
DISSERTATIO EDITION

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**Four Pillars
of Security of Supply
in the Energy Market**



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*For those who are always on my mind
and support me on my path
of constant academic improvement.*

*I would like to thank my parents, my wife,
my children, my brother, all my relatives
and friends.*

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Foreword

This research monograph is the result of the several years of efforts by the author to identify legal-theoretical, legal-political and legal-economic aspects of the security of supply in the energy market, and to empirically test and prove them. Through the analysis of societal phenomena resulting from supply and demand ratio in the international energy market, the author have tried to identify the parametres (legal-economic before all) which led to the creation of norms that constitute the international energy law today.

Development directions of the existing legal norms in that area are limited by contrasted interests of two groups – energy consuming countries and energy producing countries. Therefore, the concern of this study is confined to the investigation of possibilities for further development of energy relations, not on justification of the existing views.

The purpose of legal norms is to regulate the existing or future social relationships in a way that would secure their consistent application. However, it is often shown in practice that revisers of the normative text of international regulations are not capable of combining the opposing attitudes in one document, and as a result such document is not adopted. However, bearing in mind the strategic importance of the energy issue, security of the energy supply still remains the guiding principle, a kind of paradigm for establishing new legal rules of behaviour in the international energy sector.

This monograph is intended for academic and professional public, students and all interested researchers aiming at gaining better insight in the international energy relations. It must be pointed out here that it does not contain a complete analysis of all the relationships nor all the existing determinants. All the views presented here are susceptible to criticism, even by the author himself, bearing in mind that this work proposes the creation of new rules that would look at the security of supply from the four interconnected aspects.

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1. Abstract

The subject matter of this research monograph is the analysis of the existing international energy relations and identification of possible directions of regulatory framework development, with the view to protecting the security of supply in the energy market. Impediments for the development of cooperation between the participants in the energy market on the multilateral level can often be redefined on the regional level, and in that way drawn closer. The point of balance between the opposing interests of the consuming and the producing countries in the international energy market will be described by means of the Weierstrass point of interrelations. Geographic distribution of fossil fuels, partial monopolization, fluctuation of prices, factors of political nature, irrational use of energy, and market fragmentation, are just a few areas of common interest spheres. This research monograph will point out common problems, perceived through basic models of cooperation between the participants in the energy market and examined from two different points of view. First of all, those common problems are the basis for building tighter and materially oriented commercial, strategic relationships, since resolving them leads to the reduction in the number of open issues between the participants. Secondly, different approaches to the open issues are simply a basis for further deepening and aggravation of the contentious positions. International energy relationships should not necessarily lead to the energy market polarization, which through the adoption of certain normative solutions then reflects itself on the national systems. It is necessary first to agree on the common position before resolving many, often regional issues. Therefore, the road to common adoption of international energy market regulations is specific in its own way.

An attempt to multilateral adoption of a general document, such as the Energy Charter Treaty, was premature, but the social relationships led to creation of independent, concrete public and private legal documents that are today an integral part of the International energy law, with the tendency to follow four courses of development, which would necessarily lead to the acceptance of general principles. This monograph analyzes some aspects of the access to sources, accessibility of the market, environmental protection and energy efficiency, and the creation of conditions for building energy reserves, as basic pillars of the security of supply.

Key words:

1. Energy Charter Treaty
2. legal paradox
3. Weierstrass point
4. energy relationships
5. energy community
6. substitution of consumption
7. stock arrangements
8. ring concept
9. economic (in)security

2. Introduction

Irregular geographic (regional, continental) distribution of energy potential, as well as the limited possibilities of exploitation of certain sources (renewable and non-renewable) are the basis for division of countries to those that principally produce and those that principally consume energy. The ratio of supply offered by the producing countries to demand from the consuming countries forms a basis for determination of energy prices in the international market. It is not uncommon that the market is, in addition to supply and demand, determined by other, non-economic factors as well, which lead to formation of cartels, oligopolies, monopolies and similar phenomena. The energy market is an integrated system in which any disruption in one region, in one country even, jeopardizes the functionality of the global energy supply. Therefore, the security of supply on the national level cannot be realized without international regulatory framework which would act as its guarantee.

The security of supply in the energy market can be defined as a capability of a certain market to answer with its supply to the momentary demand. In legal sense, the security of supply acts as a roof term for all regulations that provide all the participants in the energy market with the following: 1) access to energy sources, 2) access to energy market, 3) energy efficiency and environmental protection, and 4) possibility of building necessary energy reserves (those being the pillars of security of supply). The author of this monograph has tried to call attention to the problems of securing the stability of the pillars and to point out the similarities between the current security systems and those from the past that are well-known and easily recognizable. Access to energy sources is perceived through the prism of different approaches to non-renewable and renewable sources. In both cases, there is an increase in investments, but the right to protect those investments is of a completely different nature as compared to the protection of any other kind of investment. The analysis raises two key issues perceived in practice: the first one effectuates theoretical dilemmas *rebus sic stantibus* in long-term investments, taking into account abrupt increases in oil prices, starting from the first oil market shock onward; the second issue elaborates factual operations of certain international participants regarding the dilemma of who the energy sources belong to (to the country in which they are exploited or if they are a common asset of all the peoples).

Is it possible to deny an interested participant access to the energy market – that is the issue examined in the exposition of the access to the energy market. A special attention is given to the substitution of consumption as a basic

precondition of achieving a higher level of security of supply through raising the level of energy efficiency.

Greater energy efficiency does not necessarily lead to reduction in consumption because of the phenomenon known as the rebound effect, therefore it is necessary to additionally secure the supply by building reserves.

Reserves are good guarantees for the security of supply but can be harmful to the environment, so the solution has been found in the ring concept, the application of which disperses the risks of abrupt disruption in supply and the risk of harming ecosystems.

3.

Security of supply in the energy market

The security of supply issue was first actualized as an international (global) problem after coup d'état in Libya and the events that shortly followed it on the international scene. In 1971 the new Libyan president Muammar al-Gaddafi persevered in abandoning the concept of fifty-fifty split of energy resources with concessionaires and reaching a new deal. The war soon to follow, started by the attack on Israel, was intervened by large military forces: the former USSR and the USA. On October 16th 1973 the Arabian members of OPEC imposed to all the allies an oil embargo because of their help to Israel. As a result, oil prices between October 1973 and April 1974 multiplied. The price per barrel increased from USD 2.5 to almost USD 13. In addition, a revision of all concession contracts was announced, following the Libyan example.

For several decades the international community strove to prevent such dramatic disturbances in the energy market. However, recent abrupt increases in oil and gas prices have proved that such effort has been inadequate.

Reasons for that are manifold. The key reason is the absence of a generally accepted international document which would regulate the international energy market in its totality. Accession of a large number of countries to the Energy Charter Treaty⁽¹⁾ cannot be expected in near future because of the severe clash of interests among the participants in the energy market. In addition, even sector agreements, which at first seemed to have good chances for common acceptance, after a few years of implementation in some countries, have considerably been losing support. A glaring example is the Kyoto Protocol⁽²⁾ and the withdrawal of Canada, a large energy consumer, from it. New agreements in that area that will be examined here have been raising new hopes.

Another factor that plays an important role in the energy market is the rapid growth of industrial giants, such as Asian tigers,⁽³⁾ BRICS countries,⁽⁴⁾ and other potential technology miracles to emerge in near future. Their rapid growth caused an increased demand for energy in the parts of the world where it was difficult to predict that the current pace of development would lead to the creation of such a grandiose energy market. Predictions turned out to be incorrect, and the other participants were not prepared to stand, in the long run, a test of the constant growth of demand caused by intense industrial development, primarily based on modern technology and export.

Apart from diplomatic negotiations and interest trading aimed at protecting the security of supply in the newly developed circumstances, the international practice has seen models of cooperation between energy market participants

with similar goals that function well. Following the events termed “the Arab spring”,⁽⁵⁾ the security of supply has been given a new meaning [9], and the historically known models of cooperation the new contents.

Several models of cooperation can be distinguished in practice, three out of which would be mentioned here: the model of coordinated interdependence, the model of interconditioning and the model of multilateral solidarity.

3.1. Model of coordinated interdependence

The model of coordinated interdependence has been known from ancient times. Feudal lords used to join their ships in order to preserve the monopoly on transporting wood from a certain area. The model of coordinated interdependence today can be twofold – positive and negative. The positive model implies the relationship between the two economically independent partners who cooperate in order to protect their mutual interests and who work together under the prescribed rules. This model does not imply joint investment. The association of partners can be informal or institutionalized. An example of an informal association dates back from the previous century and it has been known as the “Seven sisters”.⁽⁶⁾ By simultaneous actions these companies caused an abrupt decrease in oil prices, which significantly hit the economies of Venezuela, Iraq, Iran, Kuwait and Saudi Arabia. As a special kind of countermeasure, in 1960 OPEC⁽⁷⁾ was founded in order to open up a forum for exchanging opinion and holding regular consultations regarding oil production, refining and sale, and/or to coordinate and unify the petroleum policies of its member countries.

The key instrument used by the member countries on the institutional level are export quotas, set in order to protect the market from the unpredictable fluctuation of prices. However, during several decades of OPAC existence, it has been difficult to harmonize personal interests of individual countries with those generally accepted. The key issue is the distribution of participation of each member country inside the agreement. The solution lies in the fact that the failure in reaching the agreement would cause considerable market fluctuations, and it is well known that the fluctuation of prices does not just harm the interests of consumers, but those of producers as well, because, in the long run, due to the difficulty in estimation of future oil prices, it incurs serious losses (and vice versa). Therefore, the aim of the application of the model of coordinated interdependence in this concrete example is preserving the stability of oil prices in the global market and protecting the security of export and with it of supply.⁽⁸⁾

Such operation clearly displays all the characteristics of cartels, which according to the currently accepted view are perceived as negative factors in the market, since they exclude absolutely free functioning of demand and supply mechanism. However, cartelization of the energy market produces another negative effect, which can significantly affect the security of supply, and that is the so-called copying of economic climates and political landscapes between the cartel members. Namely, the cartel character of OPEC resulted in the accumulation of the large amount of financial assets that could not possibly be invested in domestic markets due to the lack of investment possibilities. Placement of the excess capital further increased the wealth of the cartel members and led to the so-called petro-dollarization [30], i.e. to turning of the economies towards

foreign investments,⁽⁹⁾ so the focus of interest has been transferred from exclusively local to other, foreign markets [6]. Intertwined interests of interconnected partners can lead to the negative perception of the model. Legal-political trends in one market can cause fluctuations in the other market. Although those fluctuations are not necessarily the effects of the energy policy, non-functioning of the agreed within this model causes export distortion, and/or disruption of the security of supply. This claim was confirmed in 2011 with the events known as “the Arab uprisings”,⁽¹⁰⁾ when the oil prices significantly increased without the previous agreement, and latter decreased again. The market reacted to the fear of short energy supply due to political events, which led to the increase in prices. The effect of this model on the market trends can partially be counteracted by the application of the model of interconditioning.

3.2. Model of interconditioning

In the model of interconditioning two or more competing or opposing participants make joint investment in order to gain mutual benefit in the international energy market. This model bridges the gap between the opposing interests by introducing a new variable, i.e. the common goal. The most common type of this model’s application is when several countries join together in order to build oil or gas infrastructure.

The construction is preceded by long diplomatic negotiations on security, technical, technological and financial issues.

First it is necessary that the supplier and at least one energy consuming country (importer) agree on the profitability of the project itself. If the exporter and the importer are not the end countries, it is important to include in the negotiation process all the countries along the corridor of the projected gas pipeline. Assessment of security risks present not just in the process of construction of infrastructure, but latter in its exploitation as well, is a part of security clearance. The greater the security risk, the smaller the return on investment and weaker the wish for the realization of the project.

Technical and technological aspects include the assessment of energy needs (both current and projected) of each transit country and the end importing country. Those needs form a basis for determination of the capacity of the planned infrastructure. Also, each participating country can propose ideas regarding the projected route, having in mind configuration and composition of the terrain.

Financial negotiations are often the most complex part. The first issue is that of the method of financing the construction. The second issue is that of the energy commodity price and the minimum and maximum amounts that can be pulled. The third issue regards the transit taxes introduced as a means of compensation for transporting energy through the territories of transit countries.

After the events surrounding the South Stream⁽¹¹⁾ project, it is quite certain that future negotiations will have another segment, and that is the issue of guarantees. Suspension of further realization of such a large-scale project thwarted the interests and expectations of transit countries, which not just failed to provide for themselves the security of supply, but also bore considerable costs while preparing the terrain and paperwork necessary for the realization of the plan. The main problem in defining the guarantee clauses is that they draw their

subject matter from diplomatic rather than detailed legally determined relationships. Due to the lack of a generally adopted multilateral document which would regulate the issue of the energy sector investments in the international energy market, delivery and supply of energy are strategic issues discussed within the diplomatic and not strictly legal talks. It is presumed that if diplomatic negotiations succeed, there will be no further problems regarding the ratification, and/or implementation of agreements. The key benefit here is the higher level of security of investments, i.e. the reduction of possible non-commercial risks. Bearing in mind the fact that the project involves the participation of several countries, any participating country that would make a unilateral move diverting from what was commonly agreed upon would with such a move risk the imposition of diplomatic sanctions, and in that way jeopardize its security of supply.

In that sense, the model of interconditioning involves different participants with the common goal: to safeguard the security of supply. However, within this model the security of supply is perceived from the point of view of each participating country. It has been proved in practice that regardless of the size and the level of development of each participating country, its energy market is not strong enough to resist great fluctuations in the global market. It is therefore necessary to provide a higher level of security. The model of multilateral solidarity may offer a solution to that.

3.3. Model of multilateral solidarity

In the time of crisis one or more energy commodities in the international energy market can be in short supply, which results in the increase of prices. Although the participants in the national market may be willing to accept the higher prices, sometimes it can be impractical to supply the energy market (due to the damages inflicted on infrastructure, security risks, and similar factors). In the model of multilateral solidarity, the countries participating in the established market are obliged to help one another in such times. The security of supply is therefore raised from the national to the regional or group level. If a country does not possess enough energy sources of its own, it can get the energy from the neighbouring transit countries, so it is the most purposive for each country to develop a security of supply system with its neighbouring transit countries. The system built with the neighbouring countries that guarantees the security of supply can have short-term, mid-term and long-term goals.

