

**Prospects for application of US shale gas technology in Eastern  
Europe: Legal, economic and environmental concerns  
Poland vs. Ukraine**

By

Yevgeniy Alexeyev

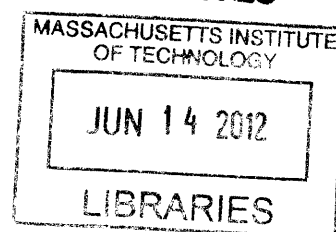
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A handwritten signature in black ink, appearing to be "Y. Alexeyev".

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# **Prospects for application of US shale gas technology in Eastern Europe: Legal, economic and environmental concerns Poland vs. Ukraine**

By

Yevgeniy Alexeyev

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## **ABSTRACT**

It is obvious to everybody today that energy is a very important strategic element of the countries' economy. Continuously growing population and industrial sectors demand more and more energy for successful development disregarding the raising price for traditional energy resources what urges researchers and industry practitioners to search for unconventional alternatives. That seems to be especially crucial for emerging economies. In this light shale gas that was in recent years introduced in the US in results of successful application of fracturing technology, appears to be a promising option of reasonable scale. Being found in abundance in shale fields of Poland and Ukraine it represents a real opportunity to improve energy independence and potentially reduce carbon emission in these countries.

The study includes brief overview of geological conditions and discovered reserves of the shale gas in the region, current status of energy balance and relevant legal framework along with official and industry comments on current shale gas activities and analysis of most probable market scenarios for the new energy resource followed by recommendations in a form of conclusion to consider by potential project developers.

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*“The vast majority of niches for technology are created not from human needs, but from the needs of technologies themselves.”*

*W. Brian Arthur*

*“The Nature of Technology. What it is and how it evolves”*

## **Introduction:**

### **Unconventional gas resource and opposition in Europe**

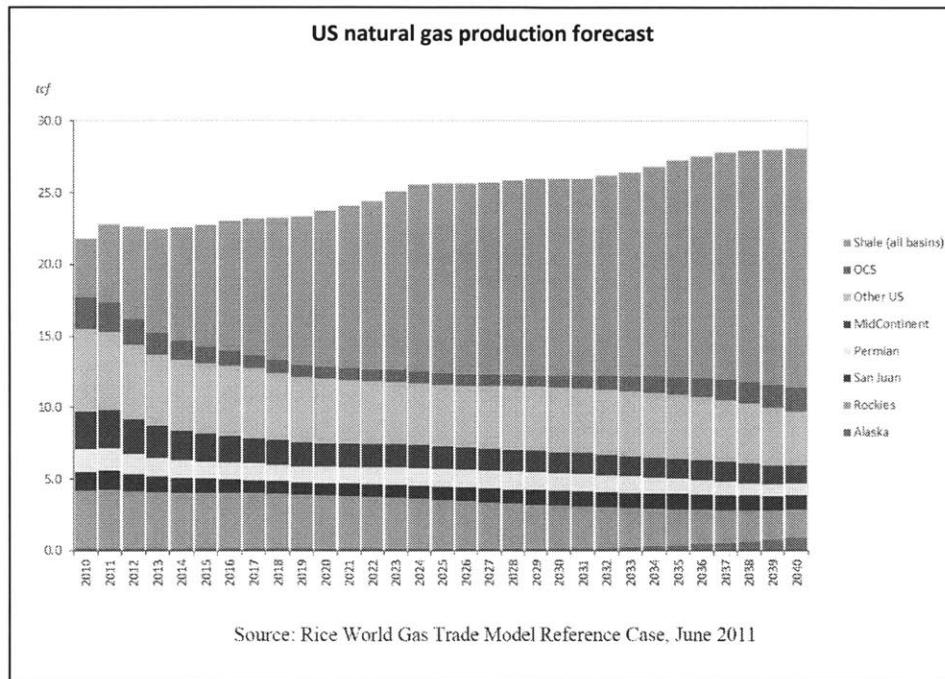
Shale gas is in fact natural gas trapped in the shale caverns. From production prospective mainly it is distinct from conventional natural gas by deeper location and lower density of the resources defined by low permeability and porosity of the shale strata (compare to higher porosity of sand-stones in case of traditional natural gas). Due to these facts, even being known for quite a long time, shale gas did not get attention from point of view of commercial production since a more sophisticated technological approach required to crack shale and link the gas caverns with production wells to justify economics of the extraction.

By the data of National Petroleum Council cumulative unconventional gas reserves over the globe comprise 922 trillion m<sup>3</sup>. Where about 456 trillion m<sup>3</sup> is noted for shale gas. These unexplored resources look comparable to predicted reserves of conventional natural gas (350 trillion m<sup>3</sup>).

When world market oil prices skyrocketed in 2005, the development of shale gas extraction through fracking received a major boost as the United States, faced with high gas prices, began investing billions of dollars in what promised to be a means of bringing cheap energy to consumers.<sup>1</sup> Shale gas reserves of the US are estimated at 17.4 trillion m<sup>3</sup>. Based on geological similarities to the US gas reserves in European shales may comprise about 11 trillion m<sup>3</sup>, 12 trillion m<sup>3</sup> in China and about 20 trillion m<sup>3</sup> in Russia.



The US was the first to develop shale gas. First gas was extracted in 1981 at Barnett shale field and till the end of the 1990-s shale gas production in the country reached 13 billion m<sup>3</sup>. First horizontal well at Barnett was drilled in 2002 and significantly improved production. In 2009 it reached 67 billion m<sup>3</sup> or 11.3% of overall gas production in the US. By forecast of

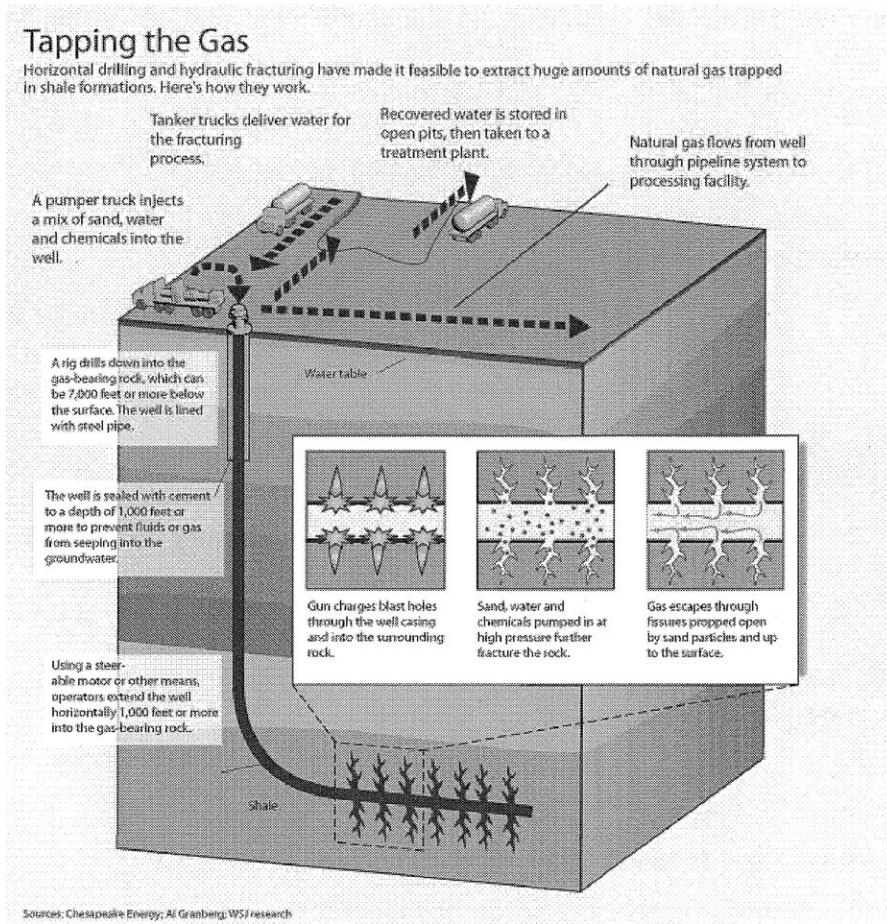


Energy Information Administration of the US DoE shale gas production in the country will continuously grow up to 2035 with average annual increase of 5.3%

The main focus of this study is a stimulation technology called to enhance development of unconventional gas resources and whether it is a critical point in terms of extension of shale gas activities in Europe or there any other important factors that influence the process of adoption.

Method of hydraulic fracturing has been used for decades for intensification of conventional oil and gas extraction in different parts of the world. However, for the recent years public awareness about the technology is mainly steamed by extension of shale gas operations in the US that became feasible due to growth of the prices for natural gas and availability and feasibility of directional drilling. As a fact shale gas production is a **combination of these two technologies**, steered drilling to reach the gas in place along the shale bed and fracturing

stimulation to release the gas from its natural traps along the drilled well and by this means to



enhance recovery.

From technical and economic prospective it seems to be rather successful but large amounts of water involved in the process has generated serious concerns regarding availability (scarcity) of this resource for agriculture and local communities along with

environmental risk of contamination. Besides, some publications in Western Europe have raised a concern related to ground movement/seismic effect caused by subsurface activities. Compared to the U.S., local opposition is much more likely in the more densely populated Europe, where citizen-organized initiatives opposing shale gas development are mushrooming, particularly in Sweden, France and Germany's most populous state of North Rhine-Westphalia. Fourth, there are environmental challenges associated with the fracking process.<sup>2</sup> Thus France became the first country in EU to ban shale gas production in relations to concerns over fracturing operations. Bulgaria recently followed this policy revoking a license of Chevron especially due to the use of fracking technology.

However, at the same time there are at least two East-European countries that do not share the concerns above and have actively initiated shale gas exploratory activities by attracting

strategic technological partners and investors to take part in open tenders for the relevant licenses on prospective areas. These facts have “cracked” the region into two camps and raised a question whether the technology itself is actually the main issue defining development of shale gas activities or there any other factors that seriously influence adoption to this energy resource...

### **1. Geological conditions and relevant internal technical capabilities in Poland and Ukraine**

The Sunday Times reports that “Wood Mackenzie, the oil and gas research group, estimated that there could be as much as 48 trillion cubic feet (1.36 trillion cubic meters) of unconventional gas stretching across northern and central Poland.”

There are three shale basins identified in Poland: Baltic basin in the north, the Lublin basin in the south (shared with Ukraine), and the Podlasie basin in the east. By ARI (Advanced Resources International, Inc.)/IEA (Energy Information Administration of the US DoE) estimations the organically rich shales in all these three basins appear to have favorable characteristics for shale gas exploration. The depth varies from 2000 in the South-East to 5000m in the North-West. Productive thickness in general is estimated at 100 up to 400m.

By ARI/EIA study of available geological data, supplied by Polish National Oil & Gas Company, PGNiG: *Baltic Basin covers an area of approximately 102,000 square miles area in Poland, Lithuania, Russia, Latvia, Sweden and the Baltic Sea. Its southwestern border is formed by the Trans-European Fault Zone. Paleozoic sediments compose 75% of the basin fill, with the Silurian strata most prevalent. The deposition of the Silurian-age shales occurred along the Trans-European fault zone bounding the Baltic Basin, continuing southeast into the present day Lublin and Podlasie basins.*

*These two basins share the same regional depositional environment as the Baltic Basin but are differentiated by local geologic features, such as the Mazury-Belarus High and regional*

*tectonic faulting. Subtle differences in elevation and marine conditions created by these features caused organically rich shales to be deposited at different periods of the Silurian. In the Baltic and Podlasie basins, the most prospective shale intervals occur in the Lower Silurian Llandovery. In the Lublin Basin, organically rich shales were deposited in the slightly younger and thicker Wenlock strata.*

