Does the Energy Sector Reform Call for Reform?

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PRELIMINARY COMMUNICATION

This paper discusses the course of the energy sector reforms in Europe so far, its objectives, achievements, issues, and dilemmas. In particular, long term and security aspects of energy supply of Europe are analyzed. In addition to the legislative changes regarding the open energy market regulation, and primarily the changes concerning electricity and natural gas markets, the past period saw dynamic changes of institutional framework, such as: increasing members of the European Union, increased number of countries aspiring to the EU (candidate countries or potential candidates), and changes in other European countries out of which Russia is the most significant energy producer.

The paper analyzes the issue of responsibility between state – regulator – system operator – trader – energy buyer. In Europe, it is more a complex question because the system of responsibility includes the institution of the European Union. Therefore, the relations between EU - state – regulator – system operator – trader – energy buyer are especially important.

The paper looks in to the issue of energy company integrations, creation of energy mega-undertakings and their influence on further market development. The question of monopolies now appears in a new form.

The conclusions suggest possible measures for institutional influence on energy market development, especially in the network energy systems, which may have a positive impact on system security and stability and markets development and their long term sustain ability.

Key words: energy market, energy sector, reform

1. INTRODUCTION - SITUATION AND PROBLEMS OF THE ENERGY SECTOR REFORMS IN EUROPE

During the past 15 years the efforts of the European Union has been focused on promoting common energy market with the view of achieving higher level of economic growth and competitiveness in relation to other highly developed economies. Before this, Member States had energy systems (not markets) with variety of structural and ownership arrangements based on their constitution and historical background. In most countries these systems were vertically integrated companies responsible for the whole territory or administrative regions, and competition did not exist. Potential competition was only at the energy products level but not within single energy product market, except for oil derivatives.

The analysis of the EU legislative activity in the past period, where the aim was to establish network energy market (electricity and gas) by means of large number of Directives, shows the following:

1. The EU wants to create a common open energy market in conditions where the institutional relations between the Member States are not solved;
2. The strategy of multi-step promotion of internal market of electricity and gas does not produce expected results because none of the steps has been fully implemented, and as a response to the problems aroused, a new step is proposed, which also fails to be implemented, etc.;
3. So far, the EU has not solved the problem of ownership relations and how they influence on market development, although it is well known that lack of clarity in the ownership issue as a rule results in negative effects on the market;
4. The issue of security of supply has not been seriously considered;
5. The issue of long term interests and open market rules has not been considered. This was partly caused by energy surpluses in some European countries, which created an unrealistic picture on market situation.

In order to implement the underlying idea of the open energy market : **that customer may choose the supplier and buy energy at affordable price, and that trader have access to network though which the energy can be sold to the buyer**, it is necessary to solve some issues which obstruct this process. The EU has primarily focused on the problems of unbundling energy activities in to production, transmission, distribution and sale, emphasizing the issues of transmission and distribution systems operation as the crucial question of the market development. The solution of this issue is necessary but not sufficient for realization of fundamental objectives of the energy market.

On the basis of the adopted Directives the requirement of legal unbundling and independent transmission system operator should have been implemented by July1, 2004. More than a year later 16 Member States fully and definitely implemented this requirement in electricity transmission system and 9 Member States in gas transportation system. Similarly, distribution companies (DSO) should be independent by July 2007. The compliance situation in this case is even worse because only six Member States implemented in full this requirement in

the area of electricity, and four of them in the gas distribution.

According to the national regulators' reports of individual Member States, the problem of activity unbundling in transmission and distribution (TSO and DSO) activities has been considered in a rather unclear way, without concrete activities in implementation within the national legislation. The problem most often derives form the excessive discretion right that EC leaves to the national regulators in the area of integrated companies. Lack of progress in the unbundling process is pinpointed as the most serious obstacle to reinforcing competitiveness and developing market competition in the supply and distribution of electricity and gas.