Short-term security of supply system is based on the agreements on mutual borrowing and/or selling of excess energy/energy commodity in order to meet an increased daily demand. If one energy system is under serious strain or threatens to collapse, the neighbouring countries are obliged to sell it their excess energy, including the energy from their reserves if necessary, in order to protect the neighbouring energy market from crash. Such action is driven by desire to protect one's own energy market, since the collapse of the neighbouring market, due to its geographical proximity and presumed similarities in functioning, would overburden one's own market, therefore it is highly advisable to prevent any greater imbalance.

When it comes to mid-term strategies, countries can harmonize their energy policies regarding subsidizing energy capacities.

Larger energy capacities in a region guarantee greater security of supply, and the need for their harmonization derives from mutual relationships of different energy markets in that region. If it came to a larger discrepancy between the development of two or more markets, the balance of power, and therefore of interests, would be disturbed. That is why it is so important to include in mid-term projects as many participants as possible.

Long-term planning usually denotes capital investments, which include the investment in the development of production, storage or transport facilities. The model of multilateral solidarity can best be applied to the investment in developing storage facilities.

Joint storage facilities provide much greater leeway for reestablishing equilibrium in a destabilized market. At the same time, the partners at all times have at their disposal their own energy reserves and the reserves of other participants, which provides greater leeway for securing the energy market.

All the presented models are intended to enable smooth functioning of the energy market, and provide the participant with the following: access to energy sources, access to the energy market, energy efficiency and environmental protection, and opportunity to build up reserves.

4.

Access to energy sources

Energy is the result of *chemical* or *physical processes* in the energy sources. One form of energy can be converted into the other form as well. There are several forms of energy [28]: the potential energy, stored by an object's position in comparison to other objects; the kinetic energy of a moving object; the chemical energy, resulting from chemical bonds between the atoms of an object; the electric energy, which is the result of an object's electric charge; the thermal energy, coming from an object's temperature; the nuclear energy, which is the result of the instability of atomic nuclei of an object; and the electromagnetic energy, which is basically the energy of radiation, existing as light, radio-waves and in other physical forms.

According to the pace of regeneration, i.e. the rate of consumption of an energy source in relation to its capacity to renew, energy sources can be classified as renewable and non-renewable.⁽¹²⁾ Non-renewable are all those sources which are more quickly consumed than they are regenerated. These are primarily coal, oil and natural gas. Renewable are those sources that are naturally produced at a pace that meets the demands of both biodiversity and mankind. The goal of exploitation of both renewable and non-renewable energy sources is to provide enough energy to meet the long-term demand, i.e. to protect the security of supply.

4.1. Access to non-renewable energy sources

Access to non-renewable energy sources is riddled with numerous problems. The basic ones lie in their limited amounts and unsafe technology used for their exploitation and transport, which often cause pollution to the environment. Another problem is the infringement of expectation interests of the importing countries by the sources factually controlled by another country. Finally, another impediment is a special protection of investments from non-commercial risks, primarily the risks of expropriation, bearing in mind the *rebus sic stantibus* doctrine.

4.1.1 Exploitation of non-renewable energy sources

The largest reserves of fossil fuels are limited to quite a few regions in the world. Relying on their relatively high energy security, countries that have factual control over the exploitation sites are determined to use them as a source of their economic power and a potential for the increased investment in other

sectors. It is quite common that countries rich in ore and mineral resources intentionally attract investors to explore their mineral and ore reserves in order to increase potential investments. However, increased production of energy means larger export market, and consequently larger energy dependence of one or more partners. Larger energy dependence of partners raises the issue of their need to be informed of the state of the affairs in the exporter's internal market and exporter's future plans, since destabilization of the exporter's market causes destabilization of the importers' market. That creates the system of interdependence in which the importing countries in a way are in a subordinate position to the exporting countries.

Such relationship does not contribute to the building of trust in the energy market, and additionally widens the gap between the energy producing and the energy consuming countries. Thousands of years long tradition of oil exploitation [3] has put the energy market participants in quite complex positions. The importer's level of investments serves as a counterbalance, i.e. a kind of security for the importer. Therefore, it is not possible to talk about the real market competition when it comes to the access to sources, but about the current state of relationship between the participants. Such relationship is regulated through contracts, where the contract about to be signed does not need to be in the least similar to the previous contract. The reasons for possible dissimilarities between the terms of these contracts are twofold.

Due to the uneven distribution of energy supplies and huge costs of energy transport between continents, it is not possible to talk of a single, global market with equal conditions for all the participants, regardless of where the energy comes from. The object of each contract can be different. Apart from the delivery quotas and prices, contracts often state the level of investment, minimum and maximum quotas, penalty clauses, etc. Contractual parties are different countries and/or companies with different market influences and positions, so each party strives to get into contract the provisions that largely suit their own needs.

In addition, it is necessary to take into account the existing relationships, if any, between the contractual parties, and the level of already assumed obligations. Investment conditions and prices guaranteed to one contractual party need not be offered to another, and vice versa. The same conditions for purchasing energy applied to another contractor could possibly threaten the interests of the first contractor, so the exporter would take into account the potential importance of both contractors. Since there is no generally adopted multilateral document which would prohibit discrimination in the international (global) energy market, there is no legal protection.

However, multilateralism per se is not an unknown concept in the international energy market. The strength of multilateral agreements reflects the strength of common interests. Interests of big producers/exporters are opposed to the interests of big consumers. In addition, the third countries side with the policies of one of these two groups in their best interests. If any group is absolutely dominant, there is no multilateralism, and consequently no multilateral protection. The point of balance of interests between these two groups within a multilateral system can be described by means of Weierstrass⁽¹³⁾ point [7] of interrelations⁽¹⁴⁾ [10]. It is also interesting to examine the Weierstrass point from the aspect of new energy trends. Steep decline in oil prices in the second half of 2015 can be merely assigned to reduced demand. The number of countries that are energy

independent is growing year after year, and so is the level of energy efficiency in all sectors. Such processes are highly unpredictable in the long run, therefore it is not possible to clearly envisage the actual needs of the importing countries. In order to maintain the best possible position for themselves, the producing countries often make concessions, in some cases too big, which necessarily disrupt relationships, i.e. break the meeting point of interests. Political upheavals are a problem on its own, because they often cause the oil prices to rise, but also to decline,⁽¹⁵⁾ so in that sense they cannot be considered a constant variable.

Multilateralism struggles to survive because of the very lack of a standard of behaviour that would enable general predictability of individual participants' behaviour. As generally accepted and exact standards do not exist, the infringement of expectation interests is usually discussed in theoretical analyses.

4.1.2. Infringement of expectation interests

Any energy-exporting country independently commands its own energy sources. It cannot be said that a country has no say when it comes to the use of its capacities if it has granted long-term concessions, because the country uses those very contracts to manage its own resources. However, the events in the European energy market in 2006–2009 brought into question the postulates of the international relations established by the public international law.

The escalation of dispute between Russia and Ukraine caused great shortage of energy, especially in the European gas market. At that time, the transit of the Russian gas almost entirely depended on Ukraine. In the USSR period, Ukraine completely turned to gas as a primary source of energy in both homes and industry. As the national production of gas in Ukraine considerably dropped by the end of the last century, Ukraine became completely dependent on the Siberian gas. At the same time Ukraine served as a main gas transit route towards many European countries.

Russia's resentment because of the Ukrainian mounting debts resulted in Russia's decision to cut off the supply. It can be said that the Russian decision was provoked by the behaviour of one participant in the infrastructural system. However, since the behaviour of that participant affected the other participants in the system, in fact the whole region of Europe, and they all suffered damage, the position that Russia's decision was unjustified was gaining strength because it had infringed the expectation interests of other countries of a secured gas supply in spite of the possible breach of the contract terms. In that particular case the expectation interests were infringed because Russia controlled the reserves that were in fact global reserves, which all the interested countries were entitled to. It is indisputable that Russia had the right to the compensation for the delivered gas, but also in the novel way of thinking (in theory termed "Merkelism") Russia had no right to cut off the supply since that matter was in the domain of public law and not private law. Any disruption of supply would infringe the right of the involved countries to a secure supply and/or their expectation interests, and from the point of view of private law those countries have sustained damage. The issue of determining the actual guilty party can be the subject of argumentation, but from the aspect of the public law, the disruption of supply is to be blamed on the supplier since it was the result of a unilateral decision, reached without even the silent approval of the parties involved.

Two events disincentivized justification of such a rigid, legally groundless position. The first one dates back to 2007. The Russian Arktika expedition proved that the Lomonosov ridge is an integral part of the Russian continental shelf, and with it increased Russia's estimated fossil fuels reserves. In that way Russia practically made it known that it controlled those reserves as well, so that its sovereignty over their exploitation could not possibly be limited, thus rejecting the claims to the infringement of the so-called expectation interests. The results of the Arktika expedition and Russia's attitude to it clearly showed that it was not possible to talk about the obligations that a sovereign country had towards the third countries, but that such a country, as an equal contracting party, had the right to protect its own interests in case that another contracting party did not fulfil its legal obligations. By claiming sovereignty over "new" territories, Russia showed that the policy of research and management of potentially exploitable resources lied exclusively in the domain of its own decision, so that no one could demand that Russia undertake or not undertake any activities regarding the energy reserves under its control, under the guise of the "global interest".

Only several years after the success of the Russian expedition to Arctic, Russia and Germany laid and inaugurated the Nord Stream.⁽¹⁶⁾ With that project, Germany as one of the leading partner of Russia (when it comes to the amount of the purchased gas), abandoned the idea of the public obligation of Russia to provide the secure supply of gas regardless of the possible breach of the agreement, and instead invested considerable funds in securing for itself direct, so to say undisturbed supply of the Russian gas.

4.1.3. *Rebus sic stantibus*

Events on the energy market in the last few decades have raised another legal issue to be solved, that being the clash of rules *pacta sunt servanda* and *rebus sic stantibus*. Considering the changeability of energy prices, would it be justifiable, invoking a change of circumstances, to allow the change of contract terms in long-term investment agreements, bearing in mind their aleatory capacity when it comes to the exact predictability of future fluctuations in the energy market, but also unequal economic strength of the contracting parties at the time the contract is concluded.

Professor Merrill [26] promotes the absolute observance of the principle of equal value of givings. If the courts accepted such principle, there would be an increased number of rulings in favour of the economically weaker party in order to achieve "a better deal", i.e. "more equal" contract terms. The aim is to protect the economically weaker party, under presumption that at the time of the closure of the contract it did not have a say regarding the terms of the contract, and therefore its consent to it was practically extorted. As a model for proving his thesis, professor Merrill examined relationships between a landowner (country) and a tenant (investor, concessionaire) that holds the right to exploitation of energy sources on the given land.

Economically weaker party is usually unable to make more detailed analyses and estimates, or to hire experts to do that for it. What is more, due to the unfavourable investment climate, the weaker party is often forced to make decisions on "take it or leave it" principle, so it is not possible to expect it to persevere in all its demands since in that way it could deter a potential (often the only one) investor.

However, in legal sense both contracting parties are absolutely equal. On signing a contract, each contracting party takes into the account all the risks and benefits of the legal action in question. The higher the risk, the lower the price a potential investor is ready to pay and vice versa. This means that risk is a measurable category. If both parties had projected their commercial and non-commercial risks before they concluded the contract, then they cannot call for the change in contract terms in case the projected risks actually happen.

The Venezuelan model can serve as an example of one way to solve this dilemma. In late XX and early XXI century Venezuela expropriated over 1,500 companies, the majority of which operated in the energy sector [23]. If the expropriation is not discriminatory and compensation is realistic and prompt, such expropriation can be considered an adequate measure for cancelling the contract. Expropriation, of course, does not solve the dilemma, but it does help sometimes economically weaker party, i.e. the country receiving investments, to realize its ultimate goal. If such a position was adopted as a rule when it comes to the access to non-renewable energy sources, it would bring much more certainty in the chain of events caused by large market fluctuations, i.e. the increase in prices. However, the proposed model does not offer solution in case of the changed circumstances and the drop of energy prices, i.e. if it is in the investor's best interest to ask for the change of contract terms because the circumstances have changed. According to the current state of affairs in the international energy market, such scenario is quite possible, especially if we take into account the trends of substituting fossil fuel consumption, most notably in the tertiary sector, and a constant growth of renewable energy consumption.

4.2. Access to renewable energy sources

The issue of wider usage of renewable energy sources was particularly actualized with the adoption of the Kyoto protocol. In order to reduce the emission of greenhouse gases and achieve lower level of dependence on imported energy, world countries have come up with different incentives with the view to better exploitation of energy potentials.

Any country can freely exploit its own natural resources, however, sometimes the neighbouring countries have an interest to jointly invest in and regulate the exploitation. Common interest of the neighbouring countries has both positive and negative connotations.

The connotation is positive if countries through joint investment can use certain capacities to stimulate the energy balance, and the nature of such investment points to the joint investment. Such example can be found in the practice of the Republic of Serbia, in its joint investment with Romania in the exploitation of Djerdap Hydroelectric Power Plant [19]. Considering the fact that the river Danube, with its enormous kinetic potential, forms a natural border between the two countries, it was purposive that the two countries join their efforts and invest in order to gain mutual benefit.

The connotation of the joint interest is negative if one country decides upon investment in order to preserve for itself or use up natural resources. That would be the case if one country would negatively affect another country's potential exploitation of energy sources (by changing a river course, wind directions, etc.)

After both countries agree on the joint investment, their future relationship is regulated by special international agreement. However, the dispute arises if the countries do not give consent to the joint project and they are both willing and interested in investing in the project separately. One country then can challenge the neighbouring country's intention to energy operation. There can be various reasons for that. The dispute [22] between Croatia and Montenegro over Prevlaka⁽¹⁷⁾ is a well-known example. Both countries consider Prevlaka a part of their own territory and do not allow each other to use that land. However, the real motives can be of completely different nature. In the international practice, the most frequent reason is the preservation of biodiversity in a certain area. It is quite common that the international community condemns the unplanned felling of the so-called rainforests⁽¹⁸⁾ or drainage of marshlands for the purpose of wind farm development. In such cases there is no border dispute but the international community stresses a "higher interest", using it as a pretext for interfering in the energy policies of sovereign countries.

Bearing in mind the growing trend of using renewable energy sources and the pronounced interest of the international community, countries now publicly announce all their mid-term energy plans that could possibly be the subject of criticism in diplomatic circles. The increased level of renewable energy consumption reflects itself in the energy market. The larger the domestic production of energy from renewable sources on a country's territory, on the presumption that the supply is constant, the lower the demand in the energy market, since the country will largely be capable of meeting its own energy needs. Until it reaches the level of absolute energy independence from imported energy, it is vital that the country create conditions for smooth access to the international energy market so that it could satisfy the demand on its national market.

