

ENVIRONMENTAL LAW

Some Legal Aspects of Shale Gas

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Abstract

Some countries with large reserves intend to promote shale gas production, in order to reduce their dependency on imported gas. Shale gas will be an important new aspect in the world energy scene, with many effects. European Union wants secure and affordable sources of energy. Natural gas is the cleanest fossil fuel and a vital component of European Union's energy strategy. One of the most important aspects is that gas produces significantly cleaner energy than other fossil fuels. From a legal point of view, extraction of oil and natural gas is one of the most highly-regulated activities. In European Union, the regulation of shale gas activities is different if we compare with United States. United States has a complete framework of federal and state regulation of shale gas extraction. More than that, these regulations have evolved in order to respond to the United States shale gas boom. Legal regime of shale gas extraction in every member state of European Union must put together national and European Union regulations in this field of activity. Methodology: The analysis is based on a survey of relevant national legal frameworks. The purpose of the article is not to provide an assessment of the applicable legal framework but to analyse how the current legal framework is applied in practice and to point to possible areas for further review. Keywords: shale gas, directives, national legislation, environment, civil liability.

Keywords: *Shale gas, energy, European Union, United States of America,*

Introduction

The shale gas extraction development in the United States has forced EU states to search for shale gas in order to reduce dependence on imported gas.

Huge shale gas reserves were discovered in Austria, Germany, Poland, and France.

But a number of aspects are obstacles shale gas development in the EU.

Environmental concerns over the use and potential contamination of water resources caused by fracking have postponed shale gas production.

Another negative aspect is the more obvious presence of government in land and resource management in many EU countries, where land ownership is distinct from ownership of mineral rights., But even we have favorable policies, shale gas production needs extensive investment, technical expertise, and time to extend in global markets.

In the US, over 100 billion dollars were invested in shale gas and oil development since 2008.

Given these aspects, it is unlikely that EU countries will be able to have sufficient financial resources to produce large quantities of shale gas in the closest future.

1. European Union legislation

In the European Union it is a lack of relevant regulations relating to the shale gas extraction method. As a result, the problem is regulated by the laws of the member states. It is also clear that any goals set up in the field of the European Union energy policy should not affect the right of each member state to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply.

Even it is not any comprehensive regulation on the EU level in the field of the extraction of unconventional gas, we can mention some regulations that are applicable.

Any new regulation could be based either on Articles 191 and 192 of the Treaty on the Functioning of the European Union (TFEU) or Article 194 TFEU. Articles 191 and 192 contain provisions on environmental protection. Art. 194 are regulating the goals of the EU within the field of energy¹.

Article 194 TFEU declares that 'EU energy policy shall take into account the need to preserve and improve the environment'. In the same time, there are some secondary law regulations which can be applicable to shale gas extraction. Legislation on permits includes Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons, imposing objective and non- discriminatory criteria based on which permits are granted. (The „Hydrocarbons Directive“).

The Directive regulates the procedures for granting and using authorizations.

The concept of authorizations is specified in Article 1 as „Any law, regulation, administrative or contractual provision instrument issued there under by which the competent authorities of a Member state entitle an entity to exercise, on its behalf and at its own risk, the exclusive right to prospect or explore for, or produce hydrocarbons in a geographical area“.

¹ See M. Duraj, *Legal Aspects of the hydraulic fracturing method*, p. 111.

Article 3 of the Hydrocarbons Directive specifies that the procedure to obtain an authorization must be initiated at the initiative of the competent authorities by means of a notice inviting applications, to be published in the Official Journal of the European Union, or by means of a notice inviting applications to be published in the Official Journal of the European Union following submission of an application by an entity. Other interested parties then have at least 90 days to submit an application².

There is not separate authorizing or permitting procedures of granting authorizations to prospect for explore or produce shale gas. The general authorization and permitting procedures for hydrocarbons are valid too for exploration, prospection and production activities in the field of shale gas³.

In the same time, there are some other directives⁴.

The directives regarding water legislation are Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, the so-called Water Framework Directive, and Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration, the so-called Groundwater Directive⁵.

Because fracturing fluid contains chemicals, will be applicable to this method of shale gas extraction Regulation (EC) no 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). Undertakings connected with shale gas extraction would be regulated by the Mining Waste Directive (Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries).