The latest proposals of the EU aims at highlight the question of transmission system operator independence (and distribution system as well) in terms of ownership as well, **which is a necessary step towards realization of open market concept**. The question is why only after 15 years of identifying the problem and barriers to the creation of open market, the solution is being looked for, and why it has not been done earlier.

On the basis of the course of reforms so far it can be concluded that the legislative framework favored maintaining the monopolies wherever possible. Actually, the legislative changes and especially the privatization processes which took place outside the EU brought only redistribution of space monopolies, without any real breakthrough towards market creation. Usually, state monopolies were replaced by private monopolies. Majority of buyers did not have opportunity to their right of choice, either because lack of alternative or lack of interest because due to low costs buyers are not interest in participating in the market play.

Uneven level of development of the EU Member States, and thus, of purchasing power of customers in, particularly, new country members, reduces the scopes of the open market within the EU and underlines the social dimension of the problem, which again, is a responsibility of the state or local administration.

2. EXPECTATION OF THE EU AND OTHER COUNTRIES IN ENERGY SECTOR DEVELOPMENT

In the projections of energy system development one basic question has not been resolved yet: **is energy market an objective per se or only an instrument for achieving goals of economic and energy policies of the EU**. The analysis of activities so far shows that the EU has seen the forming of open market as an objective rather than a means, and the lack of expected results has been tackled by adopting new directives, one after another.

From a point of view of energy buyers' interest, either household or commercial customer, the aims are the following:

1. Affordable energy price;
2. Possibility to choose supplier;
3. Confidence in supplier and quality of service;
4. Security of supply;
5. Sustain ability of choice of technological and energy arrangement of meeting energy needs.

It can be assumed that the outline of the open energy market, as it was envisaged in the EU, with all its directives and regulation of monopolies in energy transportation and distribution does partly fulfil the aims of energy buyers, such as: affordable price, possibility of choice, and confident supplier. Of course, only there where supply effectively took place. Other goals such as, security of supply and sustain ability of technological and energy arrangement for customers, go beyond the scope which can be realized by the market and enter the scope of responsibility and intervention of national states and/or EU as a whole.

Energy situation of the EU, and equally so in other countries, was relatively favorable in the period when the sector reform was initiated. Energy surpluses that emerged after the collapse of socialist and communist countries and lowering of their economic activities, created the illusion that the offered reform solutions would be sufficient. However, with depletion of these surpluses and with problems