5.

Access to energy market

The demand and supply of energy commodities and/or energy in a certain area constitute the energy market. The energy market can function as a closed (not real) and open (real) system. Due to technical barriers, a closed market is always available to the same participants and it is technically not possible to open it to others, while an open market can be accessed by all the interested participants.

5.1. Access to closed market

Participants in a closed energy market are exclusively the countries which have access to the energy transported through the existing infrastructure – oil and gas pipelines. A closed energy market is not regarded as a real market since it is actually not governed by the forces of supply and demand. The minimum quotas and the prices are established in advance and entered into the contract on the infrastructure development concluded between the interested parties. However, the market forces are not entirely excluded. In case the demand of the countries participating in such a market is such that it exceeds the agreed maximum import quota, free excess energy is sold to whoever offers a higher price. It is also possible that the country which does not use its maximum quota purchases the maximum amount at the agreed price and then sells the excess amount. It is therefore possible to have a system within which the country A supplies gas to the countries B, C and D. If the capacity of the pipeline system is 200 million cubic metres a day, and the maximum/minimum quotas ratio for the country B is 100/80 million, the country C 40/30 million, and the country D 60/50 million, it is possible that the countries B and C pull the maximum quota, and the country D the minimum quota. In that case the country A is free to offer the countries B and C the unused amount of 10 million cubic metres of gas a day. It is also possible that the country D decides to offer a part of its own quota to the countries B and C. In that way there would be two suppliers and two possible consumers operating in the market.

All the scenarios described here are defined in a multilateral contract, which regulates the relationships between the participants who are often at the same time the investors in the infrastructure. It is also possible that the supplying country be the sole or the majority investor. That poses the following question: whether the supplier can refuse access to the interested party, regardless of the amount of the accepted investment, and/or whether it can refuse to jointly

develop infrastructure with another country if that other country demands to join the planned project.

The best example of the solution to this legal issue is the construction of the Nord Stream gas pipeline. Thanks to their geographical position and their borders on the Baltic Sea, Russia and Germany agreed upon the joint development of an offshore natural gas pipeline from Vyborg in the Russian Federation to Greifswald in Germany, “bypassing inland neighbouring countries”, first of all Poland [4].

With the land-based pipeline laid through Poland, that country would be entitled to transit charges for allowing the transport of gas through its own territory, and at the same time it would increase its energy security. Poland’s readiness to join in the investment and bear a part of the development costs would surely lower the cost of individual investment for the other interested parties. Since the pipeline was laid undersea instead of overland, Poland in a way was denied access to that closed market. However, this statement should be treated with reserve.

Strictly speaking, Poland, like Germany, also has a border on the Baltic Sea, and therefore can negotiate with Russia the development of a new pipeline that would supply it with gas and guarantee its energy security. Before deciding to invest, each interested party performs numerous analyses. Exclusively financial analyses, which would show that it is far more profitable to develop a common infrastructure that would supply several countries as compared to the costs of developing separate systems to supply individual countries, is subject to criticism, because it does not take into account other aspect: a direct route to the supplier, the absence of transit taxes, building up individual reserves (in the amount of the current pipeline capacity), etc.

The same applies to the other neighbouring countries on the route of a conceived overland pipeline. There is no issue of discrimination of participants in the energy market if all the participants have equal conditions and are offered equal opportunities. That is why it is extremely important to determine the range of the market.

In closed markets, the size of the infrastructure determines the number of participants, who initially, before the construction itself, agree on the “development” of the market. Such market is exclusively reserved for the countries that share the same infrastructure.

On the other hand, all the interested countries are free to participate in an open market, with certain limitations (the established rules of behaviour), which will be discussed in the next chapter.

5.2. Access to open market

The energy market can be examined on a micro (national) and macro (global and regional) level. Every country establishes its own rules and lays down conditions for the functioning of its national market. A uniform global energy market does not exist because the rules in regional markets differ. The common characteristic is the tendency towards harmonization of market rules.

Since the natural energy potential and/or the suppliers and consumers are globally unevenly distributed, the formation of rules primarily depends on the commercial habits of participants in regional markets.

The European market is an example of a regional market that strives to make all the national markets in its domain completely uniform. By signing the Treaty Establishing the Energy Community [20] the European countries agreed to work together towards the following goals:

- a) to create a stable regulatory and market framework capable of attracting investments into the gas networks, electricity production and transport and distribution networks so that all the parties have access to the stable and continuous energy supply that is essential for economic development and social stability;
- b) to create a single regulatory space for trade in energy that is necessary to match the geographic extent of the concerned product markets;
- c) to improve security of supply in the single regulatory space by providing stable investment climate in which connections to Caspian, North African and Middle East gas reserves can be developed, and indigenous sources of energy can be exploited;
- d) to improve the environmental situation in relation to the use of energy and related energy efficiency;
- e) to foster the use of renewable energy, and set out the conditions for energy trade in the single regulatory space;
- f) to develop market competition on a broader geographic scale and exploit economies of scale.

The very definition of the Energy Community goals imply that the disruption of market forces is incompatible with the rules that regulate the European energy market. All the parties resolutely accepted the obligation to implement *acquis communautaire* on the energy sector.⁽¹⁹⁾ Since the energy regulations of the European Union are constantly improving, harmonization of national regulations is a permanent obligation and leads to the unification of all the market rules.

As disruption of competition in the energy market is forbidden, it is possible to deny access to the energy market to a participant whose dealings are suspected to negatively affect the competition. In the European Union law such act of access denial is known as the “Gazprom clause” [40].

5.2.1. Gazprom clause

Directive concerning common rules for the internal market in natural gas [12] (hereinafter referred to as Directive) allows third parties to control a transmission system operator or a transmission system itself only after they satisfy the requirements of the single energy market.⁽²⁰⁾ The requirements are primarily related to the implementation of ownership unbundling. The obligation for companies registered in the countries outside the European Union to implement ownership unbundling terms valid in the energy market of the European Union is defined in the reciprocity clause, i.e. the Gazprom clause [40]. In order to ensure security of supply and protect an open gas market from non-market conditions, Article 11 of Directive sets the requirements [2] for certification of a transmission system operator.⁽²¹⁾ The purpose of defining these requirements is to prevent the acquisition of strategic EU energy transmission assets by foreign companies.

National regulators have the right to refuse certification of a transmission system operator. ⁽²²⁾ When estimating the level of risk for the market, the regulatory authority must take into consideration the obligations of the Community with respect to a third country arising under international law, including any concluded agreement which addresses the issues of security of energy supply. At the same time, the EU member countries can exercise national legal controls over the energy-related activities in order to protect public security interests. That obliges foreign companies registered outside the EU territory to abide by the regulations, i.e. to fully comply with the requirements concerning ownership unbundling during the whole period in which they participate in the energy-related activities.

In contrast to regional markets, regulated either by formal acts of the countries participating in them or business practices of the existing participants, global energy market is not organized. The relationships of the participants in the global market are conditioned by the clash of interests. On one hand, it is in the best interest of big energy suppliers to maximize the prices and the amounts sold in order to generate greater profit. On the other, big consumers, most usually large industrial potentials, want to satisfy the largest part of their own energy needs at the lowest possible price, finally aiming at reducing their dependence on the imported energy. The instruments they use to that end are: improvement of energy efficiency, environmental protection and increase of the level of domestic production.

6. Energy efficiency and environmental protection

Energy efficiency may be observed in terms of individual consumption of energy for consumers' personal needs, but also as the main precondition for faster-paced development of industrial production.

Increasing the level of energy efficiency is a long process. Its length depends on the willingness of countries before anyone else to accept this task seriously, but it also depends on raising the public awareness of the need for saving energy. It is impossible to carry out extensive reforms unless all actors in the country are involved. First of all, it is necessary to mobilize citizens to actively participate in the process of increasing energy efficiency. This can only be achieved by educating citizens on every level as well as through financial incentives. Financial incentives may have either positive or negative determination. Positive incentives refer to direct state subsidies to end users for the implementation of energy efficiency projects. Incentives with negative determination refer to a value that the end users will not have to pay if they realize an energy efficiency project [27].

In the long run, education has the greatest importance in raising the energy efficiency level. If energy efficiency is established as a standard in society, along with explanations regarding the affirmative and negative occurrences accompanying the rebound [29] effect,⁽²³⁾ then the energy efficiency effects will be universally accepted and implicit. Implicitly requiring a certain level of energy efficiency directly impacts the demand by increasing it, which will certainly reflect on the supply, which will try to respond to such a demanding market.

In itself, energy efficiency contributes to the security of supply since it directly reduces the consumption of energy; however, without additional mechanism in the market, it is not able to completely protect the energy market from import or to prevent the pollution of the environment, especially when it comes to industrial production, i.e. the secondary sector.

6.1. Substitution of consumption

The growing industrialization represents a great challenge to the security of supply in the energy market. Ensuring the security of supply establishes itself as a strategic priority. A country, unless it has its own resources or in case of short term shortages of own reserves, may obtain necessary energy commodities in the international market.

Meeting the needs of the market by purchasing energy or using reserves cannot be considered a satisfactory method to secure the supply due to several reasons.

First, the purchase of energy commodities in the market depends on the current demand and supply. Even in the case of a closed market with pre-determined prices, it is possible that the said prices become uncompetitive (if a variable scale is not agreed on or if a new market opens, with the prices much lower than the agreed ones), which adversely affects the security of supply. Due to major fluctuations in the energy market, a shortage of necessary energy commodities is also possible. Such a situation may arise due to technical obstacles, legal and political reasons, one-sided joint decisions by the producers and other reasons.

Technical obstacles usually occur in closed markets; due to physical damage of transport facilities, the supply of energy decreases or is completely interrupted. Technical obstacles may be short in duration; however, major breakdowns may lead to complete interruption of the supply for a longer period of time. Legal and political reasons are the most frequent cause of breaches of energy supply agreements. Whether it is an internal destabilization of the supplying country that interrupts the supply or a political confrontation of two contractual partners, the end result is the interruption or limitation of the supply. A similar situation occurs due to one-sided decision of several large producers (cartel arrangements). In order to achieve a common interest, large producers may unilaterally introduce a “new rule”, which may not necessarily lead to price increase or limitation of supply, but which may become an additional charge to consumers and most certainly reflect on prices in domestic markets. If a consuming country has to resort to procuring energy in another market, or in the cases of serious unprofitability or spending of own reserves, the security of supply becomes an absolute priority for that country.

Another form of short term protection – spending of own reserves, does not yield good results. Regardless of the amount of reserves, they cannot be sufficient to completely ensure uninterrupted functioning of economy, households, and state apparatus over a longer period of time. Resorting to energy reserves must be an extraordinary measure used in precisely determined cases. If the reserves are used too liberally, at a certain point a country may no longer have the energy it needs. Other solutions to meeting the needs in crises are therefore inevitable. Such solutions must be long-term, and immune to technical obstacles, legal and political reasons and one-sided decisions of producers.

Multilateral protection is considered a type of long term protection.

By using multilateral protection the exclusive use of own resources is discarded. By making its own resources available in crises, a country may, in accordance with the principle of reciprocity, count on the resources of other countries.

6.1.1. Principle of reciprocity in the international energy market

The principle of reciprocity does not refer to equating the volume of the potential supply. A country may have at its disposal much larger capacities than another country, and the potential supply will therefore not equate. Reciprocity refers to conditions under which another entity’s capacities may be used. Hence, under the assumption that countries’ energy production runs at full capacity, within a specific interval the country A may produce electrical energy surplus of 15MW in its market, whereas the country B may produce 5MW.

If both countries enter an agreement stipulating they will enable the use of 30% of their daily surpluses in a crisis, on the condition they purchase the energy at a price the surpluses are sold in the market and that they compensate for the damages arising from the failure to deliver the surpluses to other contractual parties, the country A may be entitled to request the delivery of 1.5MW, and the country B 4.5MW of energy.

Such interpretation of reciprocity principle arises from the fact that it is impossible to accurately determine the amount of a country's capacities that will be available in future. Capacities available at present may not be available in future. It is assumed that each country strives to create the highest possible level of available capacities in order to ensure its own security of supply; hence, the economic rationale for concluding such agreements. By concluding multilateral agreements, a country ceases to exclusively rely on own resources and relies on the capacities of others.

The application of the reciprocity principle as a means of protecting the security of supply should not be confused with other types of the multilateral protection. Most frequently, the reciprocity is seen as related to long term agreements on energy supply, yet such practice is certainly incorrect. An agreement on the supply of energy aims to ensure the security of supply at a pre-determined price or at a price for an agreed amount, over a longer period of time. The goal is to achieve a fixed element in the supply and/or part of the overall supply, and achieve market stability. Such contracts are *iure gestionis* acts of a country; however, the practice shows that problems regarding the implementation of agreements are most often non-commercial.

In the following example, countries A and B concluded an agreement on the long-term supply of energy. If the political relations between the two countries deteriorate, the continuation of the agreement is brought into question. Although diplomatic disagreements are not mandatory elements of a contract (type, quantity and amount), one party to the agreement may use the continuation of the agreement to exert political pressure. In the final days of November 2015, the construction of the long-announced "Turkish Stream" was brought into question by the adoption of the Russian Bill on special economic measures towards Turkey. Turkey brought down a Russian warplane with two pilots in it, claiming it entered its airspace. Since the Turkish president did not make an official apology, Russia introduced economic sanctions to Turkey, which brought into question the continuation of construction of the Turkish Stream: "Project Turkish Stream is in no way different from any other, since it is a part of our investment cooperation, and the Bill on special economic measures applies to this project as to any other project" [34]. If we exclude the participants, the bringing down of a Russian warplane does not in any way affect the realization of the gas pipeline since the event did not endanger the construction either commercially or technically. However, the trust between the partners significantly deteriorated and it is not realistic to expect the project to be realized in the foreseeable future.

Introducing trust as an important variable in the international energy relations additionally aggravates the position of countries relying to a greater extent on multilateral protection.

Therefore, it does not come as a surprise that countries are implementing measures to raise own production from conventional sources if such sources are available to them. This involves more expansive exploration, higher investments,

and expansion of infrastructure bringing into question the profitability of such endeavours, especially considering the increasingly stricter regulations on environmental protection.

