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Comparison of Legal Advice for Extracting Shale Gas in the United Kingdom and the United State of America

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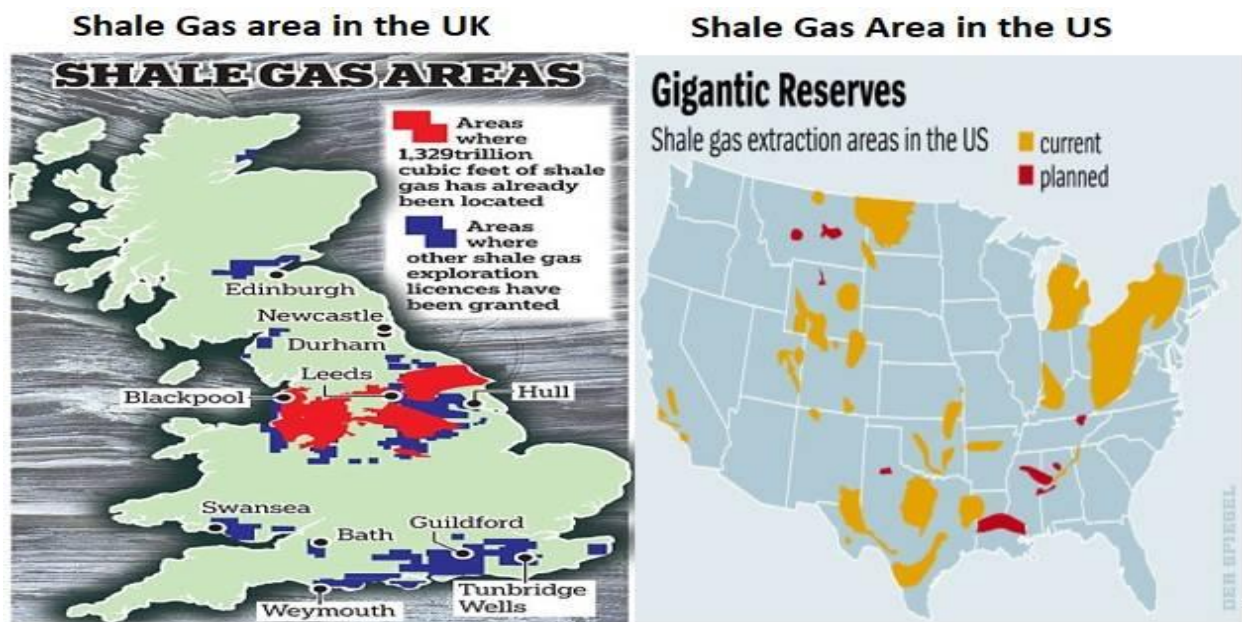
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Introduction

Through this paper, we are going to advise the company named Trump Valley Plc., which is planning to carry out its shale gas exploration operations in the US and the UK, in terms of the regulatory requirements that needs to comply with in order to get the permission. The company also has advised how it can convince the people of the US with regards to its exploration activates and benefits. For this purpose, the laws that govern the exploration of shale gas in both the countries should be understood.

Considerable Growth of Shale Gas

It has been observed that with the increase in the application of shale gas in industrial, residential, transportation, power generation, and commercial activities, it has been expected that Shale gas market is going to show a considerable growth. The major factor which demands shale gas is depletion of reservoirs and increased demands for energy. An increased interest in using the unconventional gasses has also called for shale gas market growth. It also has been observed that the increase in demand for energy cannot be satisfied only by using the unconventional gasses and thus again there is a need for conventional sources of energy to meet these demands.

The increase in the prices of crude oil prices has also increased the demand for an unconventional source of energy. Again this will strive for an increase in global shale gas market. In addition, many governments nowadays have been enacting favorable government



regulation to deal with the shale exploration due to various benefits offered by it, which again boosts the market growth of shale gas globally.

Regulatory Bodies in the US

Although Congress' has the power to regulate the activities related to hydraulic fracturing as per the Commerce Clause of the U.S. Constitution, still most of the regulatory power with regards to the technology of the oil and gas industry vests with the states.

States are free to regulate hydraulic fracturing as they see fit, with the exception that state regulations must meet the minimum requirements of any applicable federal regulations. This approach to oil and gas industry regulation has led to varying levels of complexity in the regulatory process encountered by companies in different states.

The Oil and Gas Conservation Act (OGCA) is the main act that regulates development of oil and gas development in **Colorado**.

The Department of Natural Resources (DNR) is that Office of Conservation which has been given the responsibility of regulating the activities related to exploration and production of oil and gas in **Louisiana**.