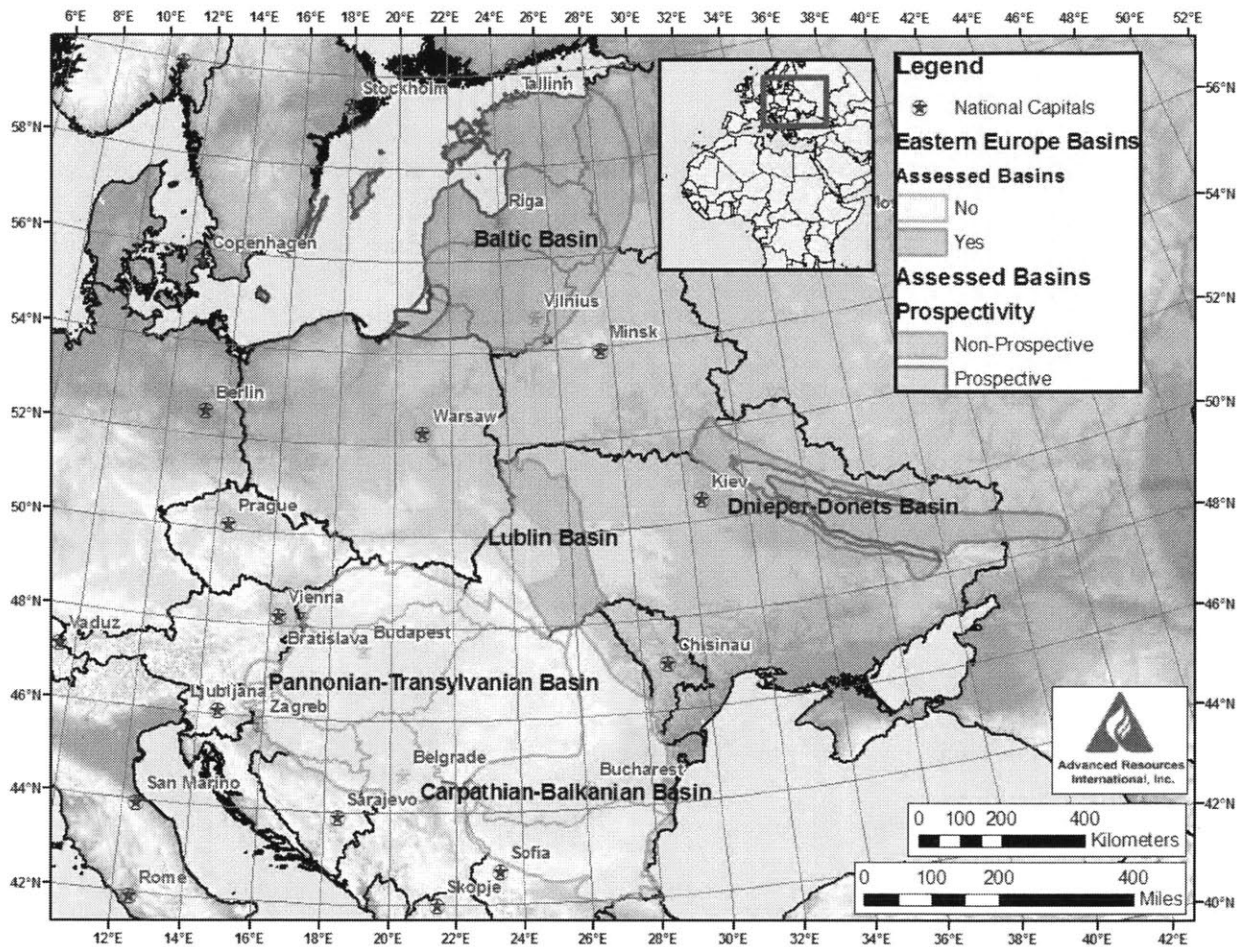
*The southwest margin of the Baltic Basin received very thick sediments of marine deposits as the basin subsided during the late Ordovician-Silurian collision of the Avalonia and Baltica tectonic plates. Anoxic conditions in the deep marine environment of the early Silurian allowed for the deposition of thick layers of organic rich shale, which were subsequently buried to depths sufficient to thermally mature the shales into the wet to dry gas window.*

*The 8,850 mi<sup>2</sup> Reservoir Properties (Prospective Area) shale gas prospective area in the Baltic Basin was determined using the depth and thermal maturity of the Llandovery Formation. The formation shallows to the northwest, where its prospective area is limited by lack of sufficient thermal maturity. In the deep, western margin of the basin, the Llandovery Formation is highly thermally mature, with Ro values greater than 5.0%. However, the basin becomes very deep in this area. In the western areas, the prospective area is limited by the 5,000m depth contour interval.*

Commenting geological conditions in Poland Oisin Fanning, Acting Chairman of San Leon Energy, states that shale gas in Poland has a good quality and relatively not very deep located. By specifications gas of certain Polish fields are similar to shale gas Montney field in Canadian Alberta and British Columbia.

Dnieper-Donets and Lublin basins are two fields discovered in Eastern and Western parts of Ukraine correspondingly. Geological conditions of Lublin basin are very similar to those one in Poland. This why it makes sense to use this are for a brief comparative analysis of the other

factors that may potentially or may not eventually influence development of shale gas as an unconventional energy resource in the region.



By the data of ARI/EIA international report of 2011: *Ukrainian Lublin Basin is the southern extension of the Lower Paleozoic sedimentary basin deposited along the western slope of the Baltica paleocontinent. It is bounded by the Grojec Fault in central Poland (which separates it from the Baltic Basin), the Trans-European Fault Zone to the west, the Mazury-Belarus high in the east, and, in this analysis, by the Romanian border to the south. The Ukrainian portion of the Lublin Basin covers an area of 26,500 mi<sup>2</sup>. The primary target in the Lublin Basin is shale in the Silurian-Ordovician section. Data on Ukrainian geology is sparse, so ARI relied heavily on data from the Polish Lublin Basin to establish a prospective area for the Silurian Shale in the Ukraine. Based on continuation of depth and maturity trends observed from*

*Poland, ARI assumes 7,850 mi.<sup>2</sup> Reservoir Properties (Prospective Area) of the Ukrainian Lublin Basin to be prospective. The basin becomes shallow to the North and east, and exhibits uplifted faulting to the south and west, limiting the prospective area to a deep, thick centralized area in the Northwest of Ukraine.*

For about two centuries of extensive mining activities both countries have accumulated enormous experience in extracting minerals in local geological conditions. Combined with high professional level of local engineers and industry standards along with relevant available machinery it provides sufficient basis for potential shale gas exploration and production activities from prospective of technical capabilities. However some industry experts express skepticism regarding development of unconventional gas in Europe as fast as in North America, where production has grown four times since 1990. One of the main reasons for this position is insufficient number of on-shore drilling units in Europe. By data of Baker Hughes, providing services for oil and gas projects around the world, the number of drilling station in the US comprises over 900 units when there only about 100 relevant drilling units available in Europe.

## **2. Current situation in energy sector and predictions from economic prospective**

Polish officials believe that exploitation of shale gas in Europe could change its energy paradigm and climate policy of the country. “The finding of shale gas could free Poland from its energy dependency on Russia. Poland could become a major exporter of this resource, enriching its economy” - *Polish Oil and Gas Company (PGNiG), Annual Report 43 (2009).*

92% of electricity and 89% of heat in Poland is generated from coal but at the same time Poland is a large net importer of natural gas. Of the 16.4 bln.m<sup>3</sup> of natural gas consumed in Poland in 2009, 9.9 bln.m<sup>3</sup> (~60%) was imported, almost all of which was supplied from Russia. After a plateau in production from 2004 to 2007, the country’s natural gas production has again

begun to decline. Annual production is currently 17 mln.m<sup>3</sup>, from proved reserves of 170 bln.m<sup>3</sup>.

There may be even nearly 2 trillion m<sup>3</sup> (1920 billion m<sup>3</sup>) of shale gas, though it is more probable that the shale gas reserves in Poland amount to 346 - 768 billion m<sup>3</sup>. This is even 5.5 time more than the conventional deposits documented to date (which in Poland are of the size of 145 billion m<sup>3</sup>). With the current annual demand for natural gas in Poland (14.5 billion m<sup>3</sup>), this is enough to satisfy the demand for natural gas of the Polish market for almost 65 years. The experts calculated that it is also equivalent to 200 years of natural gas production in Poland at the current level (without changing the level and ratios of supply from imported and national sources).

By different estimations the biggest in Europe shale gas field is located at the adjacent territories of Poland and Ukraine. The field was discovered quite a while ago but development of the resources had not been considered due to the technical issues making it much more expensive and less predictive compare to natural gas. Now Poland is looking forward to the positive US experience to be replicated in Eastern Europe. By preliminary estimations success of such activities may potentially introduce an alternative to the currently imported natural gas at about half of its price. This factor along with a positive social impact (new jobs created by the industry) definitely looks very attractive from the prospective of energy economy of the country.

At the end of June 2011 a relatively small UK company 3Legs Resources having drilled the first horizontal well in Poland (about 4,100 m) at the Lebien shale structure close to Baltic shore announced on high concentration of shale gas at the output. That became the first actual confirmation of availability of this energy resource in the country.

The pioneer-firm has been followed by a list of other companies exploring the new opportunities. Thus Chevron announced on starting exploratory drilling and signed a service contract with Halliburton in last July for this purpose.

The National Oil & Gas Company, PGNiG, came into partnership with FX Energy (US) starting exploration of shale field Kutno last Summer, predicting capacity of the field at about 100 billion m<sup>3</sup> of gas. By comments from PGNiG due to operations at Kutno the company expects prospectively to double its gas production that was about 4.2 billion m<sup>3</sup> in 2010.

As for July 2011 there were 87 licenses for shale gas exploration granted in Poland (about 60 licenses received by foreign companies). Based on these licenses the companies are given rights to proceed with exploration activities at the area exceeding 30% of the overall territory of the country. By data of the Energy Information Administration of US DoE the Polish so-called “shale belt” extended through the whole Eastern part of the country from the Baltic coastline to the border with Ukraine contains up to 5.3 trillion m<sup>3</sup> of recoverable gas resources.

According to the calculations of ARI/EIA Polish shale beds contain almost one third of all the European shale gas reserves (17.5 trillion m<sup>3</sup>). Thus it is not surprising many leaders of the world oil and gas industry have expressed their interest to these deposits. Such giants as US ExxonMobil and Chevron and French Total are already among the 20 foreign companies that have got shale gas concessions in Poland.

As for commercial production of shale gas, PGNiG announced last year by the most optimistic scenario they will come to this stage not earlier than in 2014. At the same time senior officials of the Polish Ministry of Environment suppose that more or less significant level of gas production may be reached only in 10-15 years.

As for Ukraine, like most of East-European countries, Ukraine depends on natural gas supply from Russia, in terms of power and heat generation 70-80% relying on internal coal resources. In 2008, the country consumed about 220 mln.m<sup>3</sup>/d of natural gas, of which 54 mln.m<sup>3</sup>/d was produced domestically from 1.1 tln.m<sup>3</sup> of proved reserves. By ARI estimations Ukraine has 1.36 tln.m<sup>3</sup> of gas in-place in the prospective area of the Dnieper-Donets Basin and



4.22 tln.m<sup>3</sup> of gas in-place in the Lublin Basin. Of this 5.58 tln.m<sup>3</sup> around 1.2 tln.m<sup>3</sup> could be ultimately technically recoverable.

The shale gas, that helped US to become first in the world by gas production, is considered in Ukraine as a potential important component of energy security of the country. Yuriy Boiko, the Minister of energy and Coal Industry, promised to start commercial development of local shale gas fields in 5-7 years. Some experts suppose there is a prospect to reach gas production of about 20 billion m<sup>3</sup>/year and release Ukraine from gas import. The US Department of Energy has noted that the phenomenal increase in the domestic supply of natural gas through shale gas production may have significant, long-lasting effects on energy independence and national security, and may lead to “a lessening of both supply and leverage from countries such as Russia and Iran, in part through the strengthening of European consumer markets.”<sup>3</sup> However, the shale gas is still a new and unexplored area for the country.

### **3. Current political climate and legal frameworks**

*"I confirm that there is a lot of natural gas in Poland - it is worth investing in its exploration. The joint gas reserves from conventional deposits and the estimated gas reserves from unconventional deposits, that is from shales, make us the third country in terms of extractable gas reserves in Europe. Moreover, extractable shale gas reserves indicated in the PGI estimation satisfy the joint demand for gas in Poland indicated in the Polish Energy Policy until 2030 with a surplus. Poland is the leader of shale gas exploration among the European countries and also the most advanced country in terms of monitoring the environmental aspects of geological works related to shales."* - Minister Piotr Woźniak, Chief National Geologist and Under-Secretary of State in the Ministry of the Environment.

At the end of March 2012, total investments in the territory of all licence areas amount to PLN 2 billion (€475 million). Companies envisage further investments at a similar level until the

end of the exploratory process. The Minister of the Environment is receiving subsequent requests submitted by concessionaires to extend the scope of exploratory works.

Announcing further exploratory works, Vice-Minister Piotr Woźniak, Chief National Geologist, emphasises: *"The last report of the Polish Geological Institute estimating natural gas reserves in shale formations revealed that Poland is a strategic area for the search for shale gas in Europe. The works on exploration licences are monitored and proceed in accordance with plans defined in licenses."*

Realizing the potential for unconventional natural gas to support its declining conventional gas production, the Polish government has shown strong support for shale gas drilling. It has put into place very attractive fiscal terms for gas development, although infrastructure and regulatory issues remain as barriers to efficient development. Development of Poland's large shale gas technically recoverable resource of 5.3 trln.m3 could significantly increase the country's natural gas reserves and internal gas production.