The hydraulic fracturing method may influence special protection areas established by the Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds) and special areas of conservation established by the Habitats Directive (Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora). The most used technical method for extracting shale gas is fracking. Hydraulic fracturing, known as fracking is a process in which fluid is injected into a well at very high pressures in order to either widen and deepen existing cracks or create new fractures. The fluids used can include water, water mixed with solvents, or drilling mud. The fluid is mixed with the „proppant,“ which is typically sand, aluminum pellets or other small granular material that is carried

² See Law firm Philippe & Partners, (2011), *Final report on unconventional gas in Europe*, p. 24.

³ See Law firm Philippe & Partners, (2011), *Final report on unconventional gas in Europe*, p. 24.

⁴ See M. Duraj, *op. cit.*, p. 112.

⁵ See M. Duraj, *op. cit.*, p. 112.

into the fractures where it remains to prop the crack open thereby allowing the oil or gas to flow⁶.

2. National legislations

We are analyzing here 4 countries (Poland, France, Germany, Poland and Sweden).

Two groups of authorization procedures can be mentioned. The Polish and French mining legislation provides for tender procedures. In Sweden and Germany, it is not a tender procedure⁷.

In Poland we have a tender procedure, a quasi-tender procedure and a no tender procedure; In France is a quasi-tender procedure. In Germany and Sweden we are speaking about non-tender procedures without formal licensing rounds.

In Poland, the law specifies a tender procedure according to Article 3 of the Hydrocarbons Directive.

Applicants can initiate a quasi-tender procedure in accordance with Article 3 of the Hydrocarbons Directive. A *koncesja* can be granted through a non-tender procedure, if no more than one company wants to obtain an authorization⁸.

In France, the procedure regulated by the mining legislation is an application of the quasi-tender procedure mentioned under Article 3 of the Hydrocarbons Directive. The first stage is when the applicant initiates a tender procedure by submitting a first application to the competent minister. After the Prefect verifies the application file is complete, the competent minister publishes the notice inviting other applications in the Official Journal of the EU and the Official Journal of the French Republic. Competing applications are submitted to the competent minister too. The quasi-tender procedures for obtaining an exploration or prospectation permit and a concession permit are similar. The tender notice with the purpose of granting a concession is subject to a public inquiry⁹.

In Germany and Sweden, the Federal Mining Act and the Minerals' Act regulate no tender procedures. In both countries, applications for exploration authorizations and exploitation concessions are made directly to the competent authorities by means of an application submitted by the concerned entity. Individuals, corporate bodies or commercial partnerships can submit applications for licenses at any time. In the texts of these applications must be specified the field proposed for exploration or envisaged for production, a work program and evidence of financial resources.

The new Polish Geological and Mining Law entered into force on 1st January 2012 and stipulates that hydrocarbons deposits, such as natural gas, are covered

⁶ See M. Duraj, *op. cit.*, p. 112.

⁷ See Law firm Philippe & Partners, *op. cit.*, p. 24.

⁸ See Law firm Philippe & Partners, *op. cit.*, p. 22.

⁹ See Law firm Philippe & Partners, *op. cit.*, p. 25.

by the mining ownership of the State Treasury. The State Treasury may dispose of its right to the mineral deposits by establishing a mining usufruct by way of an agreement, concluded for a period of time longer than 50 years¹⁰.

Sometimes it is possible that an entrepreneur who has obtained a concession for extraction of hydrocarbons may request acquisition of the relevant real estate (article 19).

The new law is maintaining the obligation to obtain a concession for prospection and exploration as well as for extraction, regulating different conditions of obtaining concessions for prospection, exploration and extraction of hydrocarbons. In order to obtain a concession is necessary a tender procedure, unless the law states otherwise. The law defines the criteria on the basis of which the authority selects the best offer (technical and financial capabilities of the entrepreneur, proposed technology for conducting works, proposed remuneration for establishment of the mining usufruct)¹¹.

A new obligation is also being provided by the new law, one under which the Minister of the Environment will be required to obtain an environmental condition decision as well as approvals and decisions, necessary for granting a concession before opening a tender procedure. The law stipulates the obligations of applicants to submit proper documentation in the tender procedure, and in addition states that the applicant would be also obliged to identify areas covered by special forms of protection, including nature protection and protection of historical monuments as well as requiring the submission of methods for preventing and remedying any adverse impact of the intended activities on the natural environment.

In Poland and France the mining legislation are regulating fixed maximum durations for the tender procedure or the authorization procedures.