The Wyoming Oil and Gas Conservation Commission (WOGCC) has been given the power to regulate development of oil and gas by the state, and it also handles the permitting process needed for oil and gas development in **Wyoming**.

The Oil and Gas Division of the Texas Railroad Commission is the prime regulatory body which administers the regulations that deal with the drilling of oil and gas in **Texas**.



Regulatory Bodies in the UK

There are a number of regulatory bodies that work along with various government departments in order to regulate the activities related to exploration of shale gas in the UK.

Some of these regulatory bodies include:

DECC

It has been given the power by under the Petroleum Act 1998 to conduct licensing rounds and then issuing the licenses for drilling and exploratory activities

Mineral Planning Authorities

It considers the applications for land use planning permissions and then it decides whether an environmental impact assessment is to be done or not

The Environment Agency (England), the Scottish Environmental Protection Agency (Scotland) (SEPA) or Natural Resources (Wales)

It consider applications for environmental permits

The Health and Safety Executive (HSE)

It considers design of the well and also the risk in the form of major accidents and hazards to people.

The Department of Communities and Local Government (DCLG)

It has the role of publishing the planning guidance.

Petroleum Exploration and Development Licenses (PEDLs) issued by DECC

By getting this license, the company is allowed to pursue a range of exploration activities, and DECC issues these licenses.



Differences of Laws of Both Countries the US and the UK Governing Shale Gas

There are various laws present in each state that governs the activities related to exploration of shale gas. The UK government has an adamant regulatory framework and legislations with regards to the exploration of shale gas as opposed to the US government which has comparatively lenient regulations. The US laws have also given a specific exemption to the exploration activities from various regulatory laws. On the other hand, in the UK there are a number of laws that regulate, govern and thus act as a legal hindrance in the path of exploration of shale gas.

It can be noted that in the US, as per **The Energy Policy Act of 2005**, the exploration activities are **exempted** from regulations under following laws:

- **the Safe Drinking Water Act**
- **the Resource Conservation and Recovery Act**
- **the Emergency Planning and Community Right-To-Know Act**
- **the Clean Water Act; the Clean Air Act**
- **the Comprehensive Environmental Response, Compensation, and Liability Act**
- **The National Environmental Policy Act.**

The Laws in the UK that govern the exploration activities are as follows;

- **Petroleum Act 1998**
- **Town & Country Planning Act 1990 and EIA Rigs**
- **HSWA and Borehole Site Rigs (Well consents), Wells Design and Construction Rigs**
- **Environmental Protection Act 1990**



- **Environmental Permitting Regulations**
- **Wastes Management/contamination**
- **Water Resources Act: Anti-pollution works notices, Groundwater Regulations, and Water Resources Management Plans**
- **Drinking Water Standards**
- **REACH/radiological assessments**
- **Contractual and Civil Liability (Tort/Environmental Liability Directive)**

Problems with Fracking Activities

The "hydraulic fracturing" process involves smashing the rocks with millions of gallons of water along with sand and then asserting the chemicals for bringing the gas to the surface. This process has certain risks which are to be considered while undertaking any fracking activity. Some of these risks are given below;

- Contamination of groundwater
- Fracking-induced earthquakes
- Methane pollution and its impact on climate change
- Infrastructure degradation
- Exposure to toxic chemicals
- Blowouts due to gas explosion
- Workplace safety
- Air pollution impacts



- Waste disposal
- Large volume water use in water-deficient regions

Winning the Confidence of Residents Close to the Barnett Shale Basin

It has been advised to the Trump Valley Plc. That although it has got the necessary legal permission from the government of USA to explore shale gas in Texas, still it must convince the residents who are staying close to the Barnett Shale Basin as they are aware of the fracking and its consequences on the environment. In order to gain their confidence, the company needs to tell them about various benefits of Shale Gas Development (Thomas, 2017).

The Benefits of Shale Gas Development

There are various benefits that are available to the residents who are staying near the place of shale gas development/exploration. As per studies, due to the various benefits of shale gas development, the annual production of shale gas in the US has grown from about 1 trillion cubic feet as reported in year 2006, to approximately 9.7 Tcf as reported in the year 2012 which is more than 40% of total production of natural gas in the US.

There can be some internal/direct benefits whereas some are external/ indirect benefits.



Direct Market Impacts

Some of the Direct Market Impacts are as follows:

Increases in Consumer Surplus from Lower Prices

The development of natural gas production has always provided benefits to the customers. Moreover, due to the increase in supply and fall in the equilibrium price of gas, this advantage has even increased. It has been seen that due to increase in the provision of the gas, the home heating cost goes down especially during winters. Moreover, due to this lowering of cost, the natural gas is gaining more and more importance as a fuel for electricity generation as due to an increased supply of this gas in the electricity markets, there has been a significant fall in the prices of gas-fired electricity producers and thereby a reduce in the prices of electricity for consumers.