An alternative method is to raise the level of energy production from renewable sources. Conditions for realizing this model refer to geographical potentials, developed sector of agriculture and attending sectors, but also to legislative improvements that should be capable of helping and improving the whole process.

If it is in charge of managing the supplier, a country will easily undertake all the necessary measures; however, that may not be the case if the system of supply is solely in private ownership. This may limit the scope of agreements on mutual support between countries. Most frequently, such agreements are limited to available mandatory reserves, but not to surpluses that all producers and suppliers produce. In practice, if there is an infrastructure, market race will most often decide the fate of surpluses. The task of the country is to provide conditions that will ensure the security of supply.

As confirmed by the Paris Treaty, modern theory holds that the countries' main priority is ensuring the security of supply by implementing an overall energy market development strategy in order to substitute consumption. Substitution of consumption envisages a series of measures bringing about the replacement of fossil fuels with renewable energy resources, with the aim of increasing the level of energy market security of supply.

At the multilateral level, the substitution of the consumption with the view to achieving sustainable energy consumption first became a part of the political agenda at the United Nations Conference on Environmental Development (UNCED) – The Earth Summit, held in Rio de Janeiro in 1992, as stated in the document called Agenda 21.

The Agenda considers three factors to be the crucial to the process: citizens, consumption and the technology applied. With regards to these three factors, it is necessary to undertake the measures that will result in quitting the systems of non-efficient energy consumption and that will enhance the energy market in accordance with the sustainable development principles. Divided into four thematic sections, the Agenda proposes possible plans for achieving the programme of consumption substitution while considering key characteristics.

In the section “Social and Economic Dimensions”, the Agenda accentuates the need to implement measures countering poverty, especially in the developing countries and/or in the countries in transition. It is necessary to organize energy markets and to change the participants' consumption habits in order to promote health and achieve sustainable consumption, as well as to include sustainability in the decision making process. The premise of the Agenda is that the consumption of energy obtained from the conventional sources, while disregarding the economic strata in society, leads to degradation of market and increases the cost of energy, and these in turn cause the decrease of production. The Agenda then indicates to governments that a systemic change in the functioning of the market is necessary. The market must consider different economic strata by actively including them. The Agenda does not prescribe the manner in which the recommendations should be achieved, but it does represent a foundation for creating national strategies that are to address the above-mentioned issues.

In the second section “Conservation and management of resources for development”, the Agenda advocates the protection of atmosphere, combating

deforestation in fragile natural areas, conservation of biodiversity, control of biotechnological and radioactive waste with aimed at achieving the global market sustainability. Global market can function according to the sustainability principle only if the majority of countries are included in the process. However, sustainable development envisages a change of both of developed and developing countries. Changing habits takes time, and state bodies elected for a mandate cannot address the issue independently. Therefore, it is necessary to strengthen non-governmental state structures. That issue is addressed in the third section of the Agenda.

The third section, “Strengthening the role of major groups”, recognizes children, the young, women, non-governmental sector, business elites, industry and workers as having a key role in bringing about a change. Unlike political structures, all the above-mentioned groups do not have short-term plans, hence it is assumed that by changing their values and habits, good results may be achieved in the long run. The tendency towards enacting popular measures should instead be diverted towards establishing real values, towards those long-valued habits contributing to the system sustainability. Local authorities, as links between the central policies of a country and carriers of change, should also be encouraged to protect such values. It is necessary to direct consumers towards actual consumption and discourage the habits of the consumer society that adversely impact sustainable development. Realization of the above-mentioned goals requires the strengthening of the support functions that would be able to help major groups realize new ideas. The fourth section of the Agenda addresses this issue.

In the fourth section entitled “Means of implementation”, the Agenda defends the position that science, technology, education, international institutions, and financial mechanisms are the means that need be strengthened for the sake of the overall progress of society, the said progress also being the precondition for realization of the set goals. Generally speaking, the Agenda promotes combating the degradation of water, air and land, as well as of the entire biodiversity. Overall progress should be balanced and should include all structures and aspects of the society. Also, the issues of poverty, excessive consumption, health and education should be addressed.

Bearing in mind the extensive scope of regulations directed towards the overall progress of society, the Agenda invites governments to adopt the national strategies of sustainable development and to develop cooperation with international organizations. A country should act *iure gestionis* in the market and enter freely into business relations in order to attract investments and show its business correctness. At the same time, the non-government sector, which may contribute to the preservation of the values of society, should be strengthened.

Values cannot be measured solely against economic success of the world, countries, and markets in a specific period. Measurement should also analyze the overall value of natural resources, as well as the overall value of the environmental degradation. The costs of environmental pollution should be transferred to the polluter, not to the consumer and highly efficient instruments should be developed to this purpose. A potential way to ensure protection is the restrictive issuing of the permits for energy activities in case of an increase of harmful emissions in the energy process.

Another way that market protection can be ensured is through planned subsidies. In the Agenda, subsidies are given political character. Taking into account

the non-discrimination principle, subsidies need to be granted to those participants whose business operations are developed according to the principles of sustainable development and this has to be a global principle considering the polluters' impact on the whole planet.

Developed countries should promote global relations in accordance with the sustainability principle. At the same time, they are expected to take the lead. By funding "clean energy" technologies in poor countries, developed countries directly impact global energy market. Other than providing funding, the developed countries are expected to present plans that would be accepted globally. The guiding idea should be the substitution of consumption as the main precondition of market stabilization and reduction of the pollution of the environment. Planning and expertise, funding of projects in both developed and developing countries will eventually achieve a balance which is the ideal the energy market strives towards.

However, the ideas of the Agenda were not universally accepted as was concluded at the United Nation's special session⁽²⁴⁾ in 1997. Rather than the level of sustainable development, the negative effects of globalization increased, the inequality regarding the financial income in the world deepened, and the destruction of the environment continued.

The goals of the Agenda were once again confirmed at the world summit held in 2002, referred to as "Rio+10". At the very beginning of the session, as a part of the "global agreement", the summit proposed instituting a series of binding international agreements with the aim of implementing the agreed goals. During the summit, a consensus was reached that the traditional agreements cannot provide desired goals and that it was necessary to agree on all the measures at a decentralized level [5]. Although the measures are agreed on multilaterally, their implementation must be entrusted to the governments, private sector, and non-governmental sector joined in partnership by common goals [8]. Partnership involves voluntary action and shared responsibility. All undertaken activities have to be transparent, and the results measurable. With regards to this, rather than adopting one or several international agreements, over 300 initiatives directly supporting millennium development goals⁽²⁵⁾ were agreed upon in Johannesburg. At the third world summit held in 2012, the practice of adopting non-binding documents was continued. The adopted non-binding document themed "The future we want", reaffirms the intention of countries and all participants in the society to create a sustainable development system.

Protection of the energy market includes establishing market sustainability, i.e. as extensive autonomy and independence as possible from the conventional sources. Therefore, the national, regional and even global protection by means of consumption substitution is inevitable. By raising the level of awareness on sustainable development and universal promotion of the substitution of consumption, an effect on the energy demand may be achieved towards the prevalence of renewable resources.

Consumption substitution also leads to demand replacement enabling national governments to address the market control within economic, market principles. In a system thus organized it is difficult to imagine such energy shocks as were recorded in the second half of XX century and the beginning of the XXI century.

However, in order to create a sustainable system, it is necessary to ensure the security of supply by means of other instruments.

7.

Building energy reserves

Building reserves ensures short-term security of supply in the market. It is characterized by both negative and positive effects on the market.

Reserves provide the potentially available resources that may be used in crisis. The main shortcoming comes from the stock limitations. Regardless of the amount of reserves, the stock is insufficient for long-term supply of the market. Also, the market may additionally be burdened by building large quantities of reserves. If the country A purchases energy in order to build reserves at a price 20% above the current price, in crisis, when it is necessary to use the reserves, selling them at the current price would result in significant losses. On the other hand, selling energy at a higher price, i.e. a price of the cost, would cause the increase of energy prices in the market leading, once again, to financial losses.

Short-term energy reserves are an ideal way of covering day-to-day shortages; however, they are not the best solution for long-term planning of the security of supply. In this sense, two ways of raising the level of reserves were developed in practice: stock arrangements and the ring concept that mitigate the negative effects of keeping large quantities of own reserves.

7.1. Stock arrangements

Stock arrangements are separate agreements under which two or several countries establish the obligation to maintain reserves that may be used under precisely defined conditions. In practice, countries also pass decisions on establishing reserves that are utilized under a specific regimen.

Stock arrangements' primary role is to absorb the disruptions in the market caused by sudden change in prices. As the market developed, the role of stock arrangements gained importance.

The 1970's, when the first oil shock occurred, were a turning point concerning the need for and the manner of protecting the security of supply. In the ensuing period, markets were forced to absorb several significant price increases of crude oil and oil derivatives.⁽²⁶⁾ That means that they had to stabilize the market, i.e. create a transition period while the international energy prices were gradually established by market forces. Sudden increases in price had a devastating effect on the economy, so it was necessary to create a mitigating mechanism. Considering that the potential price increases are unpredictable in terms of their level and duration, countries resorted to holding larger stocks that could be used under precisely defined circumstances.

Robert Bamberger [1] writes that the United States of America were the first country in the world to create the so-called strategic petroleum reserves (hereinafter referred to as: SPR). Their utilization was strictly overseen, and taking into account that the USA is a confederacy, the reserves functioned according to the model of the stock arrangement.⁽²⁷⁾ The aim was not to spare the consumers from having to buy oil at market prices in emergency situations, but to serve as a mitigating instrument in the market's response to crisis. At the time when the special reserves were created, the goal was to prevent suppliers from using oil as a political weapon of sorts or exerting political pressure in order to achieve certain goals internationally.

By the Energy Policy and Conservation Act [13], the USA Congress established strategic reserves in order to reduce the possibility of market disruption. Any possibility of destabilization in itself might potentially cause enormous damage to the economy. The Act introduced a 90-day transition period for restoring the prices to the initial level, i.e. over the stated period, the artificial maximum increase in prices would be prevented.

The Department of Energy, entrusted with supervision of the strategic reserves, sells the reserves according to a strict procedure explained in the Notification on sale. Based on the Notification on sale, i.e. on the call for submission of offers, the assessment of best offers is made and contracts approved to the most favourable bidders. The procedure takes up to two weeks after the issuing of the Notification on sale.

The European Union, established at a much later time, suffered a grave energy shock in 2006, and again later in 2009, in consequence of the growing Russian-Ukrainian tensions.

The first directive of the Council of Europe from September 14th 2009 [41] imposed an obligation on member states to maintain minimum stocks of crude oil and/or petroleum products. Following the USA's SPR model, the provisions of the directive have the following goals:

- ensuring the safety of oil supplies in the Union through reliable and transparent mechanisms based on the solidarity among member states;
- maintaining the minimum stocks of crude oil and/or petroleum derivatives, and
- prescribing emergency procedures to be applied in the event of a shortage.

The total oil stocks that member states of the Union are obligated to maintain should correspond, at the very least, to 90 days of average daily net imports or 61 days of average daily inland consumption, whichever of the two quantities is greater. The directive introduces the standard of availability and physical accessibility of reserves. The directive also imposes the obligation of establishing clear criteria for the control of such supplies. To this purpose, a register of stocks is formed containing information on emergency supplies (depot or location of refineries or storage facilities, the quantities involved, the owner of the stock) which is updated on a daily basis.

In order to maintain stocks, each member state should form a Central Stockholding Entity – CSE, a non-profit body or service tasked with maintaining and managing the supplies.

The directive stipulates that the Central Stockholding Entity may delegate its function to another member state within whose territory such stocks are located or to the Central Stockholding Entity formed by that country or several member

states. Also, central stockholding function may be transferred to economic operators; however, the said economic operations can sub-delegate the tasks thus given only with a separate authorization based on which some obligations may be transferred to:

- the CSE of the member state on whose account such stocks are held,
- one or more other CSEs which have the capacities and have declared themselves willing to hold offered amounts of stocks, and
- other economic operators which have surplus stocks.

The Directive of the European Commission established a special model that contains the elements of both approaches. Main obligations exist at the national level, but the possibility of bilateral or plurilateral management within the EU is also provided.

Regardless of the model, the decision on the quantity of stocks held is published in the Official Journal of the European Union.

Mandatory stock comprises one or several derivatives such as: ethane, LPG, motor gasoline, aviation gasoline, gasoline-type jet fuel, kerosene-type jet fuel, other kerosene, gas or diesel oil, white spirit and SPB, lubricants, bitumen, paraffin waxes, and petroleum coke.

According to the European model, member states have to be able to release some or all of their emergency stock in emergencies if so required from them. In this manner, the supranational principle in the energy sector is instated on two conditions: firstly, in the event of a crisis, and secondly, if a specific country is asked to do so. Taking into consideration the obligation of member states to observe the instated principle, it is necessary to hold larger stocks than the minimum prescribed in order to be able to comply with the instated principle. By doing so, countries would not be forced to choose between observing the supranational principle and the principle referring to the protection of own interests. At the same time, the decision on additional reserves would certainly incentivize potential investors who consider energy a crucial expenditure.

The European model and the American model are very similar according to their functionality. Both models impose the obligation to manage reserves that may be utilized in emergencies, i.e. in the event of shortage in the energy market. The models differ in terms of the organization and the management of reserves.

The USA organizes the reserves according to the assessment of the entire energy market. The Department of Energy is responsible for reserves management supervision and the assessment of needs. The President and the Department of Energy decide on the utilization of the reserves. Since the EU is not a country, but is based on the extended economic union of independent countries, it was not possible to apply the same management type to the EU energy market.

The EU forms the reserves at the level of individual countries, and the supranational principle is based on the solidarity principle.⁽²⁸⁾ The reserves necessary in one national market may be supplemented in crises by reserves of other countries. However, a timely response is frequently an issue. The transportation of necessary energy commodities often takes time due to either administrative or technical obstacles. Therefore, a particular concept was envisaged for the EU territory, which may be found on the USA market in the same form. The concept in question is the ring concept.

7.2. Ring concept

The ring concept refers to the connection of energy storage facilities (primarily for oil and gas) of all contracting countries into a single system. Considering that separate storage facilities located in different countries need to be linked, those interconnections can also be used for storing a certain amount of energy commodities, and in themselves comprise the stock that may be used under certain circumstances.

In case of more significant fluctuations in the market, a country within the ring system has at its disposal not only its own resources, but all the reserves available to other countries within the system.

Apart from mitigating the risk from oil shocks in the market, the ring concept also has a protective distributive function.