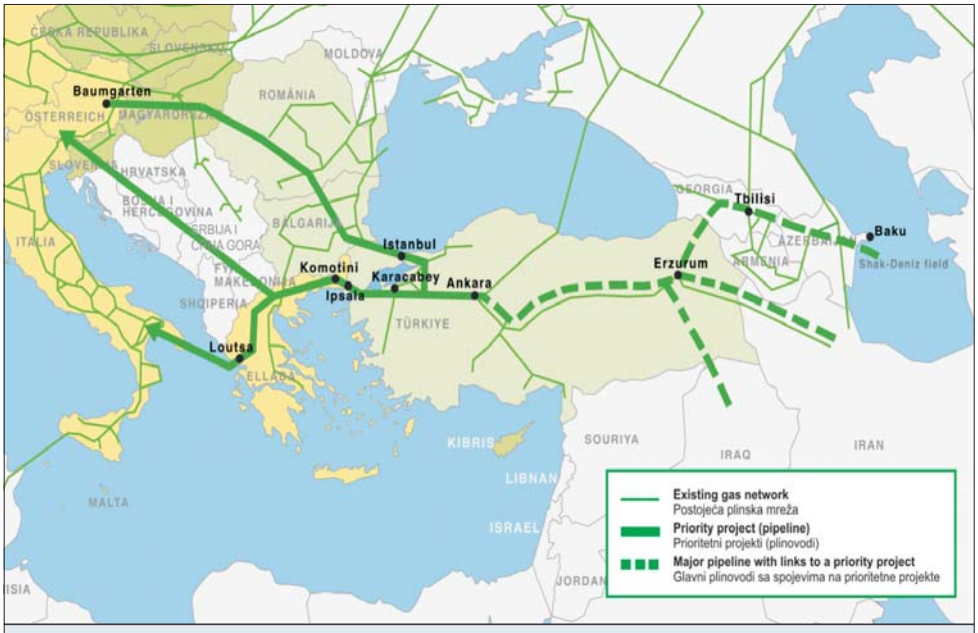

Fig. 1. Priority projects of natural gas supply to Europe from the Caspian Region - TEN-E Priority projects
Sl. 1. Prioritetni projekti opskrbe Europe prirodnim plinom iz Kaspijske regije - TEN-E Priority projects

Source, Izvor: Trans-European Energy Networks: TEN-E Priority projects, (http://europa.eu.int/comm/energy/gas/publications/index_en.htm)

Fig. 2. Priority projects of LNG terminal (TEN-E Priority projects)
Sl. 2. Prioritetni projekti LNG terminala (TEN-E Priority projects)

emerging in relations between Russia – Europe, regardless of their motives, the issue of security of supply in Europe came to the foreground. The public and energy customers expect energy supply to be secure, and the solutions offered in the energy sector reform do not guarantee it in long run.

3. REAL SCOPE OF THE EUROPEAN ENERGY MARKET

3.1. Natural gas market

The importance of security of natural gas supply was declaratively expressed in the framework of energy policy aims to make Europe as less dependent on Russia as possible when energy is concerned. For this purpose, in the framework of **TEN-E Priority Projects** there is a proposal for **priority gas pipelines of European character**, facilitating the transportation of gas from the Caspian Region.

All plans for construction of new and expanding the existing systems are designed to transport gas from Iraq, Iran, Azerbaijan and possibly Turkmenistan via Turkey up to European gas pipelines. The expansion of this system, from Turkey to Greece, and further on to Italy, will together with Nabucco project, represent the link between new gas sources and the European Union gas system and development of internal market of gas.

In addition to gas pipelines, the EU intends to increase security of supply by a LNG terminal.

However, the developments of the past several years proved that it was not enough. Namely, it was expected that entrepreneurial initiative, mainly from the private sector, would build up necessary capacities on the envisaged axes. The Nabucco project was primarily planned to set off in 2009, than in 2011, and now even this deadline is in question. The Volta project is again announced as a realistic option, but still, no concrete preparation activities are ongoing. The competition projects for connection to Italy or through Southeast Europe, and the construction of the LNG Terminal, are announced and in effect discourage one another. The insecurity of entrepreneurs is understandable because the realization of two parallel projects at the same time would compromise the business justification of both of them in their most sensitive, initial operational phase. This results in the lack of concrete activities and delays in construction of minimally needed capacities, which undermines the security of supply. It is evident that except identifying potential corridors, the EU should institutionally, organizationally, financially, and politically support the projects which are essential for its energy supply, since market mechanisms do not generate the needed construction dynamics. Institutional participation of the EU and the national governments in addressing security of supply issue is one of the major weaknesses of the energy sector reform.

The problems that EU faced with gas and oil supply from Russia during the last two winters emphasized the need to harmonize the rules of market play in the EU,

Russia and transitional countries as soon as possible. Such harmonization is possible only with a "win-win policy". This means that Russia is enabled to take part in the open energy market of the EU, and that Russia enables free investments in production and transportation of gas and oil on its territory, and that transitional tariff is defined for the transitional countries.

3.2. Electricity market

The scope of the electricity market is limited primarily by infrastructure, both in generation and in transportation sector. The short term scope of market depends on the existing infrastructure, and the long term scope depends on the planned level of the built infrastructure. The cross-border energy transportation facilities built before are the product of the relations of previous periods. Since the countries have established balance within their borders, the cross-border interconnections for electricity transmission were not developed with the aim to boost cross-border market. Today they can be estimated as insufficient for purposes of the open market, and in the future the priority should be given to development of interconnections between each country and its neighbors, as well as interconnections towards the region of energy sources.