In Poland, the tender procedure may not last longer than nine months (starting from the date of publication of the tender notice). It may take at least six months from the announcement of the tender. The exact duration depends on what is mentioned in the tender specifications. The non-tender may be between one and three months (based on the general rules specified in the Administrative Procedure Code). In Poland the opinion required by the concerned municipalities (exploration) and the Minister of economy and the State Mining Authority (exploitation) takes place before the authorization is granted. According to the law, they have about fourteen days to express their consent on an application¹².

In France, the competent Minister has two years to decide on an exploration authorization application. A decision on a concession application needs to be reached within three years¹³.

¹⁰ See M. Duraj, *op. cit.*, p. 113.

¹¹ See M. Duraj, *op. cit.*, p. 116.

¹² See M. Duraj, *op. cit.*, p. 117.

¹³ See Law firm Philippe & Partners, *op. cit.*, p. 28.

In Sweden, the procedure for obtaining an exploration/prospection authorization may last between three and six months. The Swedish Mining Inspectorate must analyze one application for shale gas production. This procedure lasted two and a half years. The difference of time between the procedure leading to the grant of an exploration authorization and leading to the grant of a production authorization is significant. This difference is not due to the specific nature of shale gas activities. In Germany, the mining legislation does not provide for a specific time period during which the authority has to decide upon the application.

In Poland the exploration concession (koncesja) includes the survey stage (geophysical, geochemical, seismic etc.), the vertical drilling stage (drilling assessment), the initial horizontal drilling and vertical drilling with limited hydraulic fracturing (pilot drilling) and multiple horizontal drilling hydraulic fracturing (pilot production testing).

Applications for exploration authorization include a geological work programme, determining the geological works that must be done during a certain period at a given stage. These working programmes (and the mentioned stages) are not the same with to every granted authorization¹⁴.

In Sweden, the plan of operations required for any drilling activity may cover the stages.

No such stages are explicitly identified in the authorization or permitting procedures. In France, beginning of prospection (exploration) mining activities requires a « Déclaration d'Ouverture de Travaux Miniers » ("DOTM"), and beginning of production activities requires an « Authorization d'Ouverture de Travaux Miniers » ("AOTM"). Exploration authorizations and permits have different durations in time. Germany: 5 years (renewable for a maximum period of three years); no specific of the schedule (only the main operating schedule is limited to two years); France: 5 years (twice renewable for maximum duration of 10 years and reduction by half of authorized geographical area per renewal); duration of DOTM and AOTM limited to duration of authorization; Poland: 3 - 50 years (unless demand for shorter period); Sweden: 3 years (renewable twice with maximum duration of 15 years) The same principle is valid for exploitation authorizations (permits cannot exceed duration of authorization) Germany: 50 years; France: 50 years; Poland: 3 - 50 years; Sweden: 25 years (renewable once with ten years).

In Sweden, France and Germany there is a significant difference between the duration of validity of the exploration authorization and of the exploitation concession. Exploration authorizations in France and Germany are valid for five years (renewable two times, in Germany for a maximum period of three years) and the exploitation concessions have maximum validity duration of fifty years.

¹⁴ See Law firm Philippe & Partners, *op. cit.*, p. 30.

Under the French Mining Code, the geographic area of the authorization is reduced by 50% at the first renewal and an additional 25% at the second renewal¹⁵.

This rule, applicable to all gas exploration activities, including shale gas, can be problematic for shale gas activities, because the availability of shale gas deposit is diffuse throughout a large territorial area, the conventional gas being available in a more concentrated form.

In Sweden, the validity duration of an exploration authorization is three years, and the exploitation concession is valid for 25 years.

Poland appears to be the only member state where both production authorization and exploitation concession are granted for a period of no less than three years and no more than fifty years (unless the applicant demands a shorter period). In all member states non-activity has a negative impact on the validity of the authorization¹⁶.

In Sweden the non-activity will lead to a refusal to prolong the authorization. In Poland, the authorization contains a deadline for commencing the prospection or exploration. If the operator fails to take up or resume activity, the authorization ultimately can be withdrawn. If the validity of the authorization is questioned due to non-activity, this of course also has an adverse impact on the permits granted under it. It must be made a distinction between ground ownership and the ownership of mineral deposits below the surface¹⁷.