Chevron while their recent Polish shale gas presentation noted their expectations regarding stable tax legislation, state capital investment into improvement of gas pipeline infrastructure and creation of service industry (i.e. acquisition of drilling stations and other drilling equipment) along with amendments in regular legislation. Chevron also expects a promotional campaign with local population that, in contrast to politicians, is still rather cautious in regards to the prospects of having thousands of wells drilled close to the places of their residence.

American companies also demand quickest liberalization of Polish gas market, where the price for the gas is still regulated by the government and PGNiG acts as a monopoly wholesale and retail supplier, along with a free export.

Minister Piotr Woźniak announces the presentation of a draft bill in the second half of April that shall provide new mechanisms of taxation and state management of hydrocarbons' extraction. The works on the draft have been conducted from the beginning of the term of office.

Besides, Poland tries to block any attempts of European ecologists to ban hydraulic fracturing on the level of EU. Michael Boni, Advisor to the Prime-Minister of Poland reckons that level of environmental risk in these regards depends on the technologies which are being applied. Western companies promise to apply in Poland the most environment-friendly technologies to meet relevant ecological standards.

The issue of environmental impact is really crucial so that, in accordance with Polish legislation, for organization of mining fossil resources it is necessary to obtain an approval from the lowest level of local administration (gmina). Despite the policy of the government actively promoting benefits of shale gas production local population to most extent does not express an enthusiasm even when promised creation of new jobs.

It is currently expected the President of Poland will sign a new law called to provide solution for land issues related to shale gas production. According to this law the administration may force land owners to agree with drilling on their sites in exchange for a certain compensation. Besides, there is a plan to amend environmental legislation and the laws related to use of water and mineral resources.

Oisín Fanning, Acting Chairman of UK company San Leon Energy, that got three licenced blocks in partnership with Talisman, noted recently that Polish government in its ambition to diversify energy sources, so that they would not be dominated by Russia, provides significant support to the project developers. It has stated the tax rate only 23%. Rowen Bainbridge, President of Aurelian Oil and Gas (UK), that also develops a field in Poland, comments: "Tax conditions here are ones of the most favorable in the world. The government creates significant economic incentives for development of its deposits".

All of these new provisions aim to facilitate favorable conditions for gas producing companies and mitigate bureaucratic barriers. Most likely Ukraine will have to proceed with similar legislative amendments over the nearest years.

As for the relevant legal frameworks in Ukraine, the previous government successfully pushed through Ukrainian parliament the law "On Methane of Coal Fields". The law provides significant tax incentives for coal gas developers in the country (so-called "tax holidays") till 2020 but has nothing to deal with shale deposits. In these regards representatives of Shell, one of the main bidders for shale gas exploration licenses, have initiated a request to the new Ukrainian government to extend similar provision for shale gas activities in order to mitigate risk for the potential investors and project developers. However, even the request was positively accepted by the Ministry of Energy of Ukraine nothing has been done so far to expedite the process of generating a legal solution.

As it was noted by Alexei Tatarenko, Governmental relations Manager of Shell Ukraine Exploration and Production LLP, Ukraine has a significant potential in terms of production of its own natural gas, including the gas from shales. At the same time, by his opinion, foreign investors desperately need reliable guarantee. He says: "As for today the issue of legal basis for our operation in Ukraine is fixed to the most extent. We welcome the mechanism proposed by the government of Ukraine that is supposed to provide sufficient guarantee for the companies investing in projects related to production of unconventional fuel. Production sharing agreement is that mechanism which provides an opportunity to obtain large area for development for the term that justifies its economic feasibility for the investor".

#### **4. Investment competition with Ukraine and technology challenge for Poland**

Both of the countries are desperate for alternative energy resources and already introduced certain incentives to promote renewable energy projects at their territories. However, there is still no any alternative so far mature enough to compete is scale with natural gas. In this light shale gas seems to be a unique opportunity to diversify gas supply for Eastern (or even potentially the whole) Europe. It is not officially announced but Ukraine and Poland (both having a over a half of discovered shale gas reserves) definitely experience a certain competition with regards to attracting foreign experience energy and service companies along with strategical investment partners to develol this resource at their territories. In these regards, the majority of industry experts in both countries grant pioneering status to Poland.

Vladimir Kamyshan, Director of Ecometan LLP of Ukraine (the company that was establisher several years ago especially for pilot coalbed methane extraction applying hydrofracturing technology, and passed all the way through adoption of the technology to local conditions while being challenged by existing relevant legal provisions) note that even shale gas looks as a very seductive large-scale gas opportunity there is still no real basis in Uktaine to start practical activities without risk of serious uncertainties. Representing one of a very few companies capable to provide directional drilling services along with hydrofracturing stimulation with a local experienced team, he prefers first to finalize the road-map for coal methane activities in Ukraine to utilize the incentives provided by a recently enforces "Law on Methane Gas of Coal Fields". By these means coal gas project can benefit to improve of safety measures for extensive coalmining activities in the country besides implementation of alternative environment-friendly fuel. Shale gas in these regards has no preference from the powerful mining community of Ukraine but may be an issue for serious arguments, not mention to potential conflict with agricultural sector.

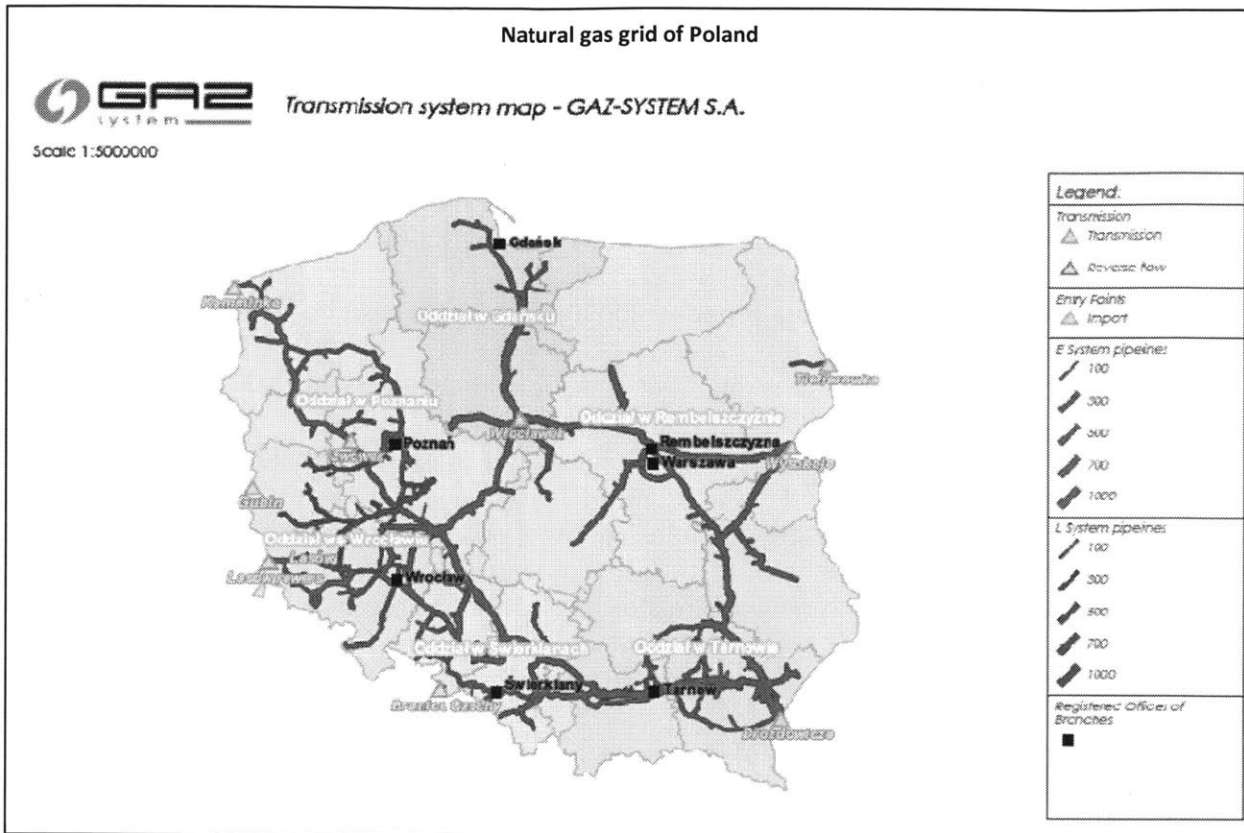
Even gaining the first place in attracting investors and industry leaders Poland is faced a technology challenge that seem to be much more complicated and require complex approach in cooperation of industry practitioners with the government along with effective relations with local communities. Hydraulic fracturing, or fracking, entails injecting large volumes of water, hydrofrac fluids, and propping agents, usually sand, into porous shale rock under high pressure, creating fissures – or fractures – that allow natural gas trapped inside the shale to flow out while the fracture is propped open after the pressure is released. Coupled with improvements in horizontal drilling, fracking gives natural gas companies the means to access unconventional sources of natural gas in an economical way.<sup>4</sup>

Application of fracturing technology in the US for many decades stands in contrast to Europe, where the process is still relatively unknown. As in the US, its proponents in the EU say that the risks involved with the fracking process are low, and that the benefits of extracting this natural gas make it necessary to continue supplying Europe's energy needs. Its opponents have raised red flags about potential contamination of water supplies, attributable in part to unknown chemical additives used in the process.<sup>5</sup> The formation brines can also contain high concentrations of sodium, chloride, bromide, and other inorganic constituents such as arsenic, barium, other heavy metals and radionuclides that far exceed safe drinking water standards.<sup>6</sup> This situation has led to political gridlock and a hardening of positions between the energy industry, scientists, environmentalists and government. The technological process generated controversy mainly due to concerns that it may contaminate groundwater and cause gas to leak from household taps. That raises a fundamental need to restore public confidence. It forces the stakeholders seriously consider monitoring of water and air pollution, full disclosure of chemical composition, sharing best practices for recycling waste water and required specific clear regulatory basis.

While there may be no concerted environmental campaign against shale gas in Poland at the present time, there are legal obstacles. According to the Polish Environment ministry, there is no special environmental law concerning shale gas, and that the country does not need one. Poland already requires every big new project to have an environmental impact assessment, and the government will consider fracking proposals on a case by case basis.<sup>7</sup>

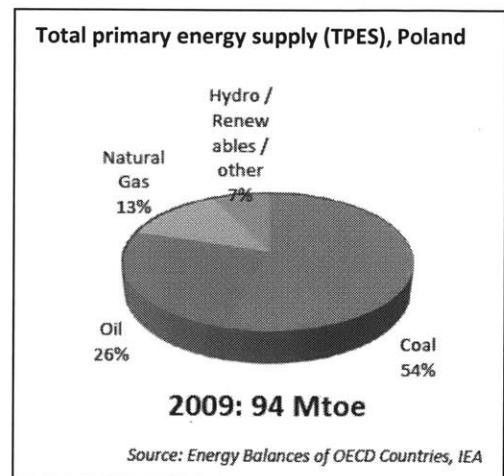
Response San Leon Energy in this light states a counterargument that groundwaters are mainly contaminated while drilling for shallow shale gas (100-300 m) when in Poland it is between 2500 and over 4000 meters. A more cautious position is maintained by the official sector. As Poland's Deputy Environment Minister Jacek Jezierski recently observed, "We will be able to say whether amendments to provisions regulating shale gas extraction are needed once we perform a professional assessment of its environmental impact, not an emotional one. Poland intends to control this process, not to ban it." According to Marek Kryda of the Institute of Civil Affairs, "It is necessary to look after issues related to property expropriation and lease. We can already see irregularities at the stage of test drilling."<sup>8</sup>

In the meantime, José Bové, a French environmentalist, farmer and Green party deputy with the European Parliament took his anti-fracking battle to the European Parliament and will seek an EU-side ban on exploration by the producer who have already snapped up drilling permits and are now riding out the political storm and waiting until the French government studies are completed.<sup>9</sup>



Local communities are also expected to be challenged by physical presence of shale gas activities close to them. Inhabitants of densely populated Europe, unaccustomed to disruption by the oil industry, might not like the rapid rate at which multiple shale wells must be drilled to sustain output.<sup>10</sup>

Another fundamental issue of how best to achieve energy independence and to secure alternative sources of energy successfully challenging the existing historically formed basis of the energy balance. Coal has been used as the primary fuel in Poland for a long time and is associated with a large industry exploiting vast local reserves and employing large number of people. Polish government even ban EU emission reduction regulation recently to avoid critical changes for





this sector and retain the option of coal alternative for a case of high prices of oil and natural gas (and potentially unsuccessful shale gas scenario).