It is a general rule that a transnational network comprises of a main pipeline and possible spur lines branching out of the main energy anchor load. Due to a technical disruption in the main pipeline or one of the spur lines, the supply may be halted to all users whose points of supply are below the interruption point. Ring concept refers to forming an actual ring enabling the supply of energy from several directions, i.e. it refers to creating interconnected networks of smaller capacity among contracting countries to serve as an alternative energy supply route for any imperiled country or contracting country. In this way, if a country is unable to supply its energy market directly from the distributors, it will do so through another member country.

The key advantage of this concept in comparison to bilateral agreements concluded with the same purpose is that an unlimited number of countries may be included, naturally, on the condition that their geo-strategic position allows the “linking” of markets [38].

The best known example of the ring concept application refers to the gas domain,⁽²⁹⁾ as can be observed in the Energy Community gas ring formation. In forming the energy community, contracting parties aimed to create a legal foundation for constructing a technical ring that would raise the international distribution to a higher level. Taking into consideration the needs of the region, primarily for the electrical energy and gas, the Energy Community’s vision is to create a large number of storage facilities interconnected into a single system.

The single system enables other countries as well to use strictly supervised local resources in order to realize common goals of the signatory countries.

Firstly, countries agreed to invest significant efforts into the implementation of the Energy Charter which includes the application of all principles declared by the Charter. In this manner, signatory countries create clear conditions for mutual business relations and, by applying the provisions of the Charter, achieve better protection in keeping with the Charter’s clauses on protection. By establishing the gas ring concept in territories of all energy community member countries, the supply of gas from several directions will be enabled ensuring the availability of the gas in the national markets. The connecting of new sources will be greatly facilitated since the new concept will give them access to a larger pool of demand, and consequently a higher potential profitability. Higher demand will result in the need for new investments and further extension of the network. Likewise, the ring concept envisages bringing gas to areas with undeveloped gas infrastructure. The inclusion of several interested micro

markets into the system will decrease the fixed maintenance expenses reflecting favourably on the energy price fluctuations and the like.

In addition to the economic connotation, the concept of interlinking has a political connotation as well. The single-line supply systems of the EU gas market (one-directional distribution from the supplier to the consumer with no alternative routes) led to distribution disruptions in 2006 and to a complete disruption of distribution in 2009.⁽³⁰⁾

Therefore, it can be asserted that the development of the energy market has both economic and strategic significance, and hence the monitoring of the legal and actual acts of the entities causing distortions in the market within the established system.

The uniqueness of the ring concept application in the territory of the EU relates to the simultaneous carrying out of the “twin track” policy [39].

The first track refers to the interest countries have in constructing new gas lines in order to secure the supply of their markets. Such tendencies are easily observed in Europe, however, only one idea was realized by the completion of the Nord Stream. The destabilization of the political relations between the EU and Russia and the insistence of the EU on the application of the third energy package caused an indefinite postponement of the South Stream⁽³¹⁾ pipeline construction.

An alternative route popularly called the Turkish Stream⁽³²⁾ was also postponed due to deterioration of political relations between Russia and Turkey. Considering that the relations between Russia and Ukraine are disrupted, as well as the relations between Russia and EU due to the Crimean crisis,⁽³³⁾ the construction of the White Stream⁽³⁴⁾ is highly unlikely, perhaps even unthinkable under current political circumstances; thus, the security of Europe’s gas supply remains an issue of the gravest importance.

The first track also includes the improvements in the oil processing, i.e. the production of oil derivatives [42] not exclusively from crude oil.⁽³⁵⁾

The obligations accepted by states at the international level regarding the reduction of greenhouse gasses emission and the tendency towards its decrease confirm the claim that the tendencies within the first track cannot be considered a permanent solution.

The second “track” recognizes a permanent solution which is the end goal, whereas the first “track” is considered a temporary solution. The guiding idea is to create a legal framework that would render energy-independent the countries currently dependent on the imported energy. The means for achieving this ambitious target [32] is the creation of a system that encourages the use of ecological, “clean” energy sources⁽³⁶⁾ and at the same time, the creation of the market that recognizes the energy thus obtained as being preferable to other energy commodities.

The consequence of the substitution of conventional sources of energy with ecological, clean sources is the reduction of the emission of harmful gasses, but also the realignment of energy prowess in the world. Energy potentials may be drawn from all areas of the planet depending on their geographical capacities, but those potentials are not necessarily related to the distribution of fossil fuels. The dominance in the energy supply will pass from the fossil reserve holders into the hands of the producers with the highest investments and energy efficiency. Therefore, it is important to devise a detailed legislation capable of

recognizing new market relations at inception and supporting the initial development seeing how those are the basic preconditions of faster development.

Experiences gained in the exploitation of the ring concept may only help a future supply system, especially with regards to the establishment of legal institutions (common approach, construction terms and conditions, utilization conditions and the like). The ring concept in itself is a novelty in the typical energy relations and represents a step towards creating new market institutions that will be able to support competitiveness in future relations and award the solidarity principle in order to ensure the security of supply in the market. It remains to be seen if by developing own “green” sources, the counties will be able to achieve energy independence in the future.

8.

Pillars of energy security in the legal system of the Republic of Serbia

The Republic of Serbia is among the countries that import energy and whose security of supply is directly dependant on the imports and the existing reserves. Energy production capacities from renewable sources are fairly modest. Energy Sector Development Strategy of the Republic of Serbia for the period by 2025, with projections by 2030 [31] envisages three pillars of the security of supply: ensuring energy security, development of the energy market, and overall transition towards sustainable energy sector, which are at the same time imposed as the key priorities of the energy sector development in the Republic of Serbia, i.e. as the principles based on which the energy policy by 2030 should be developed.

In accordance with the Strategy, the energy security refers to reliable, safe, efficient, and quality supply of energy and energy commodities and the setting up of conditions for reliable and safe operation and sustainable development of energy systems and energy sector in general.

It is necessary to organize the energy market in the manner that ensures: competitiveness based on the principles of non-discrimination, openness and transparency; the protection of energy consumers; the development of electrical energy and natural gas markets and their integration in the unified EU energy market; an increased integration of the energy system of the Republic of Serbia in energy systems of other countries, especially those of the neighbouring countries. Achieving the goals of the first two pillars of the security of supply should contribute towards the co-called sustainable energy sector which represents the third and topmost pillar of the energy market security of supply.

Sustainable energy sector refers to the following: providing conditions for improvement of energy efficiency in energy activities and energy consumption; creating economic, commercial and financial conditions in order to increase the share of energy obtained from renewable sources, as well as conditions for the combined production of electrical and heat energy; creating institutional, financial, and technical assumptions for utilization of new energy sources; enhancement of the environmental protection and systems in all energy-related fields; and establishing more favourable legal, institutional, and logistic conditions for more dynamic investment activities into the energy sector.

8.1. Energy security *in generalis*

The Strategy acknowledges the overall energy dependence of the Republic of Serbia,⁽³⁷⁾ especially with regards to oil, oil derivatives and natural gas sector. Taking into consideration the constant economic growth and the potential increase of population,⁽³⁸⁾ the absence of investments into the construction of energy facilities may lead to the Republic of Serbia becoming a significant importer of energy in the forthcoming period. Expected measures aimed at increasing the industrialization and the strengthening of heavy industry will probably result in higher demand more quickly. Therefore, it is necessary to promote measures for saving energy and raise the level of oil and natural gas reserves in accordance with risk dispersion principles. It is necessary to connect the national energy market with other markets. A secure supply of energy products presupposes the existence of legal mechanisms that ensure through repressive measures the compliance with the minimum agreed amounts of energy supply to a specific market [10]. By connecting the markets, additional income from transit may be realized, and it will create the possibility for opening of several channels of supply, i.e. of several supply lines, which is effectively the intent of the ring concept.

8.2. Development of the energy market

Successful application of the ring concept assumes the opening of the national market and/or the establishing standards of conduct at regional level. Standards of conduct involve harmonization of regulations so that the legal acts of all participants are recognizable and acceptable in different national markets.

8.2.1. Development of the national market

The EU third energy package prescribes creating the energy market based on the principles of competitiveness, openness and free initiative of energy market participants. It means that the consumers have the freedom of choice with regards to energy supply, whereas the price should depend only on the supply and demand. State intervention with regards to forming prices is indirect (through purchase and sale for own needs, i.e. for reserves and for preventing the disruption of the market). Furthermore, taking into consideration the public significance of the energy market, it is necessary to introduce all its segments to interested parties. This particularly refers to building of reserves which may pose a potential threat to citizens and the environment.⁽³⁹⁾ The independence of the energy system should not be sacrificed to maintain the continuity of investments, instead, economically balanced prices and self-sustainable system less dependable on imports should be attempted at. An internal regulatory framework envisaged along these lines is a necessary presupposition for any further integration of the national market.

The integration of the national market may be performed directly and indirectly.

Direct integration refers to formal joining of the national energy market with other markets – direct integration in a narrow sense. In the broader sense, direct integration refers to harmonization of regulations towards their unification, which should lead to dissolution of borders among several national markets.

Indirect or factual integration is achieved at a bilateral level. It involves a series of bilateral agreements between states leading to the joining of markets through specific actions (purchase, sale), investments (infrastructure construction), standardization (organizing market with the aim of realizing mutual interests), or by expressing intent regarding future joint projects. The Republic of Serbia concluded a number of bilateral energy sector agreements through which it improved its energy market. However, the most visible results were those related to harmonization of regulations under multilateral agreements aimed at unification of regulations, as seen in the EU.

8.2.2. Development of the regional market

By accepting the Treaty Establishing the Energy Community⁽⁴⁰⁾ and the idea of establishing a regional market and integrating into the EU energy market, the Republic of Serbia made the first step towards enabling more significant investments in the energy sector, which will surely reflect on the economic development and stability of the country and of the whole region in the future.

The organization of the market, in accordance with the Treaty, is dependent on reaching the EU legislative level in the energy sector, especially with regards to environmental protection, the rights of market participants, i.e. the right to competitiveness, the application of renewable energy sources (RES) standards and the decrease of greenhouse gases emission, as well as the highest possible energy efficiency.

To this purpose, the Republic of Serbia adopted the Energy Law [14] which separates energy activities in accordance with the European legislation, i.e. applies the unbundling principles. Also, by implementing the standards envisaged by European directives, action plans were determined based on which *in concreto* planning of the activities should be carried out leading to so-called sustainable energy sector.

8.3. Sustainable energy sector

According to the Strategy, the “sustainable energy sector” is a term signifying the implementation of measures to increase energy efficiency, use of renewable energy sources and the protection of environment.

The Republic of Serbia’s energy resources are modest. Increasing the energy efficiency should lead to higher utilization ratio of those resources. Rebound effect, which according to definition leads to higher consumption due to the lower prices of energy commodities per unit, is negligible under given circumstances. The goal is precisely to decrease the consumption of energy per unit, whereas a potential increase in consumption due to higher energy efficiency in households is unlikely since household needs remain similar. Energy efficiency in production activities contributes to lower price per unit due to lower energy consumption, which in turn may lead to production growth and raise, rather than reduce the consumption. However, this is an acceptable risk for the market since the increase of commercial activities is certainly a positive development, for energy market as well.

“In a country with expensive energy products, investing into energy efficiency decreases costs. However, assuming the production increases (due to price reduction which is the result of lower expenses), the producer will still encounter the problem related to the limit of the total number of emission, which is an additional expense for the producer. Therefore, the producers often choose to move the production from a country where the energy products are expensive and from a country that actively pursues environmental protection policies, to countries with different circumstances. From an economic point of view, this is an adverse event, since it reduces the domestic production; however, in terms of protecting energy market security of supply, it is a favourable trend. This phenomenon may be referred to as the energy market paradox”[10].

According to the latest assessments presented in the Strategy, the energy resources and potentials of the Republic of Serbia include fossil, conventional fuels (coal, oil and natural gas) and unconventional fuels (oil shale), as well as renewable energy sources. Reserves of oil and gas are symbolic and comprise less than 1% of geological reserves, whereas the remaining 99% of energy reserves include various types of coal, with the largest share of lignite.

Table 1. Geological reserves of fossil fuels ⁽⁴¹⁾ (million toe⁽⁴²⁾)

Energy resource	Total geological reserves
Hard coal	4.02
Brown coal	45.17
Brown-lignite coal	193
Lignite	3,698
Oil	50
Natural gas	50
Oil shale	398

With regards to the majority of oil and gas deposits in Serbia, a high utilization quotient has been realized resulting in the decrease of production. The implementation of new technologies and interventions on the boreholes temporarily halted the production decrease; however, considering the limits posed by the resources themselves, no significant expansions of the production capacities are possible.

At the end of 2010, the remaining reserves of crude oil in the explored areas of the Republic of Serbia amounted to approximately 10.14 million tons and 4.23 billion cubic metres of natural gas. It will be possible to give a more precise estimation on the potentials of oil and gas reserves after the completion of detailed geological explorations of the whole territory.

The Strategy further points out that the measurement of the impact of energy facilities on the environment may become a key criterion in the assessment of energy technologies and of the direction the further development of the energy sector is to take. Considering the prevailing attitude of the international community on the dangers of climate change, it may realistically be expected that the environmental protection standards will continuously broaden.

The broadening of the environmental protection standards favours the so-called clean energy, i.e. the energy which minimizes the emission of greenhouse gases. This is especially visible with regards to the incentives to use the renewable energy sources that have almost no negative effects on the environment. However, the said situation is unfavourable for countries that export oil, and a drop in crude oil and gas prices is to be expected in order to “compensate” for the fact that fossil fuels are “dirty”. At the end of 2015 and the beginning of 2016, the price of a barrel dropped to a record minimum in recent history, around the same time the World Economic Forum in Davos was organized and held, during which climate changes and migrations were presented as the greatest dangers in the future. Therefore, the transition to more efficient, cleaner and renewable energy must be aligned with market movements, i.e. it is necessary to find ways that would not render the withdrawal from the conventional methods for obtaining energy unprofitable in the long run. Profitability refers not only to the financial aspect, but also to energy independence of a particular energy market. Raising the level of energy efficiency and obtaining energy products from own energy resources should lead to lesser dependence, if not absolute independence, of the energy market on the import of energy commodities and/or energy. Lesser dependence or absolute independence have a positive effect on the security of supply, which is the greatest value in an energy market. Increasing own production, especially from renewable resources, provides an incentive to other sectors. Thus, the trend of replacing the conventional energy sources with renewable ones improved the position and significance of agriculture in the overall economic development of Serbia⁽⁴³⁾ [25].