In France article L 122-1 of the New Mining Code says that any holder of an exploration authorization is entitled to conduct all necessary prospection activities (regardless of consent by the ground owner). Article 552 of the Civil Code, stipulates that ownership of the ground involves what is above and below ground, is not applicable to mineral deposits that may be contained there. These are distinct from the ground ownership and owned by the State. In Sweden, according to section 1 of the Minerals' Act, exploration and exploitation of gaseous hydrocarbons can be done, no matter what is the ownership of the covered land. In Germany mineral resources are considered to be *Bergfrei* (free from land-property) according to the article 3, §3 of the Federal Mining Act.

In Poland, the law says that all mineral resources are owned by the State Treasury, except for those minerals that constitute parts of land surface properties (not applicable to shale gas)¹⁸.

The grant of authorizations and permits is regulated by the general legislation in the field of prospection, exploration and production of hydrocarbons. Due to its important environmental impact, environmental legislation has an important role

¹⁵ See Law firm Philippe & Partners, *op. cit.*, p. 41.

¹⁶ See Law firm Philippe & Partners, *op. cit.*, p. 42.

¹⁷ See Law firm Philippe & Partners, *op. cit.*, p. 42.

¹⁸ See M. Duraj, *op. cit.*, p. 118.

in shale gas activities. In Sweden and France, these different aspects are regulated by the Environmental Code, whereas in Germany and Poland several laws apply.

The majority of the environmental legislation is the effect of transposition of EU Directives.

There are more official institutions involved in such activities¹⁹.

In Germany there are State Economic Ministry on a Länder (regional) level and state mining authorities on a departmental level (except Hesse and Thuringia) and State Environmental Ministry. Some Länder work together by sharing just one competent authority governing mining activities in two or more Länder.

In France we have Ministry of Environment, Energy and Sustainable Development with the support of the General Directorate Energy Climate (grant of authorizations) and the Prefects of the concerned departments.

In Sweden we can speak about Swedish Mining Inspectorate (in some cases: the Government) for grant of authorizations and Country Administrative Board and concerned municipalities (environmental notification) and Land and Environmental court (grant of environmental permits).

In Poland are working together Ministry of Environment, with the support of the Department for Geology and Geological Concessions (grant of authorizations) and the State Mining Authority (approval of the operational plant). A special problem is the problem of royalties.

In France, royalties must be paid only during the production phase. In Germany, Poland and Sweden application fees and royalties are paid for exploration and production activities. During the exploration phase the application fee is calculated according to the number of square kilometers of the covered area. Royalties for the production phase are generally calculated according to the production output and market value of that production (on a yearly, half-yearly or quarterly basis).

In Poland, additional increasing need to be paid upon conclusion of the mining usufruct agreement (to be established in the agreement itself).

In Poland and Germany, all of the royalties go to the State.

In Sweden and France, the owners of the surface obtain a part of the royalties²⁰.

In Poland, the authority granting the exploration and exploitation authorizations, increases the royalties and exploitation fees for any activity and controls the accordance of the payment. In Germany royalties are collected by the respective Länder. In Poland royalties are paid to the municipalities where the activity is pursued and the National Environment Protection and Water Legal Management Fund. The money for establishment of the mining usufruct agreement goes to the State Treasury.

¹⁹ See Law firm Philippe & Partners, *op. cit.*, p 44.

²⁰ See Law firm Philippe & Partners, *op. cit.*, p. 45.

In France royalties are going to the State. An important part goes to the Caisse autonome nationale de sécurité sociale dans les mines) and to the surface owners in accordance with their proportional share of the area. In Sweden 1,5 % of the royalties are paid to the land owners in accordance with their proportional share of the area and 0,5% goes to the State. The Swedish Mining Inspectorate decides on what a company will pay²¹.

Conditions regarding environmental protection, including the environmental impact assessment (EIA), are specified in laws such as the Environmental Code, laws on environmental liability or laws on environmental impact assessment. Some sectors specific rules (rules specific to the gas sector) may include some conditions related to the environment, such as the Mineral Act in Sweden, the Ordinance on Environmental Assessment of Mining Activities in Germany or the Decree on mining works, on works of underground storage and on the mining and underground storage policy in France. In Sweden, any „environmentally hazardous activity” is regulated by the Swedish Environmental Code. There are three types of activity (type A, B or C). As a rule, a notification must be done (type C) or an application must be done with the view of obtaining a permit (types A and B). Exploration and prospection are type C activities, production is a type B activity, and production in mountainous areas is a type A activity²².