Besides use in home heating and generation of electricity, this gas can also be used as an input in various other production processes. It has been seen that the natural gas production also helps in the production of fertilizers as this gas is used as a prime feedstock in this process. This increased production of fertilizers would again help in lowering the price of fertilizers which will further provide benefit in terms of agricultural production and again lower prices of agricultural produce (Jaspal, 2014).

Also, it has been recommended in order to save the environment that people must use liquefied natural gas instead of diesel while fueling railway locomotives.



Benefits to Producers

Besides providing various benefits to consumers, fracking of shale gas has also provided certain benefits to producers. These gains to the producers can be measured through the value of reserves. The economics of non-renewable resources are seen through the value of reserves that holds the product of reserves and the market price. It was observed that between 2007 and 2012 there was an increase in the US natural gas reserves of about 30% that was from 248 Tcf to 323 Tcf. Moreover, by taking a base price of \$6.39 per Mcf, the value of reserves had shown an increase by about \$475 trillion. Another way to measure the benefits to producers is through measuring the producer surplus.

Local and Regional Economic Effects

It has been observed worldwide that with the expansion of recoverable reserves that is done through fracking provides great opportunities to the residents in the form of increased employment. It was also observed in North Dakota that by applying fracking techniques for the Bakken oil play, there was a significant increase in the employment opportunities for the nearby residents. It was recorded that within a period from 2005 to 2014 due to increase in oil production, there was a steady increase in the employment in North Dakota. Although this example relates to the oil fracking and not the shale gas fracking, it has been observed that by and large, they both have the same potential of increasing the employment opportunities.

Also the company Trump Valley Plc. Has already announced that it has expected to generate over 10,000 jobs between the US and the UK with the application of its shale gas fracking techniques (Sovacool, 2014).



Besides the generation of employment for the local and regional residents, the fracking of shale gas and its development has also provided benefits in terms of royalty payments to landowners which means to the owners of the land who own the subsurface mineral rights. Also, it provides for public revenues from taxation, permitting, impact fees and various other activities. In order to record the benefits arising from royalty payments, it has been observed that almost 70% of the production of this gas is done on private lands.

Positive Externalities

Besides the direct benefits, the shale gas resources of USA can provide various positive externalities as well. The main source of these positive externalities is the lower price of natural gas (as compared to other fuels) due to an increased supply that can provide for a shift in using coal to gas in order to generate electricity and also from natural oil to natural gas especially in transportation sectors.

It has been observed that gas is quite cleaner in comparison to coal or oil when it comes on combustion thus in that sense it produces low carbon emission for every unit of energy that is produced. Also, it generates lower emission of local air pollutants, for example, fine particulate matter, and mercury which have been considered as significant in impacting the health of humans negatively. Also, the supply of US natural gas can help in reducing "national security externalities" which are concerned with oil and gas imports. Apart from these benefits, certain other benefits are provided as follows;



Climate Change Benefits from Reductions in CO2 Emissions

The increase in shale gas provides potential climate changes, but this generally depends on following factors:

1. The extent to which the consumers replace using natural gas as compared to carbon-intensive fuels for example- coal.
2. The effect of net lifecycle GHG on replacing gas as against other fuels that should include methane emissions in the natural gas supply chain.
3. The increase in demand for energy that has resulted from lowering of the prices of gas.
4. What people assume about baseline federal as well as state climate policies.

From the above points, it can be seen that point 1 will provide benefits in terms of clear climate.

Whereas, 2 and 3 will try to cancel out those benefits.

Local Air Quality Benefits

Besides the benefit of reduction in GHG emissions in the climate by replacing coal with natural gas especially in the electricity sector, there are certainly other local benefits provided to the individuals who live near coal-fired power plants.

A coal-fired power plant emits much more local and regional pollutants like mercury, sulfur dioxide, etc. as compared to the natural-gas-fired power plant. Thus, it can be said that by using



natural gas-fired power plants one can control the health hazards as produced by a coal-fired power plant (Jenner, 2013).

Decreased Vulnerability to Supply Disruptions

At the beginning of the last decade there had been a Rise in the prices of natural gas which has given the common presumption that if the US wants to meet future demand, then it would need a new pipeline which can increase the supplies from Alaska, and also that it would be relying heavily on the imports from Canada and also for imports of liquid natural gas (LNG) from potentially less friendly trading partners for example- Russia.