In order to achieve sustainable development of the energy sector in the Republic of Serbia by 2030, the Strategy recommends the implementation of the following activities:

- 1) intensifying the exploration of energy potentials;
- 2) development of energy market by applying the principles of competitiveness, transparency and non-discrimination;
- 3) construction of new energy capacities, i.e. revitalization and modernization of the existing facilities;
- 4) comprehensive and coordinated approach to rationalization of energy consumption and overall increase of energy efficiency;
- 5) creating adequate regulatory and organizational conditions and simplifying and accelerating procedures for obtaining approvals and permits;
- 6) intensifying the use of renewable energy sources whereas the promotion of the renewable energy sources should be included in the energy plans of cities and local communities as a part of local energy strategies;
- 7) reorganization and restructuring of companies in the energy sector: providing economic, organizational, and legal conditions for public enterprises in the energy sector to function independently in the market and to become capable of securing higher share of own funds for the development, protection of environment, and area reclamation; introducing the principles of corporate management in public enterprises; considering the options for creating synergy through linking of enterprises that manage network infrastructure systems (oil, gas, electricity);
- 8) further alignment of the existing regulations with EU regulations and standards, along with mutual alignment and development of national regulations in

order to ensure the harmonization of technical and other regulations and laws in a way of support to safe and secure technical management of the energy infrastructure; providing permanent protection of areas above deposits of raw energy resources and of areas surrounding water reservoirs and energy corridors from further construction activities; obligating investors to always use the best available technologies in the construction of energy and other facilities within investment programs in order to ensure optimal utilization of the available energy, energy efficiency and protection of environment.

The Strategy envisages that said activities are to be accompanied by appropriate organizational and other measures that ensure: the increase of capacities of financial organizations to finance energy efficiency measures, i.e. to finance the development of production and placement of best available technologies and energy equipment; development of innovative mechanism for financing of the energy services sector; encouraging the development of domestic industry in a way that it follows the envisaged development of the energy sector; analysis of the impact of climate changes on the energy sector in the Republic of Serbia and adoption of adequate adaptation plans; systematic increase of scientific and educational institutions' capacities for working in the energy sector; informing the public in a complete and timely manner on the conditions in the sector; educating and raising the awareness on the possible effects of saving energy, its rational consumption and substitution as well as on the preconditions of the sustainable development of the whole society and country.

All recommended activities are in accordance with the goals of energy community and their implementation should lead to creation of a competitive, integrated energy market suitable to attract investments into energy sector and to ensure the safe and secure supply of energy. With regards to this, all short term and long term goals should be aligned with the National Sustainable Development Strategy [24] seeing that it is an important document for harmonization of overall goals of the society. The Republic of Serbia has expressed a particular interest in attracting energy sector investments in the domain of the exploitation of renewable energy sources [11]. In this sense, the regulatory framework should be further strengthened and its solutions modernized.

8.4. Modernization of the regulatory framework

Considering the fact that the Republic of Serbia is an EU candidate country, the regulatory framework of the Republic of Serbia is developing in keeping with the values of the European energy market.

Energy security, establishment of energy market and functioning of the energy sector in accordance with the principles of sustainable development are key guiding ideas that regulations should strive towards. The EU accession process should additionally affirm the intent to organize the energy market in keeping with the European values. In accordance with the signed Stabilization and Association Agreement⁽⁴⁴⁾ [18], the legal system should aim towards harmonizing with the EU regulations and implementing the EU goals and regulations in practice.

Modernization of the regulatory framework should take two directions.

The first one refers to extending the spectrum of multilateral and bilateral agreements ratified by the Republic of Serbia contributing to energy market organization in accordance with the rules regarding the preservation of competitiveness, and also contributing to direct or indirect increase of investments into energy sector.

The second direction that the regulatory framework should certainly follow refers to harmonization of regulations with the EU standards in the material sense, but also in terms of application of the adopted standards.

8.4.1. Modernizing regulatory framework by assuming international obligations

The sources of rights relative to organization of relations in the energy market [33] are formal acts containing rules of conduct of the energy market participants.⁽⁴⁵⁾ Considering the provisions of the Article 16 item 2 of the Constitution of Republic of Serbia [35]: “Generally accepted rules of international law and ratified international treaties shall be an integral part of the legal system in the Republic of Serbia and applied directly. Ratified international treaties must be in accordance with the Constitution”, the point in question is how to modernize regulatory framework, i.e. how to establish national laws in accordance with the undertaken international obligations. If the Republic of Serbia ratifies an international agreement, then the said agreement shall be directly applied meaning that all laws and by-laws must be aligned with the provisions of the agreement. Formally, rights stem from three sources [36] which represent the basis of the harmonization process of the national legislation: international agreements, international documents which are soft laws in character, and international common law and legal principles.

International agreements in the energy sector domain are the agreements concluded between two or several countries that regulate a single or several energy issues. They may become an integral part of national legislation if they are recognized, i.e. ratified by the National Assembly of the Republic of Serbia or indirectly by accepting individual solutions and implementing them (harmonization). The ratification of the Treaty Establishing the Energy Community⁽⁴⁶⁾ by the Republic of Serbia was the farthest reaching multilateral agreement accepted at the international level. Although the document in question is of regional character, on the strength of its solutions the Treaty purports to be implemented in the whole European continent, and even beyond.⁽⁴⁷⁾ The aim is to harmonize the regulations of all member countries to the extent that it would be realistically possible to have a joint energy policy [10].

When international agreements are signed, a commonly included provision states that the agreement comes into force after a number of ratifications. However, this does not mean that the countries that have not ratified the agreement may not incorporate its values into their legislation. In this manner, although the full application of the agreement is not mandatory in the states that did not ratify it, an international agreement is very important since it is gradually (partially) accepted. Under those circumstances, the agreement may be said to represent a soft law.

The application of the common law is not a rare occurrence in international energy relations. Common law stems from the desire of people or countries to act in times of crisis in the manner they would like others to treat them in

similar situations. In times of crisis, there is not enough time to write and adopt international agreements; therefore, laws are created through action, i.e. by undertaking activities with specific (undetermined) expectations. For instance, a country may intervene with supplies or available resources in the energy market of another country at its request, even if its energy security is destabilized to a lesser extent, expecting that other countries will act in the same manner if the same situation happened in the said country. Such conduct is not prescribed by international regulations, but is based on the principle of solidarity explained in the regulations in several instances.

Although Serbia is a relatively small country with a minor energy market potential in comparison to global movements, in terms of the implementation of the Paris Treaty⁽⁴⁸⁾ its endeavours will certainly have significance as well. Due to the increased effects of global warming, the principles of environmental protection have come to direct the current energy relations. Canada's protests regarding the implementation of the Kyoto Agreement, the refusal of many countries to accept the Energy Charter Treaty, reflect the conduct of large actors in the global energy market as of the beginning of the century.

Although the Energy Charter Treaty was not accepted by a large number of states, the Charter serves as an important guide to current tendencies. The Charter represents a multilateral agreement defining: the protection of foreign investments, creation of non-discriminatory conditions for investments and trade in the energy sector, promotion of energy efficiency and conditions and rules for resolving disputes from the fields stipulated in the Charter [37]. Therefore, the Energy Charter approaches the energy sector from the viewpoint of several disciplines, which at the time when it was issued, and even today, is too progressive a task.

However, the Paris Agreement, as a sector agreement, managed to impose on all the countries in the world the obligation of achieving a target – the increase of the temperature by 2 degrees above the pre-industrial temperature level, i.e. 1.5 centigrade degrees – which would significantly reduce the risks and impact of climate changes. For the first time, on a global level, countries agreed that it was necessary to provide safer and healthier environment by acting together. Acting jointly does not mean simultaneous activities in a specific area, but undertaking actions in accordance with action plans that will each five years set new targets. In this manner, regulations and targets shall *de facto* be harmonized since countries will draw on the experiences of their neighbours, even more so as each country will be obligated to inform the public and other countries on the progress made and achievements with regards to realizing stated targets. Precisely this obligation is the crucial one: providing information about accomplished targets. If a country does not ensure the implementation of the undertaken obligations, then surely, their formal determination cannot be measurable in terms of the accomplished standards.

8.4.2. Implementation of adopted standards

Implementation of the adopted standards may be observed both in formal and material terms. Formally, it refers to passing regulations in order to achieve certain targets or, in other words, forming regulatory framework that may ensure realization of stated ideas. In material terms, the implementation of the adopted standards refers to their actual measurement, i.e. the evaluation of the achieved

based on the given criteria. If the evaluation does not yield expected results, an analysis is carried out of two groups of causes. The first group investigates the potential weaknesses of the defined targets or mechanisms for their achievement. The second group measures the ability of the competent actors to implement proposed mechanisms.

On the international level, forums operating within separate international organizations represent a platform for carrying out comparative analyses, exchanging ideas and understanding circumstances. With regards to this, important discussions are carried out by groups under the auspices of the Energy Charter Treaty Secretariat, and at forums within the Organization for Economic Co-operation and Development, International Energy Agency, the World Trade Organization and others.

On the national plane, the analyses are primarily performed by the competent ministry for energy that is responsible for creating and implementing energy policy and the development of the regulatory framework. Therefore, it is necessary to enable the competent ministry to monitor the implementation of certain legal norms in practice and to analyze the effects of their implementation. It is of crucial importance for the development of the energy sector in the country to constantly raise the capacities of people dealing with energy matters.

Providing human and technical resources to ministries and competent services and institutions is indeed important, but cannot be compared to the importance of raising the citizens' awareness on many energy issues: competitiveness, energy security, environmental protection, energy efficiency, etc. In order to optimize the development of the energy sector with the requirements of the modern society, it is necessary to improve educational, professional, scientific and research potential of the country. The bearers of the "energy thinking" are not exclusively professional organizations within state competence, but also the educational system, i.e. the individuals within the educational system.

8.4.2.1. Formal determination

New organization of the energy market required that a separate Energy Agency of the Republic of Serbia was formed, an independent regulatory body within the competence of which are electrical energy, natural gas, oil and oil derivatives, and heat energy produced in power plants with combined production in accordance with the law. Through its activities, the Agency ensures a non-discriminatory approach to systems, as well as effective competitiveness and efficient functioning of the electrical energy and natural gas market. According to the law, the Agency cooperates with other international bodies in order to fully realize the principles of market economy. In order to develop the regional electrical energy and natural gas market, as well as to create equal conditions for all market participants and to align its operations with international experiences and standards, the Agency cooperates with regulatory bodies of other countries, as well as with other international organizations in accordance with the law and assumed obligations of the Republic of Serbia. However, a regulatory body cannot be the single responsible party [10].

Local self-governments are also seen as parties potentially responsible for the implementation of the envisaged standards. In accordance with their purpose, local self-governments cooperate with citizens and their contribution to direct communication with citizens is important.

Written in understandable language, contemporary legislative texts significantly contribute to energy culture. This especially refers to laws regulating the market, i.e. the rights and obligations of market participants. In accordance to the third energy package, the concept of competitiveness and the principles relative to the division of energy activities need to be clearly regulated.⁽⁴⁹⁾ Energy Law from December 29th 2014 included the values of the EU third energy package, but it remains to be seen how quickly the standards enacted by the law shall be implemented in the future and how it would impact the energy market.

The Strategy points to importance of other laws regulating specific segments of the energy market. For instance, with regards to oil and oil derivatives, the Law on Commodity Reserves [21] includes the solutions of the European Union Directive 2009/119/E3⁽⁵⁰⁾ referring to the establishing of the system of minimum oil and oil derivatives reserves. In accordance with the obligations undertaken by the Treaty Establishing the Energy Community, the mandatory reserves of oil and/or oil derivatives should be established no later than 1st January 2023.

Heat energy sector is organized locally. Apart from the Energy Law, relevant provisions may be found in the Public Utilities Act [17]. However, the alignment of principles these two acts are based upon with regards to organization of the market must be insisted upon. Namely, the heat energy market should also be organized. It is necessary to recognize various participants in the market in terms of the production, distribution (through heating pipeline system) and delivery, i.e. sale, and to enable all interested parties to access the market under non-discriminatory conditions. In the energy market, the end users are also protected from discrimination by the Law on Consumer Protection [16]. The Law on Consumer Protection contains several provisions regarding the so-called services of general economic interest, among which are the energy supply, including heat energy. However, in the absence of quality legislative solutions with regards to relations between the vendors and end users, the most prominent case being the collective housing, requests are frequently not met, much to the chagrin of the end users whose disapprobation of the supplier often ends with court proceedings. The most frequent requests of the end users are: cancellation of the supply, making consumption calculations public, simpler, and more transparent, as well as disconnecting real properties from the heating system network. Most of these requests are fairly easily resolved, except in the case of collective housing, when such requests are met with great difficulties. Firstly, the collective housing is a single real property and is connected to the heating system network as a single unit. Disconnecting the heat energy supply to one user or one part of the property usually requires significant financial funds, and in the case of a centralized system based on the so-called riser pipes extending across several levels, it is virtually impossible to disconnect the supply since the pipes running through that part of the real property are necessary to continue supplying other parts. The situation is slightly better when the riser pipes run in bundles through the central (joint) part of the real property branching out to each unit separately. In this case, it is possible to disconnect a specific part from the heating system, naturally at a cost, but the potential of all parts of the heating system mechanical installations in the real property remains the same, therefore certain fixed costs still remain and have to be settled. The said costs are frequently the cause of disputes between the end users and the heat energy distributors (currently, the distributors are usually the producers as well).

A solution to this issue may be in passing a separate regulation that would define in detail the relations of the owners of separate units in collective housing. Currently, no one is held accountable for not meeting the obligations towards the distributors of both heat and electrical energy in such properties, other than the specific end user. If the end user or their predecessor failed to notify the distributor about the need to change the information on the end user (if such change occurred), it often happens that the distribution of energy is charged to a person that naturally cannot be the user (the person is deceased, the owner sold the real property, moved away, etc.). In such cases, the distributor, i.e. the producer cannot realize their rights through court proceedings because they do not have the correct data on the user they provide service to. Under such circumstances, it is very difficult to attract investors to potentially invest capital into modernization of the whole system.

