supply contract with a take-or-pay clause, as well as the existing barriers to the re-export of excess amounts, the opening of the natural gas market will face serious limitations. Initially, its opening will have the significance of a declaration of an open energy policy, but in the medium and long run its impact will be growing in the context of the active participation of the European countries in the *Inogate* Program, in which Bulgaria also takes part, for natural gas transit from the Caspian region and Central Asia to the west.

The increase in the transit flows going through Bulgaria enhances the significance of the country's transmission system and along with the above-indicated long-term perspectives creates conditions for negotiations with the *Gasprom* aiming to reach more acceptable contractual conditions.

Although the use of natural gas for household purposes has been declared a priority of the energy policy for many years, the progress in this area is next to nil. The causes are rooted in the overall investment climate in the country, and also in some flaws typical of the country's energy sector, like subsidizing of competitive sources (electricity and heat), procrastination in the forging of relevant laws and regulations, as well as lack of differentiated tariffs for natural gas.

Taking into account how important the direct use of natural gas for household purposes is in terms of economy, energy efficiency and environmental protection, the government policy will aim to promote investments in the development of low-pressure networks. Based on the already proposed division of Bulgaria into eight gas-distribution regions and with the support of the World Bank, a procedure was started for the preparation of a competition for companies that will be awarded licenses to develop networks in those regions.

A review of administrative procedures is currently underway in order to propose ways for their simplification with regard to investments in gas-distributing networks. The Ordinance on the Setting and Implementation of Natural Gas Prices is approved by the Council of Ministers and promulgated. In the overall context of the market reform, the subsidies will be phased out, which will place natural gas on an equal footing with competitive energy sources.

VI.3 Heat supply

The district heating sector accounts for about 22-23% of the energy balance on the level of end consumption. Heat generation, based mainly on burning natural gas, represents the main type of heating for densely populated urban areas with multi-store buildings.

1. District heating

a) Status

The district heating, introduced in a situation entirely different from the current, has the following key features:

- Absence of market conditions (e.g. metering and regulating devices, or cost-reflective prices)
- Obsolete and worn-out equipment and facilities, which makes it impossible to adjust generation to weather conditions
- Insufficient solvent demand (especially among household consumers and organizations funded from the central or local budget)
- Refusal on the part of the consumers to use the service, which results in the decreasing load, increasing losses and undue burden on generators, consumers using the district heating services and tax payers
- Inadequate legal and regulatory framework which hinders and discourage the development of the market for energy efficiency improvement services
- Absence of efforts on the part of companies (except for few cases) to bring their management up to up-to-date standards, to improve accounting and assume a proactive role in the relations with customers
- The absence of opportunities to adjust consumption to individual needs and the crisis in the economy have led to a low collection rate that further aggravates the financial situation.

Despite the changes in the economic situation, the studies supported financially by the World Bank and EBRD and conducted in 2000 by an inter-agency panel of experts demonstrated that district heating represents the most cost-effective and environmentally friendly option for densely populated urban areas. However, to meet the above criteria in practice, it should be provided by state-of-the-art, flexible and cost-effective systems whose development and introduction is a strategic objective.

b) Alternatives

The local gas fired heating plants and the direct burning of natural gas is a serious alternative to district heating but the development of new gas networks is not competitive if compared with the already constructed district heating networks. Investments in

construction of distribution networks for low-pressure gas and the costs of their maintenance make the cost per heat unit significantly higher than are the costs of the existing district heating networks if the latter are modernized. Moreover, the cost of the devices needed for the use of natural gas is estimated to be about 1,500 Leva for an apartment.

Electricity still remains an acceptable alternative for the consumers disconnected from the district heating system because the electricity price for the household sector is subsidized. This subsidization, however, will be discontinued through the increase in prices. Electricity is not appropriate for heating purposes due to the low level of primary sources used in it (<25%) and the need for big investments in construction of new power plants and distribution networks, which, in turn, will lead to an increase in costs and, respectively, in consumer tariffs.

c) Development of the market

In the long run, significant growth in the heat energy consumption cannot be expected either in the industrial or in the household sector due to a series of reasons:

- GDP restructuring through a decrease in the share of the mining and processing industries at the expense of the share of the service sector that in principle is low energy-intensive
- Privatization accompanied by closure of inefficient and energy-intensive technologies and industries
- Competitiveness of the industrial production will increasingly depend on the reduction of energy costs
- Introduction of measures for heat energy saving in accordance with the consumers' needs and capacity, as well as introduction of devices for individual controlling and metering of energy and improvement of the heat performance of buildings (particularly the new construction).