The last but not least issue Poland is expected to challenge with regards to shale gas is a relevant local infrastructure. According to local industry experts and requests of foreign project developers there is no adequate gas pipeline network along the areas of shale gas exploration. Even the Polish government tries to compose budget to cover design and and plan construction of such regional systems there is still a long way to negotiate it with local communities not mention to the time for construction itself.

Poland is one of the key transit countries for Russian gas to Western Europe through the Yamal pipeline. The Polish gas system is connected with the EU gas system but mainly along the East-West direction, providing the only direction of gas transportation. The option of injection shale gas in the mainstream may be problematic for business model of Russian Gazprom, that is based on development of vast conventional gas fields in severe conditions of Northern regions of Russia, and thus seems to be very tough to negotiate.

However, there might be good opportunities for service companies considering this market for field activities such as drilling, fracturing and auxiliary services. As it was noted above directional drilling and well stimulation are still rather new for the region that has even not enough machinery to serve exploration at the existing concession blocks.

#### **5. Recommendation regarding shale gas projects in Eastern Europe: Estimating risks for shale gas projects based on Poland and Ukraine cases**

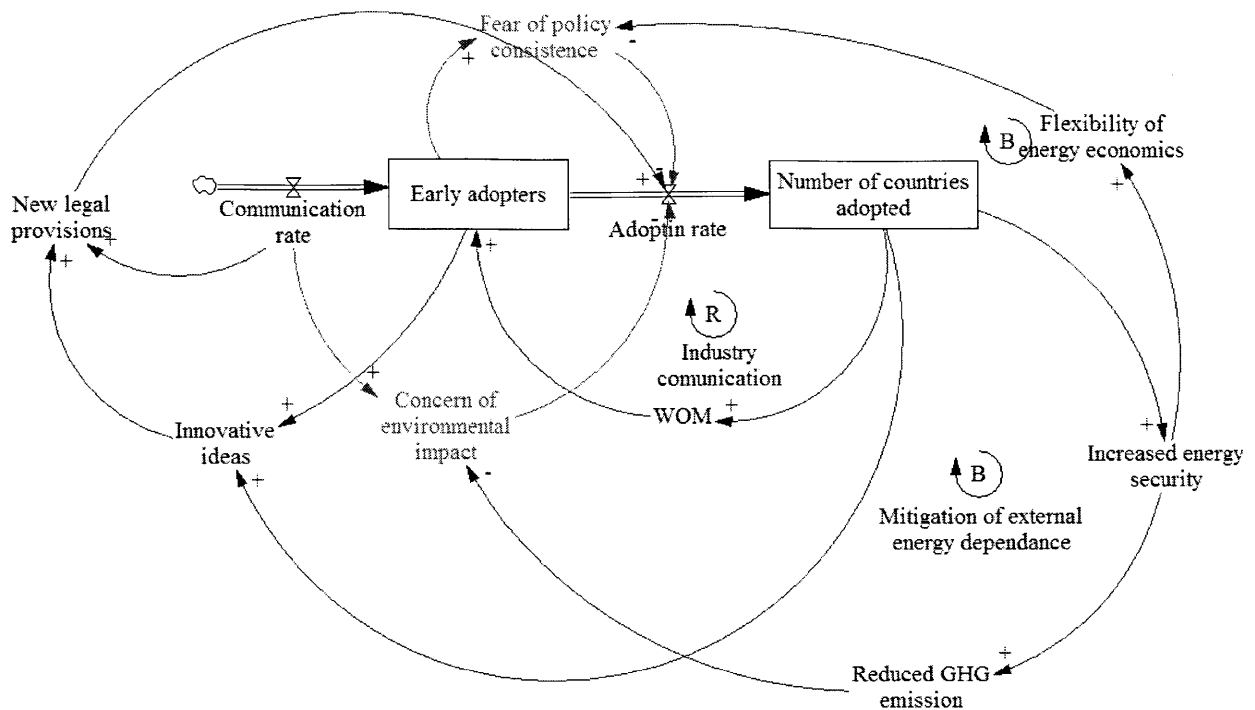
Poland became the first European country that started active development of its shale deposits. The way of trailblazer has never been easy. It occurs necessary to look for solutions at random and sometimes the latter appear to be false but eventually to the better solutions. Thus it seems to be important for Ukraine and the other countries, considering potential adoption of

shale gas as an alternative internal energy resource, to study carefully the positive as well as negative experience of Poland with shale gas and make conclusions relevant to their particular situations.

Summary of the above comparison of technical and economic aspects and legal frameworks in Poland and Ukraine with regards to recommendations to potential shale gas project developers in the region led to design a system model of market dynamics to display impact and correlation of different factors influencing technology adoption, including but not limited by the following:

- Limited water resources and environmental risks;
- Price of natural gas;
- Mitigation of GHG emission/carbon tax;
- Regulations and industry standards;
- Limited local infrastructure;
- Potential territorial markets for the technology and regional differences;
- Energy market cycles;
- Urbanization;
- Tax incentives.

By comments of license operators some of the land blocks are not densely populated. That provides favorable conditions for surface works since shale gas production, based on the Western experience, requires drilling of tens or even hundreds of wells on a relatively small area.



The model above is actually relevant for the countries considering adoption of shale gas production technology as well as to the companies involved in exploration of the gas resources and considering further investment into production stage that as a fact take immediate part in design (selection and adjustment) of the technology that present optimum solutions for the particular area being developed.

Main concerns are related to environmental impact by the extraction technology that may influence public perception and decision of local authorities which, in turn, may put a risk of policy consistence that definitely affects gas companies in their decisions on investment into development of the resource. WOM indicator in the model represents transfer of experience at the country as well as at the company level where both, positive and negative facts, do have impact on perception and decision by the followers.

The chart clearly indicates additional value that shale gas brings to the country, besides improving of its energy security, in a form of flexibility of energy economics (the resource may be potentially used locally or sold to adjacent countries while using other locally available

alternatives) and reduction of greenhouse gas (GHG) emission (by potential substitution of coal in some power generation facilities).

The model is focused particularly on the technology. However, to bring it to actual conditions of open energy economy it makes sense to consider the most likely scenarios that come to the light in conditions when the concerns on negative technology impact are removed and sufficient level of commercial gas production is reached.

### **Possible scenarios (over shale gas project lifecycle) and outcomes**

It does not make sense to consider scenarios with low price of natural gas in the region since any shale gas production under these circumstances is not economically feasible. Thus the two options below seem to be more relevant to the context.

#### ***Scenario 1***

Natural gas price is high but still affordable for the industry and households:

If shale gas is competitive it has an extensive market and creates additional value by providing new jobs and options for emission reduction. However, this diversification may eventually influence the natural gas price and thus economy of scale and continuous technological improvement to enhance shale gas production is crucial.

#### ***Scenario 2***

Natural gas price rockets too high:

Due to high cost of gas-based energy a shift to coal is a most likely option for some power generation facilities when coalmine gas as an associated resource, extracted while coalmining activities for safety purpose, may gain more preference as a gas alternative when coal as the main energy resource will be hard to compete with.

In this context it is worth to mention again that both countries have extensive coal history and the industry still maintains a certain power with governmental authorities. As a fact Poland

has recently blocked its negotiations on emission reductions with EU retaining a potential opportunity to use less environment-friendly internal energy resources if energy economics gets worse.

## **6. Conclusions**

- Both countries (Poland and Ukraine) have vast discovered but unexplored shale gas reserves and their energy economy is suffering a lack of alternative gas supply being predominantly dependent on gas imported from Russia;
- Certain actions have been undertaken to attract international gas operators, a list of licensed blocks have been assigned in Poland (in the process in Ukraine) and national companies got budget support for exploratory stage;
- Poland seems to become a pioneer in shale gas arrangements to accommodate exploration and pilot production activities in the country;
- Both economies are historically heavily dependent on coal and most of the natural gas is being imported from the same source while decay of internal gas production over the last decades, diversification is a necessity;
- Due to long lifecycle of potential shale gas projects a careful long-term analysis of open natural gas market is required (even besides internal tax incentives);
- There is potential conflict with local communities, since Polish government is designing a law to force land users if necessary, that needs to be addressed in any particular case;
- In case of raise of the price for natural gas, even if it seems to be in favor for shale gas economics, there is a risk of getting into competition with coal as a cheaper energy source;

- Lack of the drilling and fracking units in the region brings some entrepreneurship opportunities for service companies already at the stage of exploration of shale gas resources;
- The drilling and well stimulation experience in challenging conditions of the shale fields of Eastern Europe seem to force the Western technologies to evolve to be effectively utilised to meet local requirements. That will potentially bring the pioneering country an opportunity to export industry expertise further within the region or even globally.

Summing up all the stated above it is possible to say there is definitely a room and interest for adoption of shale gas extraction technology in both, Poland in Ukraine, and in current conditions there is a high chance to meet all the relevant environmental and industry standards and willingness of the companies to implement the technology adjusted to local specifics. However, the most important point, the future of the shale industry depends on, is how feasible will the gas production be. In the US cost of shale gas production varies from \$80 to over \$300 for 1 thous.m<sup>3</sup>, when both Polish and Ukrainian shale beds lay deeper than those in the US (in general 2,000-3,000 m compare to less than 1,000 m in the US). Thus production in Eastern Europe will definitely be more expensive. In this light it is ultimately crucial whether the shale gas project developers will be to adjust to the energy economics within the region to secure long-term effective exploitation of the resources while successfully benefiting on scale and recovering additional value.

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## ENDNOTES:

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## **APPENDICES**



**APPENDIX a:**  
**List of licensed shale gas exploration blocks, Poland**



# Concessions

**List of entities granted licenses for exploration and production of oil and natural gas in total conventional and unconventional (shale gas)\* \*\* IN POLAND**

**As for the date of March 1, 2012 ( In TOTAL 109 CONCESSIONS )**

*\* This note does not include the entities that have concessions for exploration of regular hydrocarbon fields and does not extend to the licenses for exploration and production of coalbed methane.*

*\*\* Source is the Ministry of Environmental Protection*

## **1. Chevron Corporation (investor):**

- Chevron Polska Sp. g. o.o. - 4 concessions;

## **2. ExxonMobil Exploration & Production Poland Sp. g o.o. - 6 concessions;**

## **3. Realm International Energy Cooperation (investor):**

- Helland Investment Sp. g o.o. - 1 concession;
- Joys Investments Sp. g o.o. – 1 concession;
- Maryani Investment Sp. g o.o. - 1 concession;

## **4. San-Leon Energy (investor):**

- Liesa Energy Sp. g o.o. - 4 concessions;
- Mount Energy Resources - 1 concession;
- Vabush Energy Sp. g o.o. - 1 concession;

## **5. Marathon Oil Company (investor):**

- Marathon Oil Poland Sp. g o.o. - 11 concessions;

**6. PGNiG S.A.** - 15 concessions;

**7. Orlen Upstream Sp. g o.o.** - 7 concessions;

**8. LOTOS Petrobaltic Sp. g o.o.** - 7 concessions;

**9. 3Leg Resources Plc (investor):**

- Lain Energy Sp. r o.o. - 6 concessions;
- Lain Resources Poland Sp. g o.o. - 3 concessions;

**10. Polska Sp Cuadrilla. g o.o.** - 2 concessions;

**11. Dart Energy Poland Sp. g o.o.** - 1 concession;

**12. Talisman Energy Polska (investor):**

- Talisman Energy Polska – 3 concessions;

**13. BNK Oil (investor):**

- Indiana Investments Sp. g o.o. - 3 concessions;
- Saponis Investments Sp. g o.o. - 3 concessions;

**14. Emfesz (investor):**

- DPV Service Sp. r o.o. – 5 concessions.