Thus, this again supports the fact the US government and people should support the development of shale gas in their local regions.

Convince both DBEIS the Public and the British Government to Approve its Intentions of Exploring Shale Gas in the UK.

The UK government itself believes that the shale gas has high potentials of providing the country with various benefits such as great energy security, the growth of the country and increased job opportunities. Fracking or hydraulic fracturing is generally a technique that is used for the extraction or exploration of gas from the shell rock.

It has been observed that the total volume of gas in the Bowland-Hodder shale in Northern England is around 1300 trillion cubic feet as per the survey was done by the British Geological Survey (BGS).



The company Trump Valley Plc. can here convene the government by taking about the benefits that the country would get with the development of shale gas as the company is projecting that the fields will be containing around 800 to 1800 trillion cubic feet of shale gas which is even more than 1300 trillion cubic feet as estimated at present (Hammond, 2017).

The government of UK considerably takes into account the safety of public and protection of the environment. The government of UK following this opinion has made the regulation of exploration very robust.

A review of the scientific and engineering evidence on shale gas has been done by The Royal Academy of Engineering and Royal Society in which they have argued that the risks that arise to health, safety, and environment on account of hydraulic fracturing or fracking of shale gas in the UK can be minimized effectively if all the activities related to the exploration process are done while complying with regulations and are implemented and enforced to the extent of those regulations.

Benefits of Shale Gas v. Harm to Health of Public

The government of UK generally believes that the increased exploration and development of shale gas can result in harming the health of general public residing near the area of exploration. However, it has been argued by many scientists that overall effect of shale gas production in the UK, in terms of national emission, if done with right safeguards, can be reduced significantly. Also, it has been observed that if we compare the emissions caused by production and transport of shale gas in the UK with that of imported liquefied natural gas (LNG) and coal. Then it comes out be really less.



The UK government has a very strong regulatory framework and legislations with regards to the exploration of shale gas as opposed to the US government which has comparatively lenient regulations. It is believed that energy is needed in every aspect of our lives. It is needed for heating and lighting at our houses, for transportation purposes, and in various other industry. It has been observed that out of the total energy in the UK, around one-third of the energy is produced from natural gas and another third form of oil. Around, 13 percent from coal and around 7% from nuclear and around 10% from renewables which mostly consists of biomass and wind. Two-fifths of the natural gas are supposed to be coming from the North Sea and the Irish Sea. Moreover, the rest of the energy is being imported from Belgium, Netherlands, and Norway through pipelines and also some of the energy is shipped from Qatar, Nigeria, Algeria, and Trinidad & Tobago in the form of LNG (liquefied natural gas).

It has been observed that around two-fifths of the gas are utilized for the purposes like household heating and cooking. Many people use gas to heat their homes and to lighten their homes. Also, around one-third of the electricity in the UK is being generated by using the natural gas. The rest of the gas is being used by the industry for carrying out their activities such as for power and heating, to be used as a raw material for products which may include fertilizers, antifreeze, pharmaceuticals, plastics, fabrics, and other chemicals like ammonia as well as methane. Gas is also utilized as a source of heat while making glass, cement, steel, bricks, tile, ceramics, paper, food products and many other products (Hammond, 2015).

Thus it can be said that production of shale gas cannot be hazardous to the health of the general public and environment t if it is properly monitored.



The Process of Obtaining Consent to Drill a Well

It has been observed that the process of obtaining the consent to drill a well is almost the same in both cases that are for conventional gas or unconventional gas. In order to obtain the consent to drill for exploration of shale gas, the company needs to follow various steps as given below;

- Firstly, the operator needs to bid for the exclusive rights in an area during the rounds for the competitive license. These are generally known as Petroleum Exploration and Development Licences' (PEDLs).
- The authority to issue PEDLs is with The Oil and Gas Authority (OGA) which was earlier with the Department of Energy and Climate Change (DECC). It is the responsibility of The Oil and Gas Authority (OGA) to work closely with the other regulatory authorities in order to assure that any activity that involves the exploration and development of oil and gas resources is safe to the environment.
- Also, it is required by the operator to get the permission of the landowner and planning permission where an assessment of the environmental impacts associated with such exploration activities is done.
- The operator also needs the environmental permissions that are being taken from the relevant environment regulator like the Environment Agency, Scottish Environment Protection Agency, or Natural Resources Wales. At present all the planned shale developments are situated in England.
- The environment agency makes sure that any activity related to exploration of shale gas is carried out in such a way that it protects people and the environment.