2. Rehabilitation of the district heating system

The technological rehabilitation of the generation and transmission systems through rehabilitation of energy facilities has proved to be the most cost-effective option for the improvement of efficiency and quality, as well as for the extension of the operational lifetime. The implementation of projects whose aim is the correction of the major flaws in the existing heat distribution systems – high losses, lack of flexibility and poor quality of services – requires significantly lesser investments and makes it possible to keep the costs at an acceptable level for a sufficiently long period of time. A series of measures will be undertaken to improve the technical status of the facilities, as well as the management practices in district heating companies and on the demand side.

Along with their direct influence for reduction of the costs, the technical measures will provide consumers with the opportunity to control their own consumption, to be motivated to use energy in a rational way and will also help alleviate the negative impact of the price increase.

Those district heating systems which are incurring high costs and for which, therefore, investments in upgrading will have negative economic indicators will have to cease their operation due to the loss of market.

3. Management of heat consumption

The high specific intensity of the Bulgarian economy stems from generation and supply losses and, mostly, from irrational consumption. The sensible use of energy by consumers is identified as a top priority because the energy supplied to the consumer's doorstep has already sustained the inevitable losses from transformation and transmission. Due to their nature, energy-saving measures and costs related to them are not suitable for big investments. Creation of a genuine market environment for energy and energy sources is the only means that can, to some extent, to bring about changes in the indifferent attitude of the consumers towards the waste of energy and to mobilize their efforts for the implementation of energy-saving measures. The first prerequisite for the improvement of the district heating operation is introduction of metering. Metering devices have been mounted in all substations throughout the country. Efforts will continue in providing incentives for installation of both individual controlling devices and also distributing devices for the energy metered in substations, so that consumers could control the heat supplied to them. Apart from their global and national importance, the measures for rational use of energy have also a social dimension inasmuch the insulation of dwellings and control of the consumption enable the consumers to keep their bills within tolerable limits.

In addition to that, legal and organizational opportunities will be sought to make use of the significant potential provided by the improvement of the organization of consumption, metering and payment. To this end, the regulatory framework will be changed so that it will encourage the establishment of associations of owners of apartments in condominiums, as well as the development of the market for energy-saving services.

4. Improvement of the management of district heating companies

The management of district heating companies needs to be improved. Practice demonstrates that due to the incompetent management of financial resources the district heating companies are incurring significant losses. Despite the availability of qualified experts and staff, the opportunities for the introduction of technical measures leading to improved results and better technical performance are not employed. Capable administrators and experts will be appointed to managerial positions and, when needed, companies that have proved their competence in the management of district heating will be contracted to improve the management practices in companies providing district heating. The staff qualifications also need to be improved. In the short run, more active involvement of the municipalities and other stakeholders will be mobilized for the identification of strategic areas of the development of district heating companies and their privatization.

Opportunities will be sought also for the improvements in the operation of district heating companies through introduction of state-of-the-art information and accounting systems, personnel training and streamlining of reporting and billing systems.

5. Program for priority investments and the provision of such investments

a) on the part of the government prior to the creation of favorable environment for private investors

The privatization of district heating companies will be the leading policy towards these companies. However, under the existing economic and regulatory environment the district

heating companies tend to be unattractive for investors due to the low subsidized prices and vague pricing policy. A number of prospective investors have expressed their interest, particularly with regard to the opportunities for cogeneration, but the existing ambiguous regulatory environment does not provide the grounds to expect that such investors will venture on participation in the privatization in the district heating sector, unless under non-market long-term agreements and high rates of return. In the period preceding the introduction of market conditions and favorable changes in the investment environment, the government intervention is necessary for the implementation of such highly efficient measures as replacement of substations, mounting of metering and controlling equipment, improvement of generation and transmission, which would make it possible for the companies to bring down their costs and for the consumers to control their consumption.

Based on the studies conducted earlier, the following investment priorities have been identified:

- Rehabilitation of substations which is expected to result in 20% cost reduction[3]
- Modernization of pump stations in order to ensure regulation of the supplied energy through regulation of the flow
- Replacement of corroded pipes (10% expected)
- Replacement of obsolete generating capacities and water-conditioning facilities (2-10%)
- Introduction of information systems for management purposes, including systems for accounting, billing and financial management of the companies.

Investments in the modernization of district heating systems will be sought through low-interest loans extended by the International Bank for Reconstruction and Development (the World Bank), EBRD, through grants under EU programs and through bilateral agreements.

b) on the part of private investors upon the creation of an appropriate legal and regulatory framework

Private investors will express greater interest and will assume the risk for their investments once the legal and regulatory framework along with the pricing policy are improved. Hence the ambition is to put in place a clear legal framework that would balance the rights and obligations of generators, suppliers and consumers in a way that will encourage generators to provide less expensive and better-quality heat supply through privatization/ construction of new capacities when interest in that is expressed.

For new construction, investors will be given an opportunity to make use of the authorization procedure which is to be defined in the new energy law. The privatization in the district heating sector will start from the seven district heating companies for which the direct subsidizing from the central budget has been discontinued and the rules for price regulation have been clarified.