The procedure concerning environmentally hazardous activities is a complete procedure, including all aspects related to the environment are examined in one single procedure, (water use, emission, protection of wildlife, noise, disposal of waste, use of soil, use of chemical substances).

In Germany, the EIA is an integral part of the planning approval for any project intending to extract over 500k m³ a day. There is no EIA requirement during the exploration authorization procedure. The Land of North Rhine Westphalia has submitted a motion in the Bundesrat to change the EIA decree in order to make an EIA compulsory for any framework operation plan approval involving hydraulic fracturing.

In Poland, the EIA is specified in the Act on Access to Environmental Information and its Protection, a close transposition of Directive 85/337/EC.103 According to the Polish authorities, exploration projects are usually seen as „annex II project”, which require an EIA, if they have a significant impact on the environment.

Exploitation projects in most cases can be considered to be „annex I projects”, which may always have a significant impact on the environment. In such a case the EIA requirement must be done before initiating the main authorization procedure. Other activities will be considered as annex II projects, for which a screening is mandatory. In France, the EIA requirement is regulated by the Act

²¹ See Law firm Philippe & Partners, *op. cit.*, p. 47.

²² See Law firm Philippe & Partners, *op. cit.*, p. 48.

on Access to Environmental Information and its Protection, a close transposition of Directive 85/337/EC²³.

During the phase of the exploration authorization, an „environmental impact notice“ must be submitted to the administration. The environmental impact notice contains geographical data, data on the wildlife in the area, data on the state of pollution of the area, evaluation of different sources of pollution, measures to avoid adverse effects caused by the activities etc. The notice is not as extensive as a regular EIA. Its goal is to demonstrate that the candidate is aware of the (environmental) legal constraints surrounding the activity as well as of the environmental issues. If the notice is considered incomplete, the administration may ask further analysis or information and the administration can refuse, on the basis of the notice, to give authorization for some activities that would seem incorrect from the point of view of environment.

Shale gas activities cannot exclude the problem of civil liability.

Civil liability is different from environmental liability where we have the principle „the polluter pays“²⁴.

Civil liability is covered by the mining legislation, general civil legislation and environmental legislation. In France, Germany and Poland the mining legislation is regulating a separate regime on mining damage, the damage produced as a result of mining plant operation. The owner of the mine is liable for all damages occurring from the mining activities.

In France, the new Mining Code lays down that the authorization (permit) holder must act with caution (“se porter caution”) to the advantage of surrounding buildings and to pay compensation for any damage caused by the mining activities. If the operator goes bankrupt or disappears, the State must be warrant (“être garant”) for the compensation of the damages.

In Poland, the land owner as well as any other entity with jeopardized property rights has the right to demand the repairing of the damage resulting from the mining operations. The provisions of the Civil Code must be followed for damage rectification. The concession holder has the full civil liability for damages²⁵.

In Germany, civil liability is based on the Federal Mining Act, the German Environmental Liability Act and the German Civil Code. General liability terms must protect general interests such as life, body, legal property etc. The Federal Mining Act provides stipulations resulting in liability not requiring fault for damage caused by the listed activities. The German Civil Code does not consider necessary a fault in case of damage to land property. The German Environmental Liability Act stipulates that strict liability applies to several profession activities.

²³ See Law firm Philippe & Partners, *op. cit.*, p. 49.

²⁴ See Law firm Philippe & Partners, *op. cit.*, p. 89.

²⁵ See Law firm Philippe & Partners, *op. cit.*, p. 89.

In Sweden, damage produced by exploration (prospection) of hydrocarbons activities is covered by the Environmental Code. The operator must implement protective measures with a view of damage prevention and take the necessary precautions as soon as there is a reason to assume damage to environment or human health. As a general rule, compensation must lead to a restoration of the conditions existed before the damage occurred. In France, the compensation must cover all rights of the owners of the damaged buildings. If restoration to the previous situation is not possible, the compensation must permit to the owner of the building(s) to buy a new equivalent building in the short term.

In Poland, damage reparation takes place by restoring land, buildings, equipment, premises, water and other goods in the same state as they were before the damage. Any additional expenses supported by the aggravated party in the process of remedying damage, must be compensated. Claims following damage resulting from mining activities expire after five years. This period is longer than the period under general civil liability rules.