Good experiences may be observed in the sectors not directly related to the energy market. The same problem occurs in the household waste collection sector. Whereas the dustmen collect the waste and receive compensation for it, practically no questions are asked as to the user. Often, such questions are only asked when a problem arises, such as the failure to settle the obligations for the services provided. If dustmen do not receive the information on the change of the user in a timely manner, it will be very difficult to collect the receivables, since the information which user received the service would not be available. The time spent to gather data frequently led to expiration of court deadlines; hence, the various solutions had to be devised in practice. By implementing those solutions, the distributors may most likely increase the accuracy of data at their disposal. It is possible, based on the provision of the law, to create a single database that would be updated with the help of various state services, but also with the help of private companies entrusted with specific authorizations or specific tasks of public importance. However, caution is advisable in this process considering the regulations on the protection of personal data, especially when it comes to collecting and processing such data.

8.4.2.2. Material determination

All market segments should be based on the non-discrimination principle since it represents a solid foundation for attracting investments. Financial incentives and favourable purchase prices for electricity obtained from renewable energy sources are based on the non-discrimination principle. The Energy Law stipulates the obligation to purchase electricity from the preferential producers and clearly defines the set of incentives that preferential producers have at their disposal. Subsidies to interested investors are regulated by the Law on Efficient Use of Energy [15].⁽⁵¹⁾ The said law determines the conditions and the manner of the efficient use of energy in the energy production, transmission, distribution, and consumption sector; the policy of the efficient use of energy; energy management system; designating the level of a product's energy efficiency which impacts the consumption of energy; setting the minimum energy efficiency requirement in production, transmission, and distribution of electrical and heat energy and distribution of natural gas; funding, incentives, and other measures in this field, as well as other important issues regarding the rights and obligations of physical persons and legal entities in terms of the efficient use of energy. Main goals the law aims to achieve are the following: 1) increasing the

security of energy supply and a more efficient use of energy; 2) increasing the competitiveness of the economy; 3) reducing negative effects of the energy sector on the environment; and 4) encouraging responsible behaviour with regards to energy, based on the implementation of the policy for efficient use of energy and energy efficiency measures in energy production, transmission, distribution, and consumption sectors. To this purpose, the law prescribed main principles that all energy consumers should adhere to. The most important principle refers to ensuring energy security. Energy security is contributed to by reducing the consumption of primary, i.e. final energy through the implementation of measures for energy efficiency in energy production, transmission, distribution, and consumption sectors. It is necessary to increase the competitiveness of products and services. The implementation of energy efficiency measures significantly reduces production expenses per unit, i.e. it reduces the costs of services provided. This should lead to energy consumption sustainability namely, to an overall reduction of consumption, with rebound effect adjustment, and to better application of the available technologies and requirements of eco-design, higher efficiency and reductions in the energy use, as well as environmental sustainability through implementation of the environment protection principles. It is also necessary to define the energy management, i.e. it is necessary to create an integrated system aimed at reducing the total energy consumption. Reduction of energy consumption in energy production, transmission, distribution, and consumption sectors is ensured by implementing minimum energy efficiency requirements for new or reconstructed energy production, transmission, and distribution facilities.⁽⁵²⁾

Special attention must be given to legislative protection of participants. Namely, frequent changes of the energy market organization inevitably entails the reorganization of state-owned companies that are currently operating or have operated under specific conditions. Their reorganization should not result in lower quality of services provided; on the contrary, the quality should increase. The interpretation of the conditions prescribed by the law must be restrictive and not damaging to consumers, but on the contrary, *in favorem emptoris*.

9. Conclusion

International energy relationships develop as a result of contrasted tendencies of the producing and the consuming countries. The contrasted interests intersect at the Weierstrass point, the value of which, over time, i.e. in the course of development of relationships in the energy market constantly changes. The reasons for this change lie in the fact that the countries are becoming economically independent, as well as and in the substitution of consumption, energy efficiency, market development, etc. At the same time these define the foundation (the four pillars) of the security of supply in the energy market: access to energy sources, access to the energy market, building up of energy reserves, and energy efficiency and environmental protection.

Access to energy sources should be uniformly regulated on the global scale. However, the clash of interests between the energy producing and energy consuming countries prevented the adoption of a multilateral document that would regulate mutual relationships. Discord regarding common acceptance of Energy Charter Treaty has created regulatory void that is filled in with practical solutions in each individual case, which do not contribute to legal security. It is therefore necessary to create a regulatory framework which would define crucial relationships in the international energy market. The initiative for creation of multilateral regulatory framework leads to diametrically opposite attitudes even in elementary issues: the right to access energy sources and the right to access the energy market. The position in theoretical studies termed “Merkelism” starts from the belief that the energy sources are a common good, which from the point of view of international law is untenable. Also, access to the energy market is perceived through the concept of free access, which is in contrast with the interests of individual countries. It is necessary to find a tenable model which would reconcile the aspiration towards the security of supply to the aspiration of maximizing the profit.

The interest for creating a tenable model will exist at the moment the profit reaches the limit of acceptability, i.e. until the moment when the producers would consent to certain concessions in order to maintain the current level of production.

The instrument for reaching that moment is achieving energy independence, which is accomplished through, above all, energy efficiency and substitution of consumption. The results of the energy efficiency are limited by the rebound effect, but the general contribution is clearly perceived. Considerable results are achieved through substitution of consumption as well, i.e. by decrease of the

total consumption of fossil fuels, which considerably affects the demand and the position of the big producers.

Sudden fluctuations in the energy market can be compensated by possession of big energy reserves. The reserves can be own or regional. With their own reserves, countries can answer to the turbulence temporary in character and the causes of which are mostly of technical nature. By accepting the system of regional reserves, countries strive towards twofold supply and greater flexibility.

In that sense, the Republic of Serbia has recognized the significance of the regional connection, so it ratified the Treaty Establishing the Energy Community and by adopting the Energy Sector Development Strategy predicted key directions and goals of the national energy sector. The pillars of the security of supply of the Republic of Serbia are establishing energy security, development of the energy market and total transition towards the sustainable energy sector. In the long run, the policy of striving towards the established goals should lead to the energy independence and development of particularly the primary sector, in line with the EU values. By modernizing its regulatory framework through implementation of values of the EU laws in the energy sector, the Republic of Serbia harmonizes its regulations with *acquis communautaire*, which is a key precondition for application of the ring concept and other methods of market protection in line with the European values. Frequent changes aiming at improvement of the energy sector must not lead to the decrease of quality of energy services, but on the contrary must lead to the better protection of the end users and improvement of their rights. Only by respecting the interests of all the participants in the market can a sustainable system be created, a system that would lead in the long run to greater energy independence and/or long-term security of supply in the energy market.

10.

Notes

¹ At this point it is necessary to point out the language inconsistency perceived in scientific literature. Namely, the Energy Charter should be distinguished from the Energy Charter Treaty. The International Energy Charter, which is a political declaration about principal issues of energy cooperation, was supported by far more countries than the legally binding Energy Charter Treaty.

² The Kyoto Protocol, resulting from the United Nations Framework Convention on Climate Change, has long been the key document aimed at reduction of greenhouse gases emission on a global scale. Unfortunately, in the course of its implementation, the key polluters have refused to fully or partially implement it. The Paris Agreement raises great expectations, before all of its massive incorporation into national systems. In addition to that, even better results are expected than those envisaged by the agreement. And most importantly, it is expected that this agreement raises the awareness of all the participants in the energy market and leads to the substitution of consumed energy sources and the reduction in fossil fuels consumption.

³ The term “Asian tigers” refers to Taiwan, Hong Kong, South Korea and Singapore.

⁴ The BRICS countries are Brazil, Russia, India, China and South Africa. South Africa joined the agreement at a latter date.

⁵ As of early 2011 the term “Arab spring” (“Arab uprisings”) has got a new meaning, denoting uprisings of citizens in several countries on the African continent aimed at producing democratic changes. These events caused disturbances in the international oil market that resulted in rapid increase in oil prices. The events of that period confirmed the fact that despite the obligation of all the participants in the market to comply with the contracts signed, it is impossible to overcome objective circumstances that hinder the delivery of energy commodities, although the risks are non-commercial in nature, such as political unrest. Simultaneous inability of several potential suppliers to deliver energy does not just produce economic effects – the increase of prices due to constant demand and limited supply, but also, if the situation persists, it causes great damage because of the impossibility to purchase energy in the long run (during the period of political unrest).

⁶ The term “seven sisters” was coined in 1950s by businessman Enrico Mattei (then-head of the Italian state oil company from its foundation in 1953 till 1962) to describe the companies which formed the “Consortium for Iran” cartel and had the greatest export power from the 1940s to the 1970s.

The seven sisters were Anglo-Persian Oil Company (now BP); Gulf Oil, Standard Oil of California (SoCal) and Texaco (now Chevron), Royal Dutch Shell and Standard Oil of New Jersey (Esso) and Standard Oil Company of New York (Socony) (now ExxonMobil).

⁷ The member countries of OPEC today are: Algeria, Angola, Ecuador, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela.

⁸ At the time of the foundation of OPEC, exploitation of oil in the member countries was at the hands of transnational companies. Bearing in mind the fact that OPEC was founded by countries and not the companies, there was no space for polemics regarding possible interference of countries in the economic tendencies in the global oil market. However, as of 1973 onward, when the majority of member countries started nationalizing oil installations and facilities on the production sites and handing them over to the state owned companies, OPEC has got a different kind of legitimacy, since the implementation of decisions reached at the Conference sessions could easily be put into practice. Therefore, it is justifiable to characterize OPEC as cartel, although *de facto* OPEC is not an association of companies, but countries. The agreements reached between the OPEC member countries can easily be implemented, since the companies are directly controlled by the member countries.

⁹ The excess funds at the hands of the then-non-industrialized countries caused turbulence in the international energy market and brought on the crash of the golden standard set in Breton Woods in 1973. At the same time, investments in facilities that would facilitate future refining and distribution of oil increased.

¹⁰ In that period it was difficult to estimate the prices from one week to another since the political instability was spreading fast through many countries. Crude oil prices varied on a monthly basis for several percent (in some months going up for 10%), which was an additional impact on demand.

¹¹ The South Stream is the abandoned project of constructing a gas pipeline that was supposed to connect Russian gas deposits with the EU market. It was supposed to go through Bulgaria and Serbia, bypassing Ukraine. Serbia took an active part in that project by adopting the Law on determining public interest and the special procedures of expropriation and obtaining of documents for the construction of the South Stream natural gas pipeline (The Official Gazette of the Republic of Serbia, no. 17/2013), and the Law on issuing guarantees of the Republic of Serbia to *Deutsche Bank AG London* for the loan taken by *Srbijagas Novi Sad* for financing the South Stream project (The Official Gazette of the Republic of Serbia, no. 124/2012). The Contract on the development of the interconnector was signed on July 8th 2014.

¹² Another classification can be found in scientific literature, that of inexhaustible and exhaustible energy resources. Inexhaustible renewable energy resources are: a) dispersed resources: solar, wind, tidal and precipitation, and b) accumulating resources: air and oceans. Exhaustible renewable energy resources are: a) biological resources: forests, fish stocks and biomass, and b) accumulating resources: freshwater basins, ground fountains and soil.

¹³ Weierstrass point got its name after Karl Theodor Wilhelm Weierstrass, a German mathematician often cited as the “father of modern analysis”. His definitions of limit in mathematical theory have often been used in scientific papers and literature to describe social relationships.

- ¹⁴ Since Weierstrass defined several limit theories that explain laws in particular sets, for the purpose of this paper the term Weierstrass point has been adopted, to show that when it exists, the balance of interests of big producers and big consumers of energy also exists, and each group has its own different interests that are examined and proved in each particular case.
- ¹⁵ The oil prices decline when, in order to finance their war activities, one or both conflicted parties sell oil and its derivatives well below their market value so as to achieve a tactical advantage over their opponents (usually through purchasing state-of-the-art weaponry, ammunition and other military products).
- ¹⁶ By means of bilateral contract, Russia and Germany agreed on and jointly constructed an offshore natural gas pipeline named Nord Stream from Vyborg in the Russian Federation to Greifswald in Germany. In that way, by relying on the international waters regulations, they bypassed several transit countries that would otherwise be on the territorial route of the gas pipeline, which caused revolt of some countries. Justification for such an act from Russia, with which it possibly denied certain interested countries the opportunity to participate in the project, is that those countries, if really interested, could also promote a project acceptable for both parties, and that in that sense there were no limitations of participation. Construction of the pipeline was officially launched in an opening ceremony on April 9th 2010. The pipeline has an annual capacity of 55 billion cubic metres. It is over 900km long and laid 2,000m below the sea. It was inaugurated in 2012.
- ¹⁷ Prevlaka is a 300m long and 200m wide peninsula on the border of Croatia and Montenegro, presumably rich in mineral deposits.
- ¹⁸ Rainforest is a generic term for the forest ecosystems on both sides of the Equator (tropical rainforests), in the Amazon basin, Zaire, Indonesia, etc., and in the temperate climate zones of North America, Chile, Tasmania and New Zealand. Rainforests are characterized by high rainfall and warm climate suitable for lush vegetation.
- ¹⁹ Detailed terms can be found in Clauses 2 and 10 of the Law on the ratification of the Treaty Establishing the Energy Community.
- ²⁰ Recital 22 of the Directive stipulates: “The security of energy supply is an essential element of public security and is therefore inherently connected to the efficient functioning of the internal market in gas and the integration of the isolated gas markets of Member States. Gas can reach the citizens of the Union only through the network. Functioning open gas markets and, in particular, the networks and other assets associated with gas supply are essential for public security, for the competitiveness of the economy and for the well-being of the citizens of the Union. Persons from third countries should therefore only be allowed to control a transmission system or a transmission system operator if they comply with the requirements of effective separation that apply inside the Community. [...] The security of supply of energy to the Community requires, in particular, an assessment of the independence of network operation, the level of the Community’s and individual Member States’ dependence on energy supply from third countries, and the treatment of both domestic and foreign trade and investment in energy in a particular third country. Security of supply should therefore be assessed in the light of the factual circumstances of each case as well as the rights and obligations arising under international law, in particular the international agreements between the Community and the third country concerned”.