[3] The World Bank Study

6. Discontinuation of subsidies

The policy for bringing the prices up to the level of the costs will continue. This is dictated by a normal market policy and, based on logic and the experience of other countries in transition, the expected results are as follows:

- Bulgaria's citizens will cease to subsidize through the central budget all heat energy consumers, be those consumers rich or poor (able to pay or not)
- District heating companies will receive the opportunity to operate properly, to make the necessary investments and to bring down their costs
- Incentives for energy saving will emerge
- Companies will become attractive for investors.

Under the existing system, the district heating companies are subsidizing consumers at the cost of their own decapitalization, which is too high a price to pay and, besides, this process cannot last for long.

VI.4 Coal mining

1. Status

In 2000-2001, the following actions were undertaken in the coal-mining industry:

- Transformation of the companies through their unbundling into separate 100%-state-owned joint-stock companies or limited liability companies and through the subsequent preparation for privatization or liquidation. Thus the following companies were transformed: the *Bobov-Dol* Mines, *Pirin* Mines, *Maritza Basin (Marishki Basein)* Mines, *Balkan* Mines and *Pernik* Mines. The outcome of those actions has been negative. The goal of speedy privatization failed to be attained, while new barriers to its implementation have been put instead, mainly caused by financial and legal ambiguity resulting from inappropriate decisions on those transformations.
- In 2000, a joint venture was set up by the *Maritza East* Mines and *Rheinbraun*, Germany, for the preparation of a project for future privatization of the mines with the majority stake held by the German company. So far no significant result has been achieved in this undertaking
- Non-viable companies or their parts announced in liquidation are currently implementing projects for technical liquidation and elimination of the adverse impact on the environment. These projects are funded from the central budget. Should interest in them be expressed, the liquidation process will be suspended and they will be offered for privatization.

Currently actions are being undertaken in the following areas:

- Privatization processes and the processes of the preparation of viable companies for privatization are underway, concurrently with the drawing up of the necessary concession agreements
- Result-oriented actions for the revival by means of privatization of the viable parts of the companies announced in liquidation

- Adjustment of the existing procedures so that they can be consistent with the new law on privatization and post-privatization control
- More stringent financial monitoring of the implementation of liquidation projects
- Reassessment of a series of economically unjustified decisions on the organizational restructuring (divestiture or merger of companies) in the coal-mining industry

Key goals for the development of the coal-mining sector:

- Provision of the financial resources necessary for the companies' development and for the generation of revenues for the central budget by means of privatization
- Provision of local coal supplies at competitive prices for electricity generating and district heating companies
- Seeking a balance between secure energy supply and environmental protection.

2. Priorities

- Re-direction of subsidies from the central budget for the funding of liquidation projects and environmental protection projects
- Introduction of commercial market relations between the coal suppliers and the customers from the energy sector
- Through efficient privatization methods, attraction of financially stable investors with expertise in the coal-mining industry
- Monitoring of the implementation of the privatization and concession agreements by privatized companies
- Development of the *Maritza East* Mines in line with the long-term plans for the development of electricity generating capacities in the complex.

3. Measures to achieve the goals

a) Opencast coal mining

The opencast coal mining will remain to serve as a basis for the Bulgarian electricity sector, with the leading role belonging to the *Maritza East Mines* Company. The Company prospects and exploits the *East-Maritza* coal basin that is the biggest lignite coal deposit in the country with geological reserves of 2,273 tons out of which 1,321 tons are proven.

The mines and their customers (power plants) represent a profitable complex that comprises companies interdependent in terms of technologies and markets and generating 40% of the electricity in Bulgaria.

The necessary measures for the Company's development are related to the attraction by appropriate means of investments needed for:

- Rehabilitation and replacement of the heavy mining equipment
- Replacement of the machinery

- Improvement of the operational efficiency in all areas of activity.

b) Underground coal mining

These companies account for about 10% of the total coal extraction in the country. Their financial situation is very difficult as low efficiency, technological backwardness and heavy indebtedness (predominantly to the central budget) are typical of all of them. To ensure security of electricity supply, the opportunities provided by the European directives will be used for preferential dispatching of the plants burning local coal (up to 15% of the primary energy sources used for electricity generation).

It is urgent to:

- Attract reliable investors through privatization, including privatization of viable mines and sites announced in liquidation
- Develop new programs for the recovery of companies in which investors do not express interest
- Gradually carry out technical liquidation and/or announce as insolvent those underground and coal-mining companies whose non-viability is proven.

4. Implementation of plans and programs for alternative employment

The process of restructuring implies massive lay-offs in the coal-mining industry. The Council of Ministers ordinances provide for the following compensations:

- A one-time financial compensation for the workers and employees laid off from state-owned commercial companies
- Compensations amounting up to three gross monthly wages/salaries for the workers/employees laid off from coal-mining companies in liquidation.