**15. One Polska Sp. g o.o.**- 3 concessions;

**16. Stsheletsky Energy LLP. g o.o.** - 6 concessions;

**17. Petroinvest S.A. (investor):**

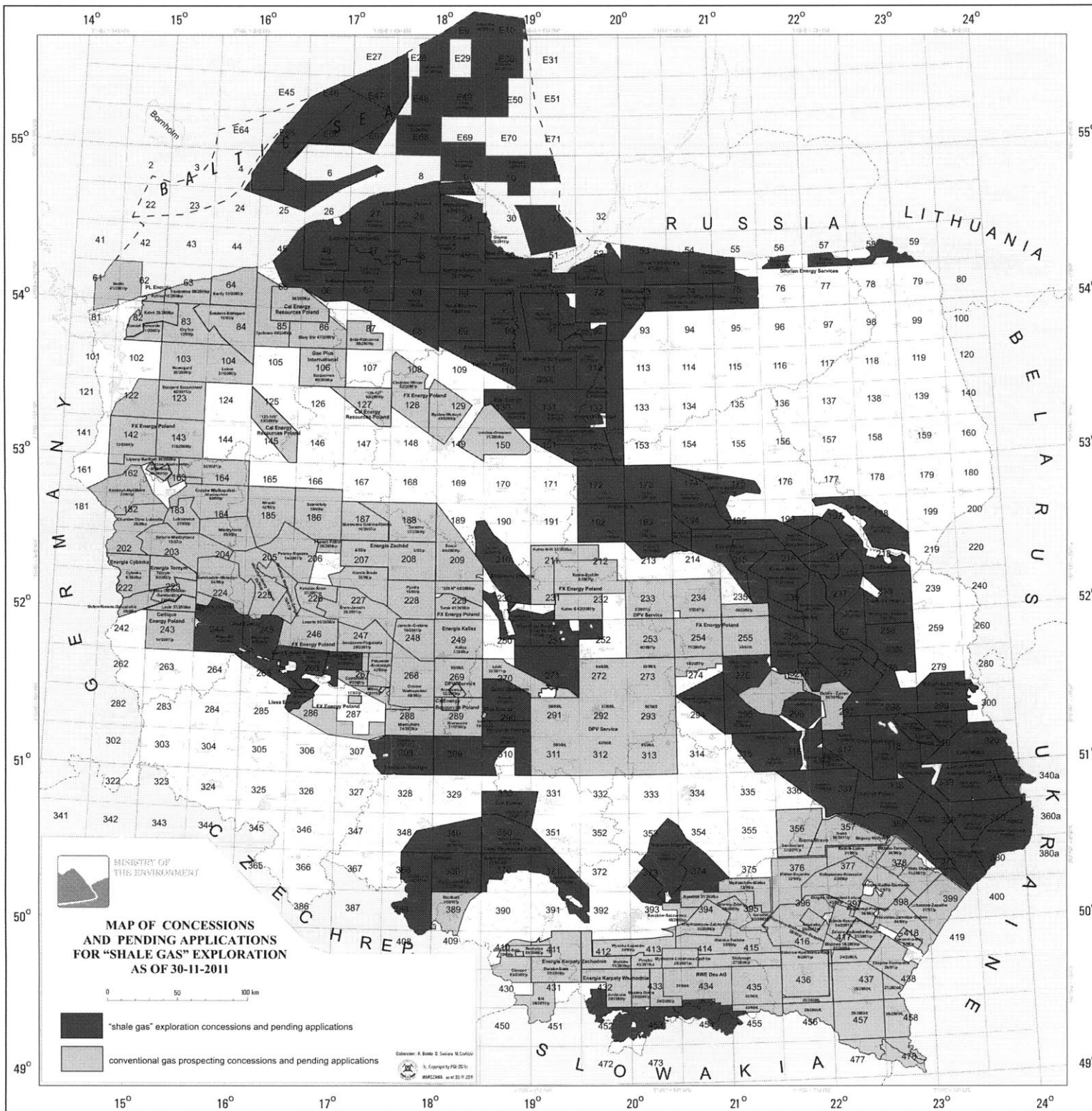
- Silura Sp. r o.o. - 5 concessions;
- ECO Energy 2010 Sp. r o.o. – 4 concessions;
- Silura Energy Services Sp. g o.o. - 4 concessions;

**18. Mas Oil (Poland) Sp. g o.o.** - 1 concession;

**19. Avrelian Oil & Gas Poland Sp. g o.o.** - 1 concession

**APPENDIX b:**  
**Map of shale gas exploration blocks, Poland**





**MAP OF CONCESSIONS AND PENDING APPLICATIONS FOR "SHALE GAS" EXPLORATION AS OF 30-11-2011**



- "shale gas" exploration concessions and pending applications
- conventional gas prospecting concessions and pending applications

Elaboration: R. Bonda, D. Szarek, M. Szczygiel  
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**APPENDIX c:**  
**Shale Gas In Poland – The Legal Framework for Granting  
Concessions for Prospecting and Exploration of  
Hydrocarbons**



# SHALE GAS IN POLAND – THE LEGAL FRAMEWORK FOR GRANTING CONCESSIONS FOR PROSPECTING AND EXPLORATION OF HYDROCARBONS

*Wojciech Bagiński\**

**Synopsis:** The article explains from the practical point of view the procedure for the acquisition of a concession for prospecting and exploration of hydrocarbons in Poland. Based on this analysis arguments are presented in support of a thesis that the current legal framework in Poland concerning the prospecting and exploration of hydrocarbons strongly protects the energy interests of the country.

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## I. INTRODUCTION

Recently newspapers all over the world reported that vast reserves of shale gas are believed by experts to exist in Poland.<sup>1</sup> For instance, The Sunday Times

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1. Marcin Sobczyk, *U.S. Giants Bet on Shale Gas in Poland*, WALL ST. J., Apr. 8, 2010, <http://blogs.wsj.com/new-europe/2010/04/08/us-giants-bet-on-shale-gas-in-poland/>; Robin Pagnamenta, *Dash for Poland's Gas Could End Russian Stranglehold*, TIMES, Apr. 5, 2010, [http://business.timesonline.co.uk/tol/business/industry\\_sectors/natural\\_resources/article7087585.ece](http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article7087585.ece); Gareth Price, *First Vertical Drilling for Shale Gas in Poland Begins*, WARSAW BUS. J., June 26, 2010, [http://finanse.wp.pl/kat,97514,title,First-vertical-drilling-for-shale-gas-in-Poland-begins,wid,12395429,wiadomosc\\_prasa.html?icaid=1bf33](http://finanse.wp.pl/kat,97514,title,First-vertical-drilling-for-shale-gas-in-Poland-begins,wid,12395429,wiadomosc_prasa.html?icaid=1bf33); Darrell Delamaide, *Chevron to Seek Shale Gas in Poland as Europe Focuses on Unconventional Reserves*, OILPRICE.COM, Mar. 9, 2010, <http://oilprice.com/Energy/Gas-Prices/Chevron-to-Seek-Shale-Gas-in-Poland-as-Europe-Focuses-on-Unconventional-Reserves.html>;

reports that “Wood Mackenzie, the oil and gas research group, estimates that there could be as much as 48 trillion cubic feet (1,36 trillion cubic metres) of unconventional gas stretching across northern and central Poland.”<sup>2</sup> Polish officials believe that exploitation of shale gas in Europe could change its energy paradigm and climate policy of the country.<sup>3</sup> The finding of shale gas could free Poland from its energy dependency on Russia.<sup>4</sup> Poland could become a major exporter of this resource, enriching its economy.

The Geological and Mining Law<sup>5</sup> in Poland grants benefits to companies which successfully explore for hydrocarbons. The entrepreneur who explored and documented a mineral deposit being the property of the State Treasury and prepared geological documentation with the accuracy required for granting of a concession for mineral exploitation, may demand the establishment of the mining usufruct for its own benefit, with priority over other parties.<sup>6</sup> Encouraged by the prospect of finding huge deposits of shale gas, which they could then benefit from, foreign companies are seriously investing in prospecting and exploration of this resource.<sup>7</sup>

This article will explain from the practical point of view the general procedure for the acquisition of a concession for prospecting and exploration of hydrocarbons in Poland.<sup>8</sup> If the resource is found, another concession for the exploitation of the hydrocarbon is required. This however remains outside the scope of this paper.<sup>9</sup>

Several arguments will be presented in support of a thesis that the current legal framework in Poland concerning the exploration and prospecting of hydrocarbons strongly protects the energy interests of the country. From the

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Katarzyna Klimasinska, *Poland 'Bubbles Up' as Marathon Target for Next Shale-Gas Boom*, BLOOMBERG, Dec. 9, 2009, <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a0PZ7A5zkBjM>; Judy Dempsey, *Eastern Europe, Seeking Energy Security, Turns to Shale Gas*, N.Y. TIMES, May 11, 2010, <http://www.nytimes.com/2010/05/12/business/global/12shale.html>.

2. Pagnamenta, *supra* note 1.

3. Sobczyk, *supra* note 1.

4. Polish Oil and Gas Company (PGNiG), Annual Report 43 (2009), available at <http://www.pgnig.pl/pgnig/ri/838/18452> (follow the “Raport Roczny” hyperlink). According to the Annual Report of PGNiG - a leading energy provider company on the Polish natural gas market - Poland's total import of natural gas in 2008-2009 amounted to 9,135.9 millions of m<sup>3</sup>. 8,137.2 millions of m<sup>3</sup> of natural gas was imported from Russia.

5. Ustawa z dnia 4 lutego 1994 r. - Prawo geologiczne i górnicze [Act of Feb. 1994, Geological and Mining Law], tekst jednolity: Dz. U. z 2005 Nr 228, poz. 1947 ze zm.

6. *Id.* Art. 12 S. 1 (This provision grants a right to apply for a preferential mining usufruct which specifies the terms of the exploitation, and which is a necessary element to obtain the concession for the exploitation of the resource).

7. For instance, companies such as ExxonMobil, ConocoPhillips, Lane Energy, and Chevron are currently prospecting for shale gas in Poland. According to informal information from the granting authority in Poland, up to December 2010 about 70 concessions for the prospecting and exploration of shale gas were granted.

8. Variations in the procedure were intentionally omitted. Variations might apply if, for instance, the granting authority would decide to issue a limited number of concessions or the environmental laws would require to conduct environmental studies before granting any concessions.

9. Discussion of all the differences in the procedure for the acquisition of a concession for exploitation would be better served in a separate article. Differences in the procedure and the concession itself include, but are not limited to, specific: a) application requirements; b) elements that need to be included therein; and c) obligations imposed on the holder of the concession.

analysis of the regulatory structure it may be inferred that its drafters had the foresight to develop a system that will protect from and reduce the potential adverse effects of intensified interest in the State's strategic resources. This potentially may be attributed to vast reserves of coal that exist in Poland.

To enhance the readability of this article a brief outline of the procedure for the acquisition of a concession for the exploration and prospecting of hydrocarbons in Poland will be presented first.

## II. BRIEF OUTLINE OF THE PROCEDURE

The following outline presents a step-by-step guide for obtaining concession for prospecting and exploration of hydrocarbons in Poland.

The steps are as follows:

1. Obtain a mining usufruct right – an agreement with the State Treasury.
2. Apply for the concession for the prospecting and exploration of hydrocarbons.

The application should include:

- the designation of the applicant (address, number in the register of entrepreneurs or official business record);
  - designation of the type and scope of business activities that are going to be included in the concession;
  - designation of the applicants rights to the plot on which the activities are going to be performed or the designation of the right that the applicant is applying for;
  - designation of the time period for which the concession should be granted along with the date from which the activities are going to be performed;
  - designation of resources available to the applicant to effectively carry out the activities that are in the scope of the application;
  - geological work programme.
3. Compensate the State for the mining usufruct right and the concession.

## III. DISCUSSION

Brief background information relating to the procedure for the acquisition of the said concessions, followed by a discussion of the relevant law, will be presented in order to gain a better understanding of the current Polish regulations and the arguments that evolve from them, in favor of a thesis that the current legal framework in Poland concerning the exploration and prospecting of hydrocarbons strongly protects the energy interests of the country.

### A. Background Information

A legal entity interested in prospecting and exploration of hydrocarbons in Poland must obtain a concession from the Polish Minister of Environment. The Department of Geology and Geological Concessions (here referred to as the granting authority) handles the process of issuing such permits. In order to obtain one, the company must meet specified legal requirements - in particular imposed by the Geological and Mining Law and the Act on Freedom of Economic Activity.<sup>10</sup>

### B. Procedure for Granting Concession for the Prospecting and Exploration of Hydrocarbons

In order to obtain the concession for prospecting and exploration of hydrocarbons the applicant is required to acquire a mining usufruct.<sup>11</sup>

#### 1. Mining Usufruct Agreement

Under Article 7 section 1 of the Geological and Mining Law,<sup>12</sup> mineral deposits which do not constitute a component of the land real estate<sup>13</sup> are the property of the State Treasury. The State Treasury, in compliance with the law, may use and dispose the rights to the deposits by granting mining usufruct rights. According to Article 9 of the Geological and Mining Law,<sup>14</sup> within the bounds specified by the mining usufruct agreement and other regulations, the mining usufructuary may, to the exclusion of other parties, prospect for and explore a

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10. Ustawa z dnia 2 lipca 2004 r. o swobodzie działalności gospodarczej [Act of July 2, 2004 on Freedom of Economic Activity], tekst jednolity: Dz. U. z 2010 Nr 220 poz. 1447 ze zm.