In Sweden, a difference must be made between compensation of damage caused to the affected landowners and compensation of damage caused to other persons. More than that, a distinction must be made between the above mentioned compensation and the compensation for rehabilitation of the area after termination of the exploration (exploitation) activities. During the exploration phase, the authorization holder is deciding the amount of compensation to be provided to the affected land owners. If they contest it, this compensation must be modified. During the exploitation phase, the compensation for foreseeable damage is set-up by the Chief Mining Inspector.

The normal compensation rules are valid for unforeseeable damage²⁶.

3. United States of America legislation

From an historical point of view, United States used for the first time shale gas fracking

Shale gas activities are including many different aspects. We are speaking about mining (hydrocarbons) legislation, legislation regulating land property, workers' safety and security, liability, pressure equipment, the use of chemical substances and environmental legislation as a whole is, to a different extent, applicable to shale gas activities. Complexity of the activity automatically has as effect the complexity of the legislative framework applicable to these activities. One of the main bad aspects specified against the authorizations for shale gas projects was the fact that the public had not been consulted during the procedure for granting such authorizations.

In United States, the topic of shale gas is divided between federal and state authorities.

²⁶ See Law firm Philippe & Partners, *op. cit.*, p. 91.

On June 9, 2009, initiators from the House and the Senate introduced the „Fracturing Responsibility and Awareness of Chemicals Act,” - FRAC Act. The bill (act) contains three major changes to the existing regulatory scheme for hydraulic fracturing operations.

First, the bills have amended the SDWA (Safe Drinking Water Act) so that hydraulic fracturing operations would fall under the UIC program²⁷.

Secondly, the bills would have required the public disclosure of „the chemical constituents (but not the proprietary chemical formulas) used in the fracturing process.

Thirdly, the bills would require the disclosure of the complete formulas of to EPA, a state, or medical personnel in case of a ‘medical emergency.

The Federal Clean Water Act had forbidden the „discharge of any pollutant from any point source” without a permit²⁸.

Fracking companies dealing with their produced water and returned wastewater by discharging it into nearby surface water bodies are subject to the Clean Water Act, more specific, to the Act’s National Pollutant Discharge Elimination System (NPDES) permit program. Congress and the Federal Environmental Protection Agency (EPA) excluded uncontaminated storm water discharges connected with oil and gas construction and field operation activities from the NPDES permit requirement. Even so, the U.S. Court of Appeals for the Ninth Circuit annulled parts of the EPA’s regulation that would have exempted contaminated discharges. As an effect, contaminated discharges of storm water from fracking operations are also subject to the NPDES permit requirement²⁹.

The federal Safe Drinking Water Act wants to protect the nation’s public drinking water supplies by imposing the necessity that all drinking water must meet national health-based quality standards. The Safe Drinking Water Act is setting-up an Underground Injection Control program to protect aquifers from wastewater injections. If fracking operations inject water and other materials into wells in order to increase the production of natural gas or dispose their wastewater through underground injection, they are potentially subject to the Safe Drinking Water Act. Forty states have received delegated authority to regulate Class II oil and gas injection wells. The EPA is regulating such wells in the other ten states, including seven oil and gas states, on federal lands and Indian lands³⁰.

²⁷ See B. M. Kramer, *Federal legislative and administrative regulation of hydraulic fracturing operations*, p. 857.

²⁸ See R. Kundis Craig, *Hydraulic Fracturing (Fracking), Federalism, and the Water-Energy Nexus*, p. 249.

²⁹ See R. Kundis Craig, *op. cit.*, p. 249.

³⁰ See R. Kundis Craig, *op. cit.*, p. 251.

4. Eastern Europe

While Poland was an original frontrunner for unconventional gas drilling in Europe, factual prospects for fracking have downscaled after a series of failed test drills and major companies eventually backing out as a result. Shale gas was originally presented as a great profitable occasion that could induce new jobs, increase state profit, and ameliorate request competition. Energy professionals emphasized the prospect of producing cheaper natural gas, while state - owned companies saw the occasion to further develop technologies. Shale was also analyzed through the lens of public security³¹.

Representatives of the Polish business community expressed concern over Russia's energy as a foreign policy tool. Poland produces one- third of its natural gas domestically, while the rest is simply imported from Russia. Shale gas was considered to be an essential tool in their attempt to attain energy independence.

Predictably, environmental associations have been less enthusiastic, advising about the side effects of hydraulic fracturing. In time, the civil society grew to be especially critical of drilling, citing groundwater impurity and damage to natural territories as undesirable consequences.