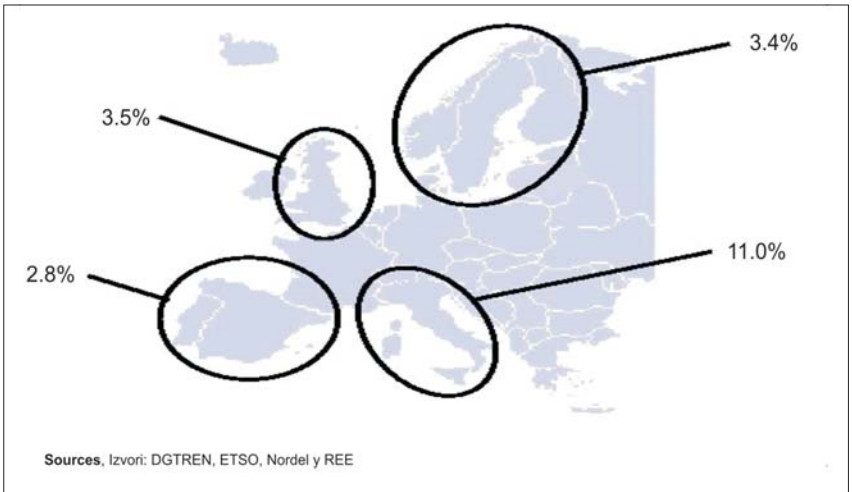

Fig. 3. Ratio between peak load and cross-border interconnections in the European power network
Sl. 3. Odnos između vršnih opterećenja i međudržavnih prijenosnih kapaciteta u elektroenergetskoj mreži Europe

In case of electric power network in the old part of Europe one can see in what extent the interconnection capacities put limits on development of electricity market, and equally so they reduce the security of supply. The Figure 3.3 shows the ratio between peak load and cross-border transmission capacities in the European power network.

The construction of interconnections capacities is a necessity and priority, but it is also a problem in real terms because a large number of countries need to synchronize their activities, and harmonize legal, procedural, ownership and business aspects of this undertaking. Political relations are also a possible obstacle. Cross-border interconnections are imperative for future market development and security of supply, and the EU should, as in the case of gas, provide its strong support and aid in order to efficient resolve the problems in their realization. Electricity network interconnections between Member States should be a part of obligations.

4. RESPONSIBILITY RELATIONS BETWEEN EU – NATIONAL STATES– REGULATORS – OPERATORS – ENERGY UNDERTAKINGS - BUYERS

The line of responsibility between EU – national states – regulators – operators – energy undertakings and customers is not closed up in situations of disruptions caused by incidents, political problems or void responsibility areas, that in the present stage of the reform nobody is in charge of, and the market is unable to solve this issue. Market interests of business operators are not sufficient and it is not realistic to expect that all interests will be dynamically adjusted as to fulfil the projects which are critical for security of supply.

Since security of supply is a civilization issue, because the modern way of life can not be separated from energy and secure supply, the responsibility of state administration can not be avoided as a link in the chain of responsibility. If we take into account the environmental considerations as well, and effects of environmental protection on the energy sector, then all reform solutions must clearly and unquestionably determine position and responsibility of each state.

For the EU it is necessary to set out responsibility relations between the EU and national states. If a single European energy market is to be created the core responsibility should be moved from national states to the EU.

Security of supply and sustain ability of specific solutions requires active role of state and/or EU administration in implementing policy of energy sector development and energy market. It is possible to view the solution in determining the active position of the state and/or EU administration in two dimensions:

- Energy transport and interconnecting energy systems;
- Construction of energy production facilities.

The question of transportation network construction, as well as supply routes between Member States, is a key prerequisite that the market fulfils its role. Determination of corridors and issuing recommendations is not enough but it is the active position in construction and maintenance of needed deadlines which is necessary. This applies to interconnecting national energy systems, which should be an obligation of all Member States. Needed capacities and construction of gas storage facility should also be included among important issues of secu-

rity of supply, as they, like transportation, can not be only a market issue.