11. The term mining usufruct is a term of art used in the Geological and Mining Act, Art. 7 S 2. Generally, it is a concept used to describe the right to extract mineral resources in Poland. The mining usufruct is based on the civil law institution of usufruct. According to Geological and Mining Act, Art. 13, in all matters not regulated by the Act, the provisions of the Civil Code regarding the usufruct shall apply, respectively, to the mining usufruct. The right of usufruct is regulated in Articles 252-284 of the Polish Civil Code (Ustawa z dnia 23 kwietnia 1964 roku Kodeks Cywilny, Dz. U. z 1964 Nr 16 poz. 93 ze zm) (Polish Civil Code). It is a limited property right which grants its holder limited rights over the real estate that is held by some other entity. Generally its holder has a right to use the encumbered property and collect its fruits, while the owner of the property retains its ownership rights.

12. Geological and Mining Act, Art. 7 S 1 (Pol.).

13. Under Article 47 paragraph 2 of the Polish Civil Code, a component part of a thing (here land real estate) is anything that cannot be separated from it without damaging or essentially changing the whole or without damaging or essentially changing the object separated. Mineral deposits that are located within the boundaries of the land real estate are considered the components of that land real estate. Under Article 47 paragraph 1 of the Polish Civil Code, a component part of a thing cannot be a separate object of ownership and other property rights. To put it another way, it shares the fate of the land real estate. From the practical point of view the problem arises with the identification of criteria used to designate the boundaries of the land real estate. According to Article 143 of the Polish Civil Code, within the limits of the socioeconomic designation of land, the ownership of land shall cover the space over and below its surface. These criteria are considered very flexible. See A. Lipiński & R. Mikosz, *Komentarz do Art. 7 ustawy z dnia 4 lutego 1994 r. Prawo geologiczne i górnicze* [w:] A. Lipiński, R. Mikosz, *Ustawa Prawo geologiczne i górnicze. Komentarz*, Dom Wydawniczy ABC, 2003, wyd. II [Treatise on Geological and Mining Law] points 5 and 11. In this article it is assumed that shale gas deposits, due to their deep location under the surface of the earth, are not within the boundaries of any land real estates and therefore are the property of the State (of course only these minerals that are within the boundaries of Poland's sovereignty).

14. Geological and Mining Act, Art. 9 (Pol.).

designated mineral. However, the ownership right of the deposits is reserved by the State.

The mining usufruct is established in the form of a written, for consideration Agreement with the State Treasury. The Agreement specifies the rights and obligations of the parties in relation to the activities that are permitted to be conducted on the subsurface of the real estate.<sup>15</sup> This typically includes the right to prospect and explore for hydrocarbons and later exploitation. The Agreement also specifies the amount of consideration for the mining usufruct right. This payment constitutes the income of the State Treasury.

Under Article 11 of the Geological and Mining Law<sup>16</sup> the general rule is that establishment of the mining usufruct right in the field of prospecting, exploration, and also exploitation of hydrocarbons should be preceded by a tender procedure.<sup>17</sup> However, exceptions exist. For instance, the tender procedure does not have to be used if the information about the areas to which this procedure does not apply was communicated to the public and published by the authority granting the concession in the Official Journal of the European Union. As a result, the Minister of Environment may now, upon request, grant mining usufruct rights for prospecting and exploration of hydrocarbons in specified areas of Poland.

Another exception to the tender procedure is regulated in Article 12 of the Geological and Mining Law.<sup>18</sup> This however applies strictly to concessions that grant exploitation rights. The entrepreneur who explored and documented a mineral deposit being the property of the State Treasury and prepared geological documentation with the accuracy required for granting of a concession for mineral exploitation may demand the establishment of the mining usufruct for its own benefit, with priority over other parties. The time period during which the party may request the establishment of this right expires two years from the date the geological documentation was accepted in writing by the geological administration authority.<sup>19</sup>

It is worth noting that the successful prospector's interests are de facto protected for a longer period. According to Article 47 section 3 of the Geological and Mining Law, the entrepreneur who has incurred the costs of carrying out the geological works, conducted on the basis of decisions granted pursuant to the Act, shall have the exclusive right to use the geological information free of charge for research and scientific purposes and for conducting the activities regulated by the Act.<sup>20</sup> This right shall expire five years from the date of the loss of effect of the decision authorizing the works which were the source of the information or allowing for the performance of another activity regulated by the Act or separate regulations. Unless a concession or a decision approving a geological work programme provides otherwise, the party which has the right to

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15. Ewa Zalewska, *The Concession Granting Policy for Prospecting, Exploration and Production of Hydrocarbons in Poland*, 55 PRZEGLĄD GEOLOGICZNY [GEOLOGICAL OVERVIEW] NR 12/1 P. 999 (2007).

16. Geological and Mining Act, Art. 11 (Pol.).

17. The tender process, which remains out of the scope of this paper, is regulated by Rozporządzenie Rady Ministrów (Ordinance of the Council of Ministers), June 21, 2005, Dz. U. z 2005 Nr 135 poz. 1131.

18. Geological and Mining Act, Art. 12 S 1(Pol.).

19. *Id.* Art. 12 S 3.

20. *Id.* Art. 47 S 3.

use the geological information acquired in this manner may make it available to other parties.<sup>21</sup>

From the practical standpoint this mechanism assures that no other entity than the successful prospector will receive or apply for concession to exploit the resource on “his” territory within the specified period of time. To obtain such concession the “hostile” applicant would have to present appropriate geological information which he does not have in the usual circumstances.

## 2. Concession for the Prospecting and Exploration of Hydrocarbons

In order to prospect and explore hydrocarbons in Poland a legal entity has to obtain a concession, which is granted if the company is duly registered in Poland (in compliance with the Act on Freedom of Economic Activity) and meets all requirements imposed by the Geological and Mining Law. As opposed to mining usufruct, the concession is not an agreement but an administrative decision issued by the granting authority to the applicant.

According to Article 15 section 5 of the Geological and Mining Law,<sup>22</sup> the concession is granted for three to fifty years. Typically, it is given for a period of three to six years.<sup>23</sup> Article 23 section 2 of this Act<sup>24</sup> specifies that a single concession cannot cover surface area exceeding 1,200 sq km. There is however no limit as to the number of concessions that one entity can hold. Before the concession is granted the granting authority is obligated to conduct consultation with the competent head of the commune, town mayor, or city president. This provision does not apply if the prospecting and exploration is conducted in the marine regions of Poland.<sup>25</sup>

The contents of the concession application are set out in Article 18 of the Geological and Mining Law.<sup>26</sup> This includes: the designation of the applicant (address, number in the register of entrepreneurs or official business record); designation of the type and scope of business activities that are going to be included in the concession; designation of the applicant’s rights to the terrain (space) in which the activities are going to be performed or the designation of the right that the applicant is applying for; designation of the time period for which the concession should be granted along with the date from which the activities are going to be performed; and designation of the resources available to the applicant to effectively carry out the activities that are in the scope of the application.<sup>27</sup>

All information provided in the application has to be evidenced.<sup>28</sup> The granting authority may ask the applicant to provide additional documents, such as data regarding the land real property that is going to be influenced by the applicant’s activities.<sup>29</sup>

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21. *Id.*

22. *Id.* Art.15 S 5.

23. Zalewska, *supra* note 15.

24. Geological and Mining Act, Art. 23 S 2 (Pol.).

25. *Id.* Art. 16 S 4.

26. *Id.* Art. 18.

27. *Id.*

28. *Id.* Art. 18 S 2.

29. *Id.* Art. 18 S 2(3).



In compliance with Article 19 of the Geological and Mining Law<sup>30</sup> the application shall include a geological work programme, the contents of which are set out in Article 32 section 2. According to Article 47 section 4 (1) of this Act,<sup>31</sup> the geological information to which the State Treasury has rights may be accessed free of charge by the applicant if used for the purpose of preparing the geological work programme.

The granting authority may refuse to issue the concession if the intended activity affects the environment protection requirements (broadly defined) or prevents the use of the real estate for its intended purposes.<sup>32</sup> Specifically, the concession may be refused if the intended activity violates the requirements of environmental protection, including those associated with the rational management of mineral deposits, also in the scope of exploitation of accompanying minerals, or prevents the use of the real estates in accordance with their designation. Granting of a concession may also be refused within the scope of disposal of waste in the subsurface if there exists a technically, ecologically, or economically justified possibility to recover or neutralize waste in other way than waste disposal.

It is worth noting that the granting authority has the discretion, and not the obligation, to refuse the issuance of the concession. However, if for instance it decides to refuse the granting of the concessions for reason of possible violation of the requirements of the environmental protection, it should specify in its decision what would be the exact infringement and also why this infringement justifies the refusal.<sup>33</sup> The refusal to grant the concession can also be justified by existence of other environmental protection regulations, for instance those prohibiting exploitation of the resource in the specified regions of Poland.<sup>34</sup>

The provisions of the Act on Freedom of Economic Activity that concern the procedure for the granting of concessions apply in areas that are not regulated by the Geological and Mining Law.<sup>35</sup> For instance, Article 56 section 1 of the Act on Freedom of Economic Activity<sup>36</sup> states that the concession-granting authority may refuse a concession or limit its scope, relative to that requested in the application for concession, or refuse to modify a concession: 1) where the entrepreneur fails to satisfy conditions for the conduct of the economic activity covered by the concession laid down in this Act or conditions made known to entrepreneurs pursuant to Article 48 section 2,<sup>37</sup> or Article 51 section

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30. *Id.* Art. 19.

31. *Id.* Art. 47 S 4 (1).

32. *Id.* Art. 26b.

33. A. Lipiński & R. Mikosz, *Komentarz do Art. 26(b) ustawy z dnia 4 lutego 1994 r. Prawo geologiczne i górnicze* [w:] A. Lipiński, R. Mikosz, *Ustawa Prawo geologiczne i górnicze. Komentarz*, Dom Wydawniczy ABC, 2003, wyd. II [Treatise on Geological and Mining Act point 1].

34. *Id.* point 3.

35. Geological and Mining Act, Art. 15 S 2 (Pol.).

36. Freedom of Economic Activity Act, Art. 56 (Pol.).

37. Freedom of Economic Activity Act, Art. 48 (Pol.) (“1. The concession-granting authority may lay down in the concession, within the limits of provisions of separate Acts, certain special conditions for the conduct of the economic activity covered by the concession. 2. The concession-granting authority shall supply each interested entrepreneur with detailed information on the conditions referred to in section 1, immediately upon the institution of proceedings on the grant of concession.”).

1,<sup>38</sup> 2) for reasons of a threat to the defense and security of the State, or to citizens; 3) where, as a result of the tendering proceedings referred to in Article 52,<sup>39</sup> the concession was granted to another entrepreneur or entrepreneurs; 4) in cases laid down in separate provisions.

Attention should be brought to Article 58 section 3 of the Act on Freedom of Economic Activity<sup>40</sup> which states that the concession-granting authority may withdraw the concession or modify its scope on the grounds of a threat to the defense and security of the State, or security of citizens, and in the event of the entrepreneur being declared bankrupt.

Article 60 of the Law of Freedom of Business Activity<sup>41</sup> states that the entrepreneur, who proposes to undertake economic activity in a field subject to concession-granting, may seek a promise that the concession will be issued. The promise shall make the granting of concession conditional upon the satisfaction of conditions for pursuit of the economic activity subject to concession-granting. This promise is given for periods covering over six months.

If the concession expires or is withdrawn the mining usufruct expires.<sup>42</sup>

### C. Security of Claims

In light of Article 17 section 1 of the Geological and Mining Law,<sup>43</sup> a concession may be granted under the condition that the applicant secures future claims. This provision may be triggered if a particularly important interest of the State or public interest - especially related to environment protection - is involved.

The application of this provision lacks significant practice.<sup>44</sup> The most important areas of where the granting authority would want to require the security from the applicant is related to claims associated with environment protection and especially with the redress/prevention of damages that might arise after the completion of the licensed activities and the expiry of the concession.<sup>45</sup> The terms specifying the type and the procedure for the use and release of the

38. Freedom of Economic Activity Act, Art. 51 S 1 (Pol.) (“Whenever the concession-granting authority expects to grant a limited number of concessions, it shall make an announcement to this effect in *Dziennik Urzędowy Rzeczypospolitej Polskiej ‘Monitor Polski’* (the official gazette of the Republic of Poland ‘*Monitor Polski*’)).