By discrepancy with Poland, where government opinions remain favorable to unconventional natural gas product, the Czech Republic has introduced in 2012 a moratorium on shale gas exploration. Like other countries in the region, the Czech Republic also relies on significant significances of Russian natural gas and faces pressure to diversify its energy product. Several major transnational companies showed great interest in the country's implicit shale gas basins. Despite this, the Czech government prioritized environmental enterprises over profitable earnings.

The Ministry of Environment explained the decision by citing „ high consumption of water per well, threat of groundwater pollution under conditions of technological lack of restraint, and geography declination as well as deterioration of air quality”³².

Lithuania was the first Soviet democracy to declare independence in 1990 but remains reliant on Moscow for energy. In 2008, The country declared in July 2011 that it'll pursue the development of shale gas. In the 2010s the Baltic countries, particularly Lithuania, raised concerns that Russia discerned against them in terms of gas pricing, assessing politically rather than commercially deduced prices.

Following a complaint by Lithuania, in September 2012 the European Commission's Directorate General for Competition launched a formal antitrust investigation against Gazprom's practices in Central and Eastern Europe³³.

³¹ See A. Maieran, *What went wrong? Fracking in Eastern Europe*, p. 8.

³² See A. Maieran, *op. cit.*, p. 8.

³³ See A. Maieran, *op. cit.*, p. 9.

Until 2014, Gazprom possessed 37 % of Lithuania's public gas company, univocally decided gas prices and indeed hovered to cut of gas during coldest days.

In June 2012, the Seimas (Lithuania's unicameral congress) passed the new National Energy Independence Strategy with the overarching thing of achieving energy efficiency and independence. Prior to this action, Lithuania imported over 60 % of its energy. In order to move down from the dependence on Russia, shale gas was presented as a primary indispensable energy source.

The anti-fracking protests emphasized the environmental pitfalls to the country, particularly in the areas near to the Baltic Sea.

Following Chevron's departure, there have been no other developments of Lithuania's shale gas prospects. Due to the growing public pressure, the government laid over conversations about opening another tender for shale gas disquisition³⁴.

Analogous to other countries in the region, Bulgaria heavily depends on Russia for gas significances.

Likewise, the prospect of gaining energy independence constituted a major incitement in the consideration of shale gas development. nevertheless, the advertisement that Chevron would start shale gas disquisition touched off large-scale anti-fracking protests in early January 2011. enterprises regarding the state of the terrain, which included the possibility of groundwater impurity and minor earthquakes,

Bulgaria banned fracking in 2012 and, to date, no shale gas companies remain in the country³⁵.

Three main arguments against fracking have shaped the public debate on unconventional gas drilling. The first was the idea of „ profitable falsity “ that came popular with a wide array of actors, from green parties to businesses and academics. The concern was that the exploitation of public coffers will primarily affect in private gain. likewise, the benefits gained from the short- term low-professed jobs created were regarded as insufficient. Another major argument against shale gas disquisition was linked to the lack of public discussion and the massive mistrust of the government.

Romania brings a unique perspective as an outlier. The country ranks second in the European Union, after the Netherlands, in terms of natural gas product.

Utmost of the natural gas consumed domestically is produced locally³⁶.

Conclusions

As a conclusion, we can say that it is not a comprehensive directive providing for a European mining law.

³⁴ See A. Maieran, *op. cit.*, p. 9.

³⁵ See A. Maieran, *op. cit.*, p. 9.

³⁶ See A. Maieran, *op. cit.*, p. 10.

The current EU regulatory framework concerning hydraulic fracturing has a number of negative aspects.

The most important is that the threshold for Environmental Impact Assessments in the field of on hydraulic fracturing activities is set far above any potential industrial activities of this kind, and should be lowered in a big proportion.

The coverage of the water framework Directive must be written again with special focus on fracturing activities and their possible impacts on surface water. Present mining laws in Europe and related regulations in the field mining activities do not take in consideration the specific aspects of hydraulic fracturing.

There are big differences between mining legislations in European member states. In many situations, mining rights are considered more important than citizens' rights.

As a result, local political authorities many times can not influence possible projects or mining sites as these are granted by national or state governments and their authorities.

In the same time, the energy problem become more complicated for European Union after the recent events in Ukraine.

In such an context, the problem of shale gas can become actual again

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