From the point of view of security of supply, same is the situation with construction of electricity generation capacities. Active position of the state in imposing minimum construction obligations and spatial layout of capacities is essential for preserving security of supply at the needed level. The issue of nuclear power plants and single EU position in this regard should be included in this set of issues.

Introducing security of supply as an important element of the reform requires that security is institutionalized and made a measurable value which is a basis for responsibility for all entities in the chain of responsibility EU – national states – regulators – operators –energy undertakings and customers.

5. PRIVATIZATION AND PRIVATE MONOPOLIES

Starting from 1990 private capital is interested in distribution, transportation and storage capacities in the transitional Eastern European countries. This trend is present today as well. Indirectly this interest is motivated by EU Directives, but essentially it is driven by desire to take a market position on time and at good price. The largest, integrated energy companies define their areas of interest and are ready to purchase any infrastructure asset which gives them a better market position. Since in most of the East European countries the open market rules are not in place yet, the ongoing privatization could turn into an obstacle to opening market up the to effective competition.

The privatization in the electricity sector is taking place practically in parallel with the restructuring of the sector. The process is more indicative in the transitional East European and Southeast European countries, which are new EU Member States or candidate states. Namely, privatization of the part of the electric energy system has been carried out in Hungary, Czech Republic, Slovakia, Poland, Romania, Bulgaria, Estonia, Lithuania, and Macedonia. Given the dynamic developments in the electric energy system in the past decades in Europe, either in the organizational or ownership terms, it is possible to expect swift changes in the current privatization of electric energy sector. In the observed countries as a rule it is the distribution activity that was first privatized, while transmission activity was left out of the process. Thus, the transmission activity remains in full or partly state ownership. Due to the lack of interest of energy customers to change the electricity supplier, foreign investors in the transitional countries are primarily interested in buying distribution companies because it automatically buys a dominant market share, i.e., supply activity. In this way the return on investment is relatively fast, and investments are always below the values estimated at the beginning of the privatization procedure (Hungary, Poland, Bulgaria, and Czech Republic). Until present, the privatization procedures conducted in Eastern and SEE countries resulted in selling of majority shares (Bulgarian generation companies, Bulgarian distribution companies, Polish generation companies, distribution companies, Slovakia generation companies, Macedonian distribution company, Romanian distribution company), and in a lesser extent in selling minority share package (Czech distribution, Slovakia distribution) . It is also interesting to note that the privatization is often carried out before the restructuring process has been completed (Hungary, Bulgaria, Czech Republic) and mainly in a very short time. Expectedly, in all privatization in the observed countries the main investors, or strategic partners, appear to be the most powerful energy companies in Europe (RWE, E.ON, EdF, ENEL, ČEZ, etc.). There is a clear tendency to replace the state monopoly by a private mega-monopoly. We can also notice that the effective selling price of electricity companies was rather low and ranged from Î80 to Î250 by metering point (customer), which translates to the value of one connection fee for capacity of 1 kW.

The privatization process was applied in electricity generation activity but the construction of new individual independent capacities is behind the development in times of vertically integrated companies. This is understandable in light of the risks existing in the emerging markets. This does not include renewable energy sources projects, as they are still relatively low on scale of meeting the system load needs.

The insight in the ownership structure of energy companies shows that the past period saw a concentration of market strength and that less than ten companies stand out thanks to their size. The current processes indicate that these companies will continue to grow in strength and that a possible option in open market development lies in the space control of the market.

6. RENEWABLE ENERGY SOURCES AND ENERGY MARKET

Increasing use of renewable energy sources is a strong political priority in the period of energy sector reform of the EU. The declared objectives are: to diversify sources, reduce energy import dependence, reduce environmental impact and create jobs.

Given the high prices of equipment and lack of possibility to integrate in to energy market on commercial basis, the solution was found in administrative decisions on share of renewable energy sources in total energy consumption and support for their application. This means higher electricity prices for customers.