39. Freedom of Economic Activity Act, Art. 52 S 1 (Pol.). Where the number of entrepreneurs who satisfy conditions for the granting of concession, and are fit to properly carry on the activity covered by the concession, exceeds the number of concessions to be granted, the concession-granting authority shall order tendering proceedings, the object of which is the grant of concession. *Id.* at section 2. In proceedings on the granting of concessions for the dissemination of radio and television programmes the concession-granting authority shall order the tendering proceedings referred to in section 1 if, following evaluation of applications according to a procedure laid down in Article 36 of the Act of 29 Dec. 1992 on Radio and Television Broadcasting (*Dziennik Ustaw* 2004, No. 253, item 2531, with subsequent amendments) the number of entrepreneurs still exceeds the number of concessions.

40. *Id.* Art. 58 S 3 (Pol.).

41. *Id.* Art. 60 S 1 (Pol.).

42. Geological and Mining Act, Art. 10 S 3 (Pol.).

43. *Id.* Art. 17 S 1.

44. A. Lipiński & R. Mikosz, *Komentarz do Art. 17 ustawy z dnia 4 lutego 1994 r. Prawo geologiczne i górnicze* [w:] A. Lipiński, R. Mikosz, *Ustawa Prawo geologiczne i górnicze. Komentarz*, Dom Wydawniczy ABC, 2003, wyd. II [Treatise on Geological and Mining Act] point 1.

45. *Id.* point 1.

security should be addressed in the decision granting the concession.<sup>46</sup> In the Polish doctrine it is indicated that the simplest form of security is the obtaining of surety/guarantee.<sup>47</sup> In general, if the concession holder does not meet the terms of the security (for instance the surety/guarantee agreement terminates) the granting authority may, for instance, withdraw the concession or limit its scope without compensation.<sup>48</sup>

In practice this security of claims mechanism is not used by the granting authority in regard to concessions for prospecting and exploration. It is widely used when granting exploitation rights.

The terms of the security are subject to negotiations with the applicant. The amount of security generally depends on the size of the land covered by the concession and the possible effect that the permitted activity might have on the environment and the neighboring estates.

Currently only concessions for the prospecting and exploration of shale gas have been granted. According to informal information from the granting authority, none of them provide for the security of future claims. Since the topic of shale gas in Europe is a novelty, and there is not yet any practice as to exploitation of shale gas in Poland, the granting authority has only just begun work on developing procedures in regard to this subject.

*D. Compensation for Mining Usufruct and Payments for the Concession for Prospecting and Exploration of Hydrocarbons*

The entrepreneur interested in undertaking the business activity of prospecting and exploration of hydrocarbons is subject to two types of payments.

According to Article 83 section 1 of the Geological and Mining Law,<sup>49</sup> the payment for the mining usufruct is to be set out in the Agreement with the State. Typically this amount depends on the size of the concession area.<sup>50</sup>

Article 85 section 2 and section 4 point 1(a) of the Geological and Mining Law sets out the concession payments for prospecting and exploration of hydrocarbons.<sup>51</sup> The payment amounts to the multiple of the payment rate (currently PLN 200) by the number of square kilometers of the subject area.

*E. Assessment of the Current Legal Framework – Protections Afforded by the Law*

Based on the analysis of the presented procedure several arguments can be made in favor of a thesis that the legal framework in Poland strongly protects its energy interests.

First, through specific regulation the State protects its sole control of strategic resources. Article 7 section 1 of the Geological and Mining Law<sup>52</sup> states that resources which are not components of the land real estate are the property

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46. *Id.* point 2.

47. *Id.* point 3.

48. Geological and Mining Act, Art. 27 S 2 (Pol.).

49. *Id.* Art. 83 S 1.

50. Zalewska, *supra* note 15.

51. Geological and Mining Act, Art. 85 S 2 & 4(14)(a) (Pol.).

52. *Id.* Art. 7 S 1.

of the State Treasury. Put differently, the shale gas that is going to be explored, prospected, and potentially exploited will remain the property of the State. The State through the mining usufruct – for which payment is obligatory - will only allow the entrepreneur to prospect, explore, or exploit the resource.

Second, through existing regulation, control over who is prospecting, exploring, and exploiting the resources in Poland is also retained by the State. It can be argued that obtaining the concession to prospect and explore does not mean that the mining usufruct for the exploitation and later the concession for exploitation will be automatically granted. Article 12 section 1 of the Geological and Mining Law<sup>53</sup> provides that the successful prospector may within two years preferentially request the granting of an exploitation mining usufruct. The law however does not impose an obligation on the State to grant such usufruct, nor does it specify the period for which such right has to be granted. The State can refuse the application (for instance because it is not in compliance with the Act on Freedom of Economic Activity) or the State can specify only a short period of time for which the mining usufruct is valid.<sup>54</sup>

Third, the energy interests of the country are protected because it also retains control over the valuable geological information obtained by prospectors during their activities. Under Article 47 section 6 of the Geological and Mining Law<sup>55</sup> he who conducts activities on the basis of this Act shall be obliged to forward on a current basis to the geological administration authorities the geological information referred to in section 1, as well as samples and the results of their research. A concession or, respectively, a decision approving a geological work programme may set out the scope and timetable of the presentation of the information and samples.

Fourth, it can be argued that in cases where the energy dependency of Poland would be compromised by actions of entities holding concessions to explore, prospect, or exploit the resource, the State could defend its interests by revoking the concession on grounds of Article 58 section 3 of the Act on Freedom of Economic Activity<sup>56</sup> and the very general threat to the defense and security of the State clause provided there.

These arguments show that the drafters of the system had the foresight to develop protections that will reduce the potential adverse effects of intensified interest in the State's strategic resources. The highlighted arguments seem to be especially worth noting from the stand point of a potential prospector or exploiter.

#### IV. CONCLUSION

Currently, due to the increased interest in potential gas deposits in Europe, there are several companies prospecting and exploring vast territories of Poland. The prize for the successful prospector is the right to apply for a preferential mining usufruct. This in turn means potential benefits and proceeds. The race

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53. *Id.* Art. 12 S 1 & 3.

54. See A. Lipiński & R. Mikosz, *Komentarz do Art. 12 ustawy z dnia 4 lutego 1994 r. Prawo geologiczne i górnicze* [w:] A. Lipiński, R. Mikosz, *Ustawa Prawo geologiczne i górnicze. Komentarz*, Dom Wydawniczy ABC, 2003, wyd. II [Treatise on Geological and Mining Act] point 4.

55. Geological and Mining Act, Art. 47 S 6 (Pol.).

56. Freedom of Economic Activity Act, Art. 58 S 3 (Pol.).

has just begun, and if the expert predictions are true, there is still room for more mining companies taking its share of the pie.



**APPENDIX d:**  
**Extracts from the FINAL REPORT ON**  
**UNCONVENTIONAL GAS IN EUROPE dated 8**  
**November 2011**





## 5 Environmental aspects

### 5.1 General

#### 5.1.1 General environmental legislation

**142.** Requirements regarding environmental protection, including the necessity to perform an environmental impact assessment (or “E.I.A.”), are, as a rule, laid down in general pieces of law aiming at environmental protection, such as the Environmental Code, laws on environmental liability or laws on environmental impact assessment. Some sector specific rules, i.e. rules specific to the gas sector, may moreover contain some requirements 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. Disclosure of information, including regarding environment, to the public may be compulsory under general public disclosure acts, such as e.g. in Sweden (Public Access to Information and Secrecy Act).

**143.** In Sweden, any “environmentally hazardous activity” is regulated under the Swedish Environmental Code. Depending on the type of activity (type A, B or C), 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, in principle, a type B activity; whereas production in mountainous areas is a type A activity. For more details regarding these procedures (as well as whether or not an E.I.A. is needed) please refer to the table below.

**144.** It is worth noticing at this stage that the procedure concerning environmentally hazardous activities is a holistic procedure: all aspects related to the environment are examined in one single procedure, i.e. (i) water use; (ii) emission; (iii) protection of wildlife; (iv) noise; (v) disposal of waste; (vi) use of soil; and (vii) use of chemical substances. In most of the other scrutinised Member States, most of these aspects are assessed separately. Moreover, it is an integral part of the main permitting procedure on prospection/exploration and production of hydrocarbons on the basis of the Swedish Environmental Code and the Ordinance on Environmentally Hazardous Activities and the Protection of Public Health. The Land and Environmental Court governs this holistic procedure leading to the grant of an environmental permit. During this process, it always hears the CAB and the concerned communities and sometimes the Swedish Environmental Protection Agency (if the matter is of significant importance for the Member State). However, an intervention of the Agency appears to be unlikely, due to the small scale character of the shale gas exploration projects.

**145.** In Germany, the E.I.A. is an integral part of the planning approval (of the framework operation plan) for any project aiming at extracting over 500k m<sup>3</sup> a day. As the law currently stands, there is no E.I.A. requirement during the exploration authorisation procedure. As we have seen it above, the Land of North Rhine Westphalia has filed a motion in the *Bundesrat* to revise the E.I.A. decree with a view of making an E.I.A. compulsory for any framework operation plan approval involving hydraulic fracturing. According to the Mining Section of the Ministry of Energy and Economic Affairs of North Rhine Westphalia, the current ceilings are considered to be too high.

*It is worth noticing, as the industry practice currently stands, we do not know whether the 500k m<sup>3</sup>/day thresholds will be met, once production activities will have started in Germany. Companies in Germany are currently at the stage of exploring shale gas resources. Therefore, by definition, we do not know yet the quantities that companies will be able to produce on an industrial basis.*

**146.** In Poland, the E.I.A. requirement falls within the scope of the Act on Access to Environmental Information and its Protection, which is a close transposition of Directive 85/337/EC.<sup>103</sup> According to the competent Polish authorities, exploration projects are usually seen as “annex II project”, which require the performance of an E.I.A., if they have a significant impact on the environment. In order to determine this, a screening is mandatory. Exploitation projects in most cases can be considered to be “annex I projects”, which may always have a significant impact on the environment. In this case the E.I.A. requirement must be performed before initiating the main authorisation procedure. Other activities, notably for carrying out drilling activities, will be considered as annex II projects, for which a screening is mandatory. Furthermore, this E.I.A. is carried out under the decision on environmental conditions. The DGGC needs to obtain this decision before grant of any authorisation by the Minister. This decision needs to be attached to the authorisation application. The Regional Directorate for Environmental Protection or the competent head of commune, town mayor or city president with approval of the Regional Directorate for Environmental Protection are competent for issuing such a decision.

**147.** In France, the E.I.A. requirement falls within the scope of the Act on Access to Environmental Information and its Protection, which is a close transposition of Directive 85/337/EC.

At the phase of the exploration authorisation, 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 E.I.A. Its purpose is to demonstrate that the candidate is aware of the (environmental) legal constraints surrounding the activity as well as of the environmental issues that will be at stake. If the notice is judged insufficient, the administration may request further analysis or information and the administration can refuse, on the basis of the notice, to grant authorisation for some activities that would seem incoherent from an environmental viewpoint, e.g. when the activities would require extensive drilling in a highly environmentally protected area. The role of the administration at this stage of the procedure with respect to the notice is thus a matter of anticipation of environmental issues beforehand. The implementation of environmental requirements (including the E.I.A.) is carried out, in practice, at the local level and at a later stage, i.e. when the E.I.A. is performed.

Regarding production, an E.I.A. is required for obtaining the concession and for obtaining the AOTM.

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Council Directive 85/337/EC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ L 175, 7.5.1985.

**148.** As mentioned above, most of the public participation during the authorisation procedures occurs in the framework of the E.I.A.<sup>104</sup> In Poland, public participation takes place during the procedure leading to the grant of a decision on environmental conditions preceding the authorisation procedure properly speaking.<sup>105</sup> In Germany<sup>106</sup> and Sweden such public consultation also occurs in the framework of the E.I.A. In Sweden, public consultation is required before exploration activities can start, if the community demands for an E.I.A. and the activities may have a significant impact on the environment. Public consultation is not compulsory in the exploitation concession process, although it is usually carried out. Such consultation is always required in the framework of the procedure to obtain an environmental permit (in the framework of the E.I.A.).

Even in France, where the mining legislation requires a public inquiry, this inquiry is conducted following the Environmental Code.

**149.** Apart from the transparency requirements foreseen in the mining legislation, environmental legislation<sup>107</sup> lays down the obligation to publish certain documents and/or to make them accessible.

For more details, please refer to the table below:

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<sup>104</sup> Article 6.2 of Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment lays down the public participation requirement, OJ L 175, 05.07.1985.

<sup>105</sup> Such a decision is required for projects that may significantly affect the environment.

<sup>106</sup> In Germany, the authorisation procedure does not require an E.I.A. yet. Such E.I.A., however, forms integral part of the framework operation plan for any project of which the aimed exploration extends 500k m<sup>3</sup>/day. Currently, legislation has been proposed by North Rhine-Westphalia which would make an E.I.A. compulsory in the context of any framework operation plan approval which foresees hydraulic fracturing.