- ²¹ “To protect the openness of our market, to protect the benefits that unbundling will bring, we need to place tough conditions on ownership of assets by non-EU companies to make sure that we all play by the same rules.” – Statement of José Manuel Barroso as of September 19th 2007, available at: <http://www.euractiv.com/energy/gazprom-clause-issues-russia-ult-news-218748>, as of February 27th 2014.
- ²² The regulatory authority shall adopt a draft decision on the certification of a transmission system operator within four months from the date of notification by the transmission system operator. Please refer to the Article 11 of the Directive 2009/73/EC for a detailed analysis of terms and conditions.
- ²³ Rebound effect may be explained as an increase of energy consumption occurring due to improved productivity.
- ²⁴ In scientific literature, the session is also referred to as “Rio+5”.
- ²⁵ Millennium development goals are determined in the United Nations Millennium Declaration adopted in 2000 at the Millennium summit.
- ²⁶ The first oil crisis (1973–1974), Iranian revolution (1979–1980), the first Gulf War (1990), the first intervention of the Organization of the Petroleum Exporting Countries (OPEC) as of the beginning of 1999 until the autumn 2000, sudden industrial development of the “Asian tigers”, and also BRICS countries as of the end of XX century until present. Natural disasters, such as strong hurricanes (“Rita”, “Katrina”, “Gustav”), tsunamis (“Fukushima”, “Haiyan”) and other natural cataclysms also caused major disruptions in the market.
- ²⁷ The formation of American strategic reserves is related to the Arabian–Israeli war in 1973. In response to the support of the United States of America to Israel, the Organization of the Arab Petroleum Exporting Countries (OAPEC) imposed an oil embargo on the United States of America, Holland and Canada and reduced the production. In the time it took to transport crude oil to the USA from the moment the embargo was introduced, the price of the imported crude oil grew from USD 4 per barrel to an average of USD 12.50 in 1974. Robert Bamberger wrote about this occurrence.
- ²⁸ Treaty on the Functioning of the European Union (TFEU), Lisbon Treaty), which came into force at the end of 2009, introduced significant changes in the energy sector. Article 194 of the Treaty provided a concrete legal framework for the development of the European energy policy. It was achieved by compromising the observance of the EU member states sovereignty and their right to use natural resources, with the common European Union jurisdiction. The Treaty underlines that the goals of the European energy policy from the TFEU have to be met “in a spirit of solidarity between the member states” (Article 194 item 1 of TFEU).
- ²⁹ Hence the term the “gas-ring concept”.
- ³⁰ Economic recovery of Russia and Ukraine from the first decade of the XXI century improved the cooperation between these two countries to an extent. However, despite the participation of Russia and Ukraine in the global market, both countries had serious disagreements with regards to gas prices. Since 2004, the difference between the gas prices for European countries and the gas prices for member states of the Commonwealth of Independent States (CIS – *Russian: Содружество Независимых Государств* is an international organization or association comprising 10 former Soviet republics: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan,

and Uzbekistan; Turkmenistan withdrew from the membership on August 26th 2005, and today it is only an associate member). With regards to this, Gazprom asked that the prices to CIS countries be raised to European net realizable oil level (i.e. the prices for European countries reduced by the transport costs). In January 2006, a disagreement arose between Gazprom and Ukraine regarding the determining of gas prices, as well as regarding the gas import conditions (i.e. regarding the Turkish–Russian–Ukrainian relations and the role of the intermediary). Russia halted the export of gas to Ukraine for three days. Ukraine redirected the gas transported to Europe, and the supply of several Central European countries was slightly disrupted for a short while. In January 2009, Russia completely interrupted the supply to Ukraine, however Ukraine held onto the gas intended for the supply of Europe. The shortage of the “European” gas resulted in a serious energy crisis the resolution of which involved not only the EU member states, which were affected the most, but also other countries. As a result, Ukraine and Russia signed an agreement. Considering the announcement of Russia that as of the end of 2018 it would no longer transport gas across Ukrainian territory, the key route for gas transportation is rendered meaningless, and Europe has to turn to alternative routes.

³¹ The proposed gas line for the transport of Russian natural gas to Italy (across the Black Sea, Bulgaria, and Greece) and Austria (across the Black Sea, Bulgaria, Serbia, and Hungary). The construction was postponed due to mutual disagreement between the EU and Russia. Namely, the EU insisted that the supplier monopoly regarding the access to the gas lines be removed, whereas Russia refused to do so.

³² Turkish Stream is the name given to the gas pipeline that was supposed to replace the South Stream. It was supposed to run from Russia to Turkey across the Black Sea. The project was proposed by the Russian president Vladimir Putin in December 2014 during his visit to Turkey. In November 2015, Russia postponed the talks about the project. A month later Turkey formally quit the project.

³³ In the Crimean status referendum 96% of the voters declared in favour of Crimea joining Russia, to the pointed protestations of Ukraine and the EU countries, but also the countries outside of the EU.

³⁴ The White Stream, also known as the Georgia–Ukraine–EU gas pipeline, is a project regarding the gas pipeline for transportation of the natural gas from the Caspian Sea region to Ukraine and further on to Poland.

³⁵ The most frequent example in the available scientific literature is that of Canada. It is estimated that Canada has 173 billion barrels of solid bitumen from which it is possible to obtain petroleum derivatives, which according to the assessments, positions Canada in the second place in terms of oil reserves, immediately after Saudi Arabia. As the oil price in the global market increases, the conditions for investment into new, more expensive technologies improve.

³⁶ The main division of energy sources according to the natural state (primary sources) is the following: sources of chemical energy (fuels), sources of potential energy, water power (ebb and flow), sources of nuclear energy (nuclear fuels), sources of kinetic energy (wind, sea waves), sources of heat and geothermal energy (water and soil heat), and radiation sources (the Sun).

³⁷ In 2010 33.5%.

³⁸ Serbia faces the issue of a negative birth rate. The authors of the draft Civil Code are intent on finding the solution to the said problem. Mr Ratko Slijepčević,

the Secretary of Commission for the preparation of the Civil Code, repeatedly made statements to the media that the Commission members' idea is for the Civil Code to prescribe that each woman in Serbia with three children should be entitled to so-called demographic fee. The fee would be paid on a monthly basis until the youngest child becomes of age. It remains to be seen if the draft proposal would pass the procedures and be adopted.

³⁹ The *Buncefield fire* is a case from the recent past, when one of the largest fuel reserves exploded in 2005. The case in question was an extensive endangering of environment and safety of populace. In this instance, the Hertfordshire Oil Storage Terminal (in the UK) containing 227,124,710 litres of oil exploded. In 2010 as well, the so-called Macondo incident occurred in the Mexican gulf – an oil rig exploded causing the spill of large quantities of oil into the sea. A number of people were killed in the explosion.

⁴⁰ By ratifying the Treaty Establishing the Energy Community, the Republic of Serbia undertook the obligation to adhere to the following directives: 1) regarding the energy security: Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment; Directive 2004/67/EC on measures to ensure the security of supply of natural gas; Directive 2009/119/EC on imposing an obligation on member countries to maintain minimum stocks of crude oil and/or petroleum products; 2) regarding the regulations on organizing the energy market: Directive 2009/72/EC concerning common rules for the internal market in electricity; Regulation 714/2009 on conditions for access to the network for cross-border exchange of electrical energy; Directive 2009/73/EC concerning common rules for the internal market in natural gas; Regulation 715/2009 on conditions for access to the natural gas transmission networks; 3) regarding the regulations on the so-called sustainable energy sector: Directive 2006/32/EC on energy end-use efficiency and energy services; Directive 2010/30/EU on the indication by labeling and standard product information of the consumption of energy and other resources by energy-related products; Directive 2009/28/EC on the promotion of the use of energy from renewable sources; 4) regarding the regulations on the environmental protection: Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment; Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants (LCP Directive); Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control); Directive 1999/32/EC relating to a reduction in the sulphur content of certain liquid fuels; Directive 79/409/EEC on conservation of wild birds.

⁴¹ The Table excludes reserves from Kosovo and Metohija.

⁴² Toe is short of the tonne of oil equivalent, a unit of energy defined as the amount of energy released by burning one tonne of crude oil.

⁴³ The authors primarily refer to the importance of biomass in the energy production which in Serbia is utilized to a lesser extent considering its potentials.

⁴⁴ The 2008 Stabilization and Association Agreement between the European Community and its member states on one side, and the Republic of Serbia on the other, confirmed the importance of the Treaty Establishing the Energy Community. The Treaty underlines the necessity for cooperation between the Republic of Serbia and the European Union regarding the development of principles of the Energy Community and the integration of the Republic of Serbia into the EU energy market.

⁴⁵ The term “sources of rights” is used both in formal and material sense. In the material sense, it refers to social factors and causes that led to the creation of a norm. It is precisely the sources in the material sense that designate the sources of rights relative to the functioning of the energy market.

⁴⁶ On the international plane, the Republic of Serbia concluded a number of agreements that directly or indirectly refer to *in concreto* development of the energy market, for instance: Memorandum of Understanding between the Ministry of Mining and Energy of the Republic of Serbia and the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus concerning the cooperation in the field of geology (“The Official Gazette of RS – International Agreements”, No. 7/2014); Regulation on the ratification of the agreement between the Government of the Socialist Federal Republic of Yugoslavia and the Government of the Socialist Republic of Romania on the conditions for extending the cooperation regarding the utilization of hydro-energy potential of the Danube (“The Official Gazette of SFRY – International Agreements” No. 12/78); Regulation on the Ratification of the Agreement on the Privileges and Immunities of the International Atomic Energy Agency (“The Official Gazette of SFRY– International Agreements and other agreements” No. 1/64); Bill on the Confirmation of the Convention between the Government of the Federal Republic of Yugoslavia and the Government of Romania on the exploitation and maintenance of hydro-energy and waterway systems Djerdap I and Djerdap II, with appendixes (“The Official Gazette of FRY – International Agreements” No. 7/98); Bill on the Confirmation of the Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage of November 29th 1969 (“The Official Gazette of RS – International Agreements”, No. 12/2010); Bill on Confirmation of the Agreement between the Government of the Republic of Serbia and the Republic of Italy on Cooperation in the Energy Sector (“The Official Gazette of RS – International Agreements”, No. 7/2012); Bill on the Confirmation of the Loan Agreement (“Additional Financing for the Energy Efficiency Project for Serbia”) between the Republic of Serbia and the International Development Association (“The Official Gazette of RS – International Agreements”, No. 83/2008); Bill on Confirmation of the Development Loan Agreement (Project of Emergency Stabilization in Electrical Energy Supply in the Republic of Montenegro) between the Federal Republic of Yugoslavia and the International Bank for Reconstruction and Development (“The Official Gazette of FRY – International Agreements” No. 11/2002); Bill on the Confirmation of the Loan Agreement (“Additional Financing for the Energy Efficiency Project for Serbia”) between the Republic of Serbia and the International Bank for Reconstruction and Development (“The Official Gazette of RS – International Agreements”, No. 83/2008); Bill on the Confirmation of the EUR 15,000,000 Loan Agreement between KfW, Frankfurt-am-Main and the Republic of Serbia for project themed “Energy Efficiency in Public Buildings” (“The Official Gazette of RS – International Agreements”, No. 6/2015); Bill on the Confirmation of the Statute of the International Renewable Energy Agency (IRENA) (“The Official Gazette of RS – International Agreements”, No. 105/2009); Bill on the Ratification of the Financial Agreement between the Federal Republic of Yugoslavia and the European Investment Bank (Restoration of Energy Sector Project) (“Official Gazette of Serbia and Montenegro

– International Agreements”, No. 3/2003); Bill on ratification of the Agreement between Serbia and Montenegro Council of Ministers and the Government of the Republic of Romania on capital renovation, modernization and increasing of the installed power of hydro-aggregates of the Djerdap II hydro-energy and waterway systems (“The Official Gazette of Serbia and Montenegro – International Agreements”, No. 18/2005); Bill on Ratification of the Agreement between the Federal Executive Council of the Socialist Federal Republic of Yugoslavia’s Assembly and the Government of the Socialist Republic of Romania on further cooperation regarding the utilization of the hydro-energy potential of the Danube, with Appendixes 1 and 2 (“The Official Gazette of SFRY – International Agreements” No. 4/88); Bill on the Confirmation of the Loan Agreement (“The Energy Efficiency Project for Serbia”) between the Republic of Serbia and Montenegro and the International Development Association, with Appendixes (“The Official Gazette of RS – International Agreements”, No. 11/2004); Bill on the Ratification of the Loan Agreement between Serbia and Montenegro and the European Investment Bank (Management of the Electrical Energy System Project) (“The Official Gazette of Serbia and Montenegro – International Agreements”, No. 5/2004); Bill on the Loan Agreement between the Federal Republic of Yugoslavia and the International Development Association (Financing of the Emergency Stabilization project regarding the Electrical Energy Supply in Montenegro in the amount of 3.8 million *SDR* (*Special Drawing Rights* represent assets of the member states formed by the International Monetary Fund in 1969) (“The Official Gazette of FRY – International Agreements”, No. 65/2002); Bill on the Loan Agreement between Serbia and Montenegro and International Development Association (“The Official Gazette of Serbia and Montenegro – International Agreements”, No. 25/2004).

⁴⁷ By applying the EU standards, as foreseen by the Agreement, the functioning of individual national markets before and after the implementation of the values of the Agreement may be observed. If in the long run the effects meet the commonly accepted intentions, the system itself will become acceptable on a global scale.

⁴⁸ The Paris Agreement, adopted by 195 countries at the 21st conference on climate changes held in Paris in December 2015, represents the first global, legally binding document. If the Agreement is universally ratified, it should produce far better results than the Kyoto protocol over the time of its application.

⁴⁹ The Energy Law is aligned with: Directive 2009/72/EC of the European Parliament and the Council of European Union of July 13th 2009 referring to the common rules for the internal market in electricity and repealing Directive 2003/54/EC; Directive 2009/73/EC of the European Parliament and Council of European Union of July 13th 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC; Regulation (EC) 714/2009 of the European Parliament and of the Council of July 13th 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) 1228/2003; Regulation (EC) 715/2009 of the European Parliament and of the Council of July 13th 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) 1775/2005; Regulation (EC) 713/2009 of the European Parliament and of the Council of July 13th 2009 establishing an Agency for the Cooperation of Energy Regulators.

⁵⁰ The Council Directive 2009/119/EC from September 14th 2009 on imposing an obligation on member states to maintain minimum stocks of crude oil and/or petroleum products.

⁵¹ The Law is aligned with: Directive 2010/30/EU on the indication by labeling and standard product information of the consumption of energy and other resources by energy-related products; Directive 2006/32/EC on energy end-use efficiency and energy services, and partly by Directive 2010/31/EU on the energy performance of buildings referring to the heating and air conditioning systems, whereas the Law on Planning and Construction and its relevant by-laws are aligned with other parts of the Directive.

⁵² See Articles 2 and 3 of the Law on the Efficient Use of Energy.

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