However, such a model instigated a growing use of renewable energy sources, especially wind, because it became a commercially attractive energy business, and investment risk was reduced to acceptable levels. Such an arrangement is sustainable as long as a share of renewable in total energy consumption, excluding large hydro, does not exceed 10%. More ambitious plans of renewable energy sources application require redefinition of all market elements and inclusion of renewable energy sources into integrated system of energy trading. The 10% limit should be open for discussion and by focusing on its level the intentions is actually to draw attention on the fact that increasing the levels in reality abates the effects of the open market.

The basic issue of a significant boost in renewable energy sources use lies in development of know-how and

high prices of the present technologies. Since this issue is closely linked to climate changes and necessity to stop the further growth of emission levels and reduce them eventually, the investment in technological development is the first priority of the EU. Only new technological solutions conditions can make renewable energy sources competitive with other technologies without administrative influence on their position.

We should not neglect the fact that the increased use of intermittent renewable energy sources partly makes the security issues more acute and that it can be a limiting factor in their implementation. This raises the question of energy storing as a specific technological challenge for the EU.

7. KYOTO PROTOCOL, EMISSION TRADING AND ENERGY MARKET

The Kyoto Protocol was adopted at the Third Conference of Parties of the UN Framework Convention on Climate Change (UNFCCC) in December 1997. The Protocol defines the following mechanisms: joint implementation, clean development and international emission trading, s instruments for a more efficient reduction of greenhouse gases emissions. In the EU countries the emission trading system is connected to flexible mechanisms of the Kyoto Protocol. Each country decides on emission reduction targets in the framework of the National allocation plan.

The Kyoto Protocol and Emission Trading System influence the energy market development as well as development of markets of other commodities and services. This influence is manifested as:

- Influence on competitiveness, choice and development of energy production/transformation technologies and meeting energy needs;
- Influence on choice of primary energy product;
- Influence on price of primary energy product and transformed energy forms;
- Influence on security of supply of needed energy forms;
- Influence on general economic development of a country/region as consequence of new terms in commodity and service markets (influence on specific economic sectors, end-users, and buyers, workforce demand, global market competition level, etc.).

The mentioned influences are interlinked and they should be regarded and studied integrally. Fulfilling the Kyoto Protocol and ETS commitments represents a further insecurity on the energy market and affects the security of supply levels. The effects are short termed (e.g., switching to natural gas or alternative fuels – biofuels and waste, changes in production portfolio) and long term ones (investments in CO_2 low-emission or zero-emission technologies). Uncertainty about the next step in emission reduction results in hesitation when it comes to making investment decisions with potential adverse effect on security of supply, energy price and economic development.

The present emissions level and trends show that many countries will not fulfil the planned emission reductions targets until 2012. Interesting is the electricity price rise throughout Europe in 2005 which is related to the prices of emission allowances. Here, it should be noted that all the countries issued emission allowances free of charge, which means that energy undertakings did not have higher operational costs directly incurred by emission allowance cost. Thus, there should not have been cost increase and energy price rise.

The price of emission allowance affects the investment decisions and in long term it leads to increased construction of gas-fired thermal power plants and rising demand for gas, which may cause higher gas prices and gas supply problems in general, especially in the light of the fact that the greatest quantities of gas are imported from the regions outside the EU. The position of electric energy systems with traditionally high shares of zero-emission technologies is especially favorable. In this case it refers to France whose position as an electricity exporter is becoming increasingly strong. Countries with high share of coal (e.g. Germany) are in a difficult position as they become net importers. In this way the Kyoto Protocol provisions and Emission Trading System affects the changes in power flows within the UCTE network.

Limiting emissions in the territory of one country will affect the construction of thermal power plants using fossil fuels, and it will be felt both by customers within the country or markets outside a specific country. Since the hydro potentials are most often fully used, the construction of nuclear power plants is underway in few countries only because of public opposition to nuclear projects, renewable energy sources require subsidizing, effective market can be built on production from thermal power plants using fossil fuels which generate greenhouse gas emission. With connecting the commitments deriving from emission limits and effective possibilities of creating market surpluses only from thermal power plants using fossil fuels, the effects of the market will be objectively limited.