<sup>107</sup> Legislation transposing directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, OJ L 41, 14.02.2003 (all four Member States have transposed this directive, and thus require access of the public to environmental information).



	Poland	France	Germany	Sweden
<b>Information to submit to the authority approving the activity</b>	The applicant needs to meet the information requirements laid down under Directive 85/337/EEC. <sup>108</sup>	The information varies depending on whether the E.I.A. is carried out under Article R 122-3 of the Environmental Code <sup>109</sup> or under Article R 122-20 of the same Code. <sup>110</sup>	The applicant's documents contain information on the possible impact of the project on the environment primarily.	It varies depending on the type of activity and the place: <ul style="list-style-type: none"> <li>- Exploration and prospection are type C activities<sup>111</sup></li> <li>- Production is, in principle, a type B activity<sup>112</sup></li> <li>- Production in mountainous areas is a type A activity.<sup>113</sup></li> </ul>

<sup>108</sup> I.e.: (i) Description of the project comprising information on the site, design and size of the project; (ii) a description of the measure envisaged in order to avoid, reduce, and, if possible, remedy significant adverse effects; (iii) the data required to identify and assess the main effects which the project is likely to have on the environment; (iv) an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice; and (v) a non-technical summary of the information listed above.

<sup>109</sup> I.e.: (i) an analysis of initial state of the site and its environment; (ii) an analysis of direct and indirect, temporarily or permanent, effects of the project on the environment cultural heritage, public health, hygiene and safety; (iii) the reasons why the project has been withheld (in French in the text: the "*raisons pour lesquelles, notamment du point de vue des préoccupations d'environnement, parmi les partis envisagés qui font l'objet d'une description, le projet présenté a été retenu*"; (v) the measures envisaged by the applicant to limit the consequences for health and environment as well as the costs for these measures; (v) an analysis of methods to be used (with description of possible difficulties and their solution); (vi) a non technical summary with the view of communication to the public.

<sup>110</sup> I.e.: (i) a summary of purpose of plan, content and possible link with other plans; (ii) an analysis of initial state of the environment and future evolutions in it; (iii) an analysis on the effects on environment, health, safety, public heritage etc. and the impact on Natura 2000 sites; (iv) the reasons on the basis of which the plan is withheld (in French in the text: "*l'exposé des motifs pour lesquels le projet a été retenu au regard des objectifs de protection de l'environnement établis au niveau international, communautaire ou national et les raisons qui justifient le choix opéré au regard des autres solutions envisagées*"; (v) the measures envisaged by applicant to limit the consequences for health and environment as well as the costs for these measures; (vi) an analysis of methods to be used (with description of possible difficulties and their solution); and (vii) a non technical summary with the view of communication to the public.

<sup>111</sup> Type C activities require that the candidate notifies: (i) any information, drawings and technical descriptions that is necessary for an assessment of the nature and scope and the environmental impact of the activity or measure; (ii) if deemed necessary (we understand: by the CAB and/or concerned municipality); (iii) Environmental Impact Statement.

<sup>112</sup> Type B activities require that the candidate notifies: (i) any information, drawings and technical descriptions that is necessary for an assessment of the nature and scope and the environmental impact of the activity or measure; (ii) the location as well as a description of alternative locations; (iii) plan conditions; (iv) site plan (map), distance to nearby residents, different areas of special interest, such as national interest for nature conservation, cultural heritage, etc.; (v) the scope of the activity; (vi) the expected environmental impact of emissions to air water, noise, etc.

<p><b>The criteria for determining whether or not to perform an E.I.A.</b></p>	<p><b><u>Exploitation activities:</u></b></p> <p>“Annex II projects” (as defined under Directive 85/337/EEC) may require an E.I.A., i.e. projects in the field of the extractive industry (or “<i>projects likely to have significant impact on the environment</i>”). The decision is based on a “screening procedure”, on a case-by-case basis, on the basis of the criteria defined in Annex III of the Directive. The screening procedure results in an “environmental decision” which needs to be issued regardless of the outcome of the screening procedure.</p> <p><b><u>Production activities:</u></b></p> <p>Such activities will be, as a rule, considered as “annex I”</p>	<p>“Annex II projects” (as defined under Directive 85/337/EEC) require an E.I.A..</p> <p>Any “<i>Autorisation d’Ouverture de Travaux Miniers</i>” (or AOTM), i.e. the document submitted along the application for an exploration licence, requires an E.I.A.</p> <p>As a rule, projects having a total cost lower than 1.9 Mio EUR are not subject to E.I.A.</p>	<p>An integral part of the framework operation plan (in form of planning approval) for any project in which the aimed extraction exceeds 500k m<sup>3</sup>/day.</p> <p>The Land of North Rhine Westphalia has filed a motion in the <i>Bundesrat</i> to make the E.I.A.-obligation part of all procedures leading to the grant of a framework operation plan involving hydraulic fracturing.</p>	<p>Type C activities require an E.I.A. “if deemed necessary”.</p> <p>Type B activities require an E.I.A. for the permit application process.</p> <p>Type A activities always require an E.I.A.</p>
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Type A activities require that the candidate notifies: (i) any information, drawings and technical descriptions that are necessary for an assessment of the nature and scope of the activity or measure; (ii) an Environmental Impact Statement and information about any consultations that have taken place pursuant to Chapter 6, Sections 4 to 6 (for instance with the County Administrative Board, relevant municipalities and affected property owners); (iii) any information that is necessary for an assessment of compliance with the general rules of consideration laid down in Chapter 2 of the Environmental Code; (iv) proposals for any protective measures or other precautions that may be necessary in order to prevent or remedy the adverse effects of the activity; (v) proposals for control of the activity, and (vi) a security report in those cases where the Act on Measures to Prevent and Limit the Consequences of Major Chemical Accidents is applicable on the activity. In cases relating to water operations, applications must also contain the following: (i) information as to whether or not any properties are affected by the operations and, where applicable, the names and addresses of the owners of the properties and any holders of special rights thereto; and (ii) a statement of the compensation amounts offered by the applicant to each party to the case, unless it is appropriate to postpone the submission of such information on account of the scope of the operations.

	<p>projects, for which an E.I.A. must be performed. Projects of minor nature would be considered as "annex II projects", for which a screening procedure is mandatory.</p> <p>The E.I.A. requirement is to be fulfilled under the procedure leading to an "environment decision" and is required for activities falling within the scope of the Act on Access to Environmental Information and its Protection.</p>			
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<p><b>The interested parties the information must be made available to</b></p>	<p>The public affected or likely to be affected by or having an interest in the environmental decision-making procedure.</p>	<p>Any OATM requires a local consultation before delegates of the concerned territorial collectivities and associations of environmental protection.</p>	<p>Competent authorities (Land ministry of economic affairs or environment, mining authorities) must make the information available to the public. Anyone is allowed to consult the documents without having to demonstrate any particular individual/subjective interest/affliction.</p>	<ul style="list-style-type: none"> <li>- During the authorisation procedure the CAB must be consulted by the Mining Inspectorate at an early stage with a view of obtaining its input on nature reserve, cultural heritage, rail road issues etc as well as regarding the E.I.A. during the procedure to obtain an exploitation authorisation.</li> <li>- Individuals who are likely to be affected must be consulted in good time and to an appropriate extent before the application submission.</li> <li>- In case of E.I.A., the candidate must consult the other government agencies, the municipalities, the citizens and the organisations that are likely to be affected.</li> </ul>
<p><b>Prior public consultations</b></p>	<p><i>“One or more natural or legal persons and, in accordance with national legislation or practice, their associations, organisations or groups”.</i> The scope of the public to be consulted may not be limited in any way.</p>	<p>Any project “of regulatory state decision” (...) “having a significant and direct impact on the environment” must be subject to public participation for at least fifteen days before any “compulsory consultation of committees having persons directly affected as their members”.</p>	<p>The public must be consulted prior to any decision; it must have the opportunity to submit statements.</p>	<p>See previous answer.</p>



<p><b>Information available to the public (including how it is made available)</b></p>	<p>Anyone may submit a request for access to the environmental information. The competent authority decides whether or not to grant the information. In case of refusal, it must issue a decision.</p> <p>At the time of submitting the present interim report, we do not know on which ground such a refusal may be done.</p>	<ul style="list-style-type: none"> <li>- The decision granting the title/AOTM;</li> <li>- The E.I.A.</li> </ul>	<p>The information made available to the public is:</p> <ul style="list-style-type: none"> <li>- Description of the contemplated activity;</li> <li>- Description of the measures aiming at minimising possible environmental impact and restoration measures;</li> <li>- Non-technical summary;</li> <li>- Any other document that the competent authority deems relevant.</li> </ul> <p>The documents must be displayed to the affected community for one month.</p>	<ul style="list-style-type: none"> <li>- The E.I.A. and the application for the environmental hazardous activity are published in the local newspaper.</li> <li>- Anyone may request additional information after a secrecy check is performed by the relevant authority (on the basis of the Public Access to Information and Secrecy Act).</li> </ul>
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*Some additional remarks for Sweden and Poland:*

**150.** The Swedish municipalities/CAB decide on the necessity of an E.I.A. in the framework of procedures leading to the start of exploration activities. This mostly is the case when the environmental information as presented by the applicant in the base line survey<sup>114</sup> is not sufficient to perform an environmental "screening". In that case, the municipalities/CAB will demand an E.I.A. to be executed. The decision to require an E.I.A. needs to be motivated. According to our national correspondent, an E.I.A. would usually be considered as necessary for drilling.

Exploration drilling was performed by Shell in the County of Skåne in 2009. The drilling was assessed by the communities. During this process, an E.I.A. was demanded by the concerned municipalities.

The E.I.A. procedure is as follows:

The applicant needs to submit an E.I.A. together with the application for an exploitation concession (to be tried by the Mining Inspectorate together with the CAB). The CAB then gives a binding opinion on the E.I.A. Together with the CAB, the Mining Inspectorate assesses whether the E.I.A. is positive. The CAB opinion and the outcome of the assessment by the Mining Inspectorate are bundled in one decision. Municipalities furthermore can give their remarks on the application during the process of assessing the E.I.A. A positive decision on the E.I.A. is required for proceeding with the core authorisation procedure with a view of obtaining an exploitation concession. The Mining Inspectorate cannot continue with the authorisation procedure when the binding opinion of the CAB on the E.I.A. is negative.

The entity applying for an environmental permit also needs to submit an E.I.A. together with the application for an environmental permit (to be tried in a similar way by the Land and Environmental Court and the CAB).

**151.** During the exploitation concession procedure the Mining Inspectorate consults the CAB with a view on obtaining its binding opinion on the E.I.A. The CAB also must be consulted by the Land and Environmental Court in the framework of the environmental permitting procedure. The CAB handling the application provides other relevant authorities and entities with the information (i.e. Mining Inspectorate, Land an Environmental Court, concerned municipalities, and land owners)

**152.** With regards to Poland, the criteria for determining whether a annex II project has to be made subject to an E.I.A. relate to the:

- a) geological works and the use of explosives;
- b) performance of activity by underground method;
- c) performance of activity by drilling holes with the depth more than 1000 m.

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<sup>114</sup> A base line survey before any drilling activity can start needs to be provided. The survey contains an identification of the site, different water and soil monsters and samples on the initial state of the area before the drilling activity has started. This survey also contains information on the environmental impact of the activity. However, rather than measuring the environmental impact, the survey serves as a reference for compensating any damage resulting from the activity (comparison between monsters/samples before drilling and monsters/samples after drilling).

The above mentioned operations are subject to a screening procedure, after which the municipality after approval of the General/Regional Directorate together will decide whether an E.I.A. is needed (on the basis of criteria mentioned in Annex III of the relevant EU Directive).

The Ministry of Environment indicates that, generally speaking, use of deep drilling methods requires in most cases an E.I.A. (for exploration and exploitation).

Exploitation projects are considered to be annex I projects, if the quantity of extracted minerals is more than 500k m<sup>3</sup>/day (similar to Germany).

**153.** Lack of an obligation to perform an E.I.A. does mean that companies do not carry out such an assessment in practice and on their own initiative.

*The fact that some companies are not under some obligation to perform an E.I.A. does not prevent them from carrying out some environmental impact assessment on a voluntary basis. At Total e.g. such assessment is carried out (by an independent third party specialised engineering company) for every new project of exploration and/or exploitation. TGSE and TEPF expected to perform such assessment for the Montélimar site. These assessments follow the standard timeline of an environmental impact assessment study. First, a baseline is identified (i.e. the detailed status of the site before any activity has started). Second, a typical social and environmental study is carried out. Such studies are favoured by Total who aims at obtaining an ISO 14000 certification as much as possible for all its major sites.*