The Environment Agency's Environmental Permitting Regulations

The Environment Agency is a statutory consultee during the planning process of exploration of shale gas and also provides for local mineral planning authorities with the advice in terms of the possible risks that can be posed to the environment by these activities related to exploration of shale gas through fracking and drilling (Jones, 2014).

The company in order to get the permit for shale gas development and exploration through fracking needs to comply with The Environment Agency's environmental permitting regulations which generally covers the following;

- Protection of water resources that includes protection of ground water also,
- The assessment and approving of the usage of chemicals which are generally used in the activities of exploration of shale gas,
- Proper treatment as well as proper disposal of mining waste that has been produced in the course of fracking activities in the process of shale gas exploration which involves drilling and hydraulic fracturing processes.
- Accurate treatment as well as management of any natural occurring radioactive material (NORM).
- Disposing of the waste gasses through flaring.



Additional Requirements

Apart from complying all the above requirements, the operator also needs to comply with certain additional requirements which are as follows:

- The operator is required to notify the Health and Safety Executive (HSE) about the design of the well and also about the operational plans at least 21 days before starting with the drilling activities. The HSE then thoroughly inspects the layout of the well and its construction and makes sure that the design has incorporated all the measures required to manage the risks throughout its life cycle.
- The HSE, as well as Environment Agency, meets all the new operators who are going to conduct the shale gas exploration activities for the first time and they advise them about their legal responsibilities that they require to comply with the relevant legislation. Both these agencies then conduct a joint inspection at the site of all the major operations involved in the exploration process.
- The operator then needs to have the final permission from the OGA.
- The operator also needs to get a prior planning permission before starting its activities related to shale gas exploration.
- It is the planning authority which finally decides if any activity is to be accepted with regards to a particular location or not. For this, it takes into consideration the interest of local communities' and other interested people. Where people are given an opportunity to give their opinion about any positive or negative impacts that can be there with respect to the proposed exploration of shale gas (Small, 2014).



Regulatory Roadmap Given by the DBEIS

The Department of Business, Energy, and Industrial Strategy has laid down a regulatory roadmap which gives detailed information about the process that the operators must comply with in order to have permission for shale gas exploration in the UK.

A very simplified procedure has been provided by The Infrastructure Act 2015 for obtaining the right to use the underground land 300 meters and below-involving activities relating to exploration of oil and gas and deep geothermal energy under its section 43 and 48.

Also it has been provided by the Section 49 of the Act that the Secretary of State for Department of Business, Energy and Industrial Strategy is required to seek regularly, and publish, the advice that has been given by the Committee with regards to Climate Change as an impact of emissions created by the onshore oil and gas sector and also the ability of the UK to meet the carbon limits set by the Climate Change Act.

A wide range of safeguards has also been introduced via Section 50 which includes requirements such as requiring good independent inspections, monitoring of groundwater, restoration conditions, and banning hydraulic fracturing within protected areas.



New Employment Creation

It has been observed from past experiences that undertaking the activities of exploration of shale gas and its production can result in a significant investment and economic benefit both at the local and national levels.

It has been observed that in the United States there has been an approximate creation of 600,000 new jobs by the undertaking the activities related to exploration and development of shale gas and which is expected to show a growth up to 870,000 by 2035.

Apart from this creation of direct job locally shale gas exploration activities can also create indirect employment for a wide range of suppliers and contractors.

As per the estimations were done by the Poyry Management Consulting and Cambridge Econometrics, it has been expected that the operations related to exploration of shale gas can increase the creation of new jobs of around 400,000 to 800,000 by the end of 2035, and around 600,000 to 1.1 million by the end of 2050.

In our given case also, the company Trump Valley Plc. has already announced that it is expecting to generate over 10,000 jobs between the US and the UK with the application of its shale gas fracking techniques.



Conclusion

Thus, it can be concluded that while the company has already got the permission from the US government to start with the shale gas exploration activities, still it needs to convince the people who are residing near the surface area that has been chosen by the company for carrying out its exploration operations. Also, the company in order to carry out its operations in the UK has to satisfy a huge number of regulatory norms in order to get the permission for carrying out activities related to shale gas exploration. Even after convincing the govt. Moreover, the public and getting the necessary permission to carry on exploration activities, it is still the responsibility of the management of the company to regularly monitor its operations where they must characterize the baseline of the environment before carrying out any hydraulic fracturing or fracking activities. After characterizing the baseline of the environment, the data of the shale gas projects should be checked against the data of these baselines. This provides for any significant changes that require further scrutiny. Also, the management needs to ensure that it is undertaking all its fracking activities which are in line with the CSR norms of each country.



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