8. CONCLUSIONS AND RECOMMENDATIONS

The EU measures contained in the Directives only partly created the conditions for open energy market development. The measures implemented so far can be estimated as necessary but not sufficient for establishing the open market of network energy systems with ensuring the needed security of supply and clear responsibility. The disruptions in supply and system failures have economic, security, and political consequences. The process of open market formation was so far rather slow and with great obstructions of the major players, most often only as a possibility and not as reality.

The geographical layout of energy production and consumption is not well balanced, so the question of transportation is crucial for network energy market development. Problems of electricity transit reduce the idea of single European market down to regional dimension, and potentials for gas transportation put limits to possible effects of competition and increase the vulnerability of the gas market. The gas transportation from Russia appears to be especially sensitive as it runs through the countries with which Russia had special re-

lations and terms of sale. The relations between EU and Russia are a critical factor of the European energy market.

The unresolved relations of energy undertakings' business risk and responsibilities of state and supra-national supply organizations affect the long term security of supply. The political stability and instability, also reduces the market and adds to the insecurity of supply.

The responsibility of the countries for implementation of the Kyoto Protocol and the market interest of energy undertakings are not in balance. The additional problem is the position on the nuclear energy, which prevents the realization of the common policy.

Financial support for renewable energy sources and administratively set targets on their share in total energy consumption reduce the idea of open market, irrespective of the positive effects of reinforced use of renewable energy sources.

Privatization and ownership concentration in a small number of energy undertakings slows down the implementation of the idea of open market. If this trend continues, we can deal only with divided and not open market. Taking into account the fact that in the privatization procedure the owners of distribution system operator and supply operator are the same subjects, the process of market opening up are largely questionable.

1. Political agreement between Russia and the EU is a key prerequisite for further development of energy market in Europe. The EU must open its market to the Russian companies, and Russia must allow the EU companies exploration and production at the fields in Russia. The reciprocity between two partners in obligations and market opportunities is indispensable.
2. Construction of electricity lines is an assumption for marker development. Resolution of this issue at present political setup is left to the interested countries and to the interest of individual investors. Each country must take obligation to ensure energy transit capacities. Also, the European Union should institutionally, organizationally, financially and politically support priority projects that come to effect rather slowly.
3. It is necessary to realistically estimate the security concerns in construction of production capacities outside each country. As much as it is desirable to open electricity market towards the generation outside a country's territory, with increasing ratio of imported energy to domestic production the country's security diminishes. The solution is in the obligation that each country builds in its territory the minimum and obligatory part of production capacities, but each Member State must secure 100% reserve on its own territory or through long term agreements on the territories of other countries'. Final solutions should be determined by means of analysis and their timing should be adjusted. National governments should have possibility to intervene if the plans of production capacity construction do not effectuate on a specific territory. The price of security expressed through necessary reserve which must be secured on the territory of each member country should be a component in the electricity pricing.
4. Market development and security of gas supply should be ensured by security standards and quality of supply standards which implies the obligations in ensuring of a part of transit for unknown users, connecting gas systems with neighboring ones, construction of new supply routes and sufficient storage capacities. The studies of vulnerability assessment should be mandatory and they would be the basis for measures at the EU level.
5. The market monopolies should be prevented, as well as the ownership concentration which leads to market monopolization. In solving the energy market monopoly problems it is necessary to set out criteria for monopoly prevention taking into account the specific situations in each country, i.e., the EU as a single market and administrative space.
6. In order to implement the Kyoto Protocol and enhance the use of renewable energy sources and development of energy market, a single legal ad financial framework should be developed. The main basis for solving these problems must derive from the value of energy and cost of environmental protection regardless of technologies, but always taking into account the effects they generate.
7. Exploration and development of new technologies must be a common European project with a synergic effort of all countries in scientific and financial terms.

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