Part of those laid-off is involved in projects for re-training and alternative employment implemented by the Ministry of Labor and Social Policy with the strong support of the Ministry of Energy and Energy Sources. In 2001, an employment generation project started in the regions with coal mining and steel industry. The project covers the regions of Sofia, Pernik, Smolyan, Kurdzhali and Bourgas and is funded under the national PHARE program.

The above-indicated actions (financial assistance, alternative employment generation and job creation) aimed to alleviate the consequences of the restructuring will be in the focus of the energy policy in the coal-mining sector. The ambition is to make these measures proactive, rather than reactive to the negative effects of the restructuring.

VII. KEY ACTIONS AND EXPECTED RESULTS IN 2002-2005

VII.1 Key actions

1. Legal framework

By the end of 2002, a new law on energy will be drafted and submitted to the Council of Ministers thus making it possible to:

- Introduce the selected model of the electricity market

- Develop an internal energy market under an approved schedule
- Introduce a authorization regime for construction of new capacities
- Enhance the SERC role.

After the passage of the energy law, within the timeframe stipulated by the legislation, the necessary secondary legislation will be drafted.

2. Regulatory framework

In 2002, ordinances adopted by the Council of Ministers for setting and implementing the prices for electricity, heat and natural gas will be enforced. Differentiated tariffs for natural gas will be introduced for different categories of consumers, thus laying the foundation for the development of the gasification in the household sector.

The Council of Ministers is to adopt the ordinances drafted by SERC on direct access to electric and gas transmission networks, which will provide opportunities for direct contracting between eligible customers and electricity and gas suppliers.

In compliance with the already approved schedule of increases in heat and electricity prices, during the period of transitional pricing the existing forms of subsidies for the electricity and heat prices will be phased out and prices will be set in such a way that they will reflect the costs.

3. Privatization

Through consistent actions that will be undertaken in 2002-2004, the energy sector will be transformed from a sector with predominant state property into a sector with a large share of private property managed by strategic investors in line with up-to-date standards. The sector will also be significantly represented on the capital market. The revenues from privatization will be earmarked on a priority basis for social protection of consumers, of those laid-off as a result of the restructuring and for the funding of projects with high social and economic impact.

4. Electricity sector

To set up an internal electricity market, changes will be made in the following areas:

- Restructuring of NEK in line with the requirements of the EU directives
- Introduction of market rules for trading
- Development of a market segment.

The necessary investments will be provided through:

- Privatization and rehabilitation of the existing capacities
- Attracting investors for construction of new capacities under the procedures of the authorization regime
- Applying a tender procedure for construction of new capacities, if this is deemed necessary for secure electricity supply, which should be proved by the long-term plans of NEK in its capacity of a system operator.

5. Gas supply

Restructuring of the *Bulgargas*, development of low-pressure gas supply and introduction of a liberal trading model allowing a free choice of suppliers – these are the key areas for action and, at the same time, the results that should be achieved in this sector.

6. Heat supply

Financial recovery and preservation of district heating as a cost-effective and environmentally friendly option for heating necessitate urgent integrated measures in the following areas:

- Provision of government-guaranteed funding for urgent energy efficient investment projects
- Improvement of the companies' management
- Introduction of devices for metering and controlling of individual consumption
- Provision of subsidies from the central budget for the sake of the proper functioning of the companies, until the prices for heat used for household purposes are normalized
- Attracting investments through privatization, where there is interest on the part of investors.

7. Coal mining

Through result-oriented actions aimed at financial recovery, liquidation and privatization, by 2005 the following should be achieved:

- Cessation of subsides for the industry
- Carrying out of comprehensive privatization of viable companies and attracting strategic investors with expertise in the sector
- Step-by-step introduction of commercial relations with the customers belonging to the electricity sector, under the principles of cost-based dispatching

8. Social protection

Taking into account the key role played by social protection in the successful implementation of the reforms in the energy sector, a system for social protection of consumers will be put in place. This system will:

- Provide those in need with timely and sufficient energy subsidies
- Have a broader scope than the existing system and that scope will change flexibly depending on the income and price levels
- Be based on up-to-date schemes: individual vouchers, two-component tariffs, energy saving measures, consumption restrictors etc., which will simplify the provision of assistance and improve its efficiency.

Equally important is the social protection of those employed in the energy sector. This protection will evolve along the following lines:

- Retraining program consistent with the requirements for market-oriented development of the energy sector, thus preventing lay-offs facilitating the process of reforms
- Programs for alternative employment and schemes for financial assistance to the workers and employees who are laid-off as a result of restructuring.

VII.2 Expected results

As a result of the implementation of the planned actions, significant results will be achieved, as shown in.