

Major Challenges in Ghana's Oil and Gas Discovery: Is Ghana Ready?

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ABSTRACT

The discovery of oil and gas in commercial quantities in Ghana has given the nation a hope that a great deal of the prevailing depressive economic hardships would be greatly mitigated. This can only materialise when the wealth from the natural resources such as oil and gas is well managed in promoting a well sustained economic development. Unfortunately, every natural resource discovery comes with its own challenges. This paper seeks to identify the major challenges of Ghana's oil and gas discovery and the structures to deal with these challenges. It is concluded that the country has most of the regulations and institutions already in place and that it should ensure their functionalities.

Keywords: *Discovery, drilling, gas, oil, pollution*

1. INTRODUCTION

In June 2007, Ghana officially announced oil and gas discovery in commercial quantities in the western part of the country. Since the discovery of the oil and gas, there have been huge expectations as to how Ghana is going to be transformed as a result of the discovery of the oil and gas in commercial quantities. If managed well, the revenue generated from the natural resources, particularly oil and gas, could bring huge foreign earnings into a country. The wealth from natural resource is a strong base for income creation and sustained economy.

Conceptually, the abundance of natural resources is a double-edged sword. While oil and gas discovery, for example, presents considerable opportunities for low income countries (like Ghana) to deepen domestic revenues and grow, resource abundance carries important challenges. This paper seeks to identify these important challenges and the readiness of the Government of Ghana to deal with the challenges.

2. MAJOR CHALLENGES OF OIL AND GAS DISCOVERY

It is an undeniable fact that exploration and exploitation of oil and gas resources has economic implications for a country but it also comes with major challenges. This section presents some major challenges of Ghana's oil and gas discovery.

2.1 Environmental Challenges

The exploration and production industry in any country is accompanied by many environmental challenges. Major activities in upstream operations which result in environmental challenges include seismic acquisition, drilling, development, production and transportation pose great challenges to the environment.

2.1.1 Seismic Acquisition

According to Marful-Sau (2009), seismic acquisition leads to acoustic emission and accidental spills of chemicals that pollute the sea. Research conducted in the Norwegian seas has also proven that

seismic shooting could cause fish to travel tens of kilometres, and some may not return unless after a few weeks. In onshore data acquisition, vast areas of vegetation need to be cleared to improve accessibility to Vibroesis and other seismic acquisition equipment. The destruction to vegetation is made more pronounced in mangroves and forests. This activity affects the aquatic life.

2.1.2 Drilling

During drilling, a large volume of fluids are circulated through the well and into open, partially enclosed or completely enclosed systems at elevated temperatures (Broni-Bediako and Amarin, 2010). When these drilling fluids are agitated during circulating process there is significant potential of the drilling fluid being discharged to the environment. Drilling discharge affects marine environment, thereby affecting fishing activities which is the major occupation among the coastal communities at Cape Three Points (Anon., 2010a). For example, in December 2009, oil giant Kosmos Energy (Ghana) spilled about 600 barrels of low toxicity oil-based mud in its exploratory operations in the Jubilee fields in the Western Region of Ghana.

2.1.3 Development and Production

Particulates which are generated from other burning sources such as well testing contribute enormously to atmospheric pollution. Apart from the emission of carbon dioxide and carbon monoxide, nitrogen oxides and hydrogen sulphide gases are introduced into the atmosphere in quantities which depend on the nitrogen and sulphur content in the oil.

In production, the major waste produced is water containing inorganic salts, heavy metals, solids, production chemicals, hydrocarbons and occasionally Naturally Occurring Radioactive Material (NORM). These have minimal effect on the environment. Nonetheless the release of the waste water into freshwater bodies requires special care (Sam-Okyere, 2010).

2.1.4 Transportation and Storage

Oil transportation has been a major source of pollution through oil spills and leakages. Oil spills occur as a result of mechanical failure processes that are involved in oil transportation and storage. A typical example occurred in January 1, 2010, when Tullow Oil spilled some 37 liters of oil as a result of breakage of their link pipes in the Jubilee Field of Ghana (Anon., 2010b).

2.2 Illegal Oil Bunkering Challenge

Illegal oil bunkering is the art of stealing oil, i.e., the dangerous practice of siphoning and transporting stolen fuel. The high level of illegal oil bunkering result when there is either high unemployment or ready market for the stolen oil.

2.2.1 Unemployment

The high expectations that oil companies will offer employment to many Ghanaians could result in people moving from the rural areas in Ghana to Takoradi in search of jobs in the oil companies. These expectations, if not met, could result in the youth engaging in illegal oil bunkering and other social vices for their livelihood. Political parties could take advantage of the frustrations of the people (especially the youth) to advance their own agenda.

2.2.2 International Market for Stolen Oil

Over the past two decades, Ghana has been experiencing many challenges as a result of the smuggling of its natural resources across its borders. Some of these resources include cocoa, timber, gold and refined crude oil. This has made the government to spend huge sums of money in combating this illegal practice. The current location of Ghana's oil find even poses a challenge in terms of security because of its closeness to the border of La Cote D'Ivoire.

2.3 National Challenge of the Use of the Oil's Revenue

A lot of views have been expressed by both Ghanaians and at international level as to how best Ghana can utilise the revenue that will accrue from the oil and gas to ensure net benefit and to avoid the so called *resource curse* as seen in countries like Chad and Nigeria (Broni-Bediako and Addei, 2010). A school of thought posits that Ghana's oil and gas revenue would be used to build industries such as petrochemical and fertilizer industries to enhance the agriculture sector. Others are also of the view that the oil revenue should be put into a consolidated fund. These are some of the challenges that the Government of Ghana will have to address.

Some other challenges include:

- i. Ensuring proper accountability and transparency for the oil revenues else it, could result in the so called resource curse.
- ii. Ensuring equal distribution of the oil and gas revenue. The question is, will the major part of the revenue be used to develop Accra and other areas and neglect communities in the area where the oil is produced, as in Nigeria where people believe that the major part of the money is used to develop the Abuja while the neighbouring communities remain undeveloped.
- iii. Though Ghana has advanced greatly in her democratic path, the challenge of abandoning democracy and resorting to military should not be overlooked. Chad had one of the best policies on how to use its oil revenue but later resorted in using its revenue in purchasing arms (Gary, 2010).
- iv. The challenge of the gradual decline of citizens' duties and obligations such as payment of graduated tax. Citizens will be expecting government to use the oil and gas revenue to finance public services.
- v. Meeting of the huge expectations of the chiefs of the host communities is another big challenge. Reports by Addei *et al.* (2010) reveal the expectations of the people in the host communities on the oil and gas industry.

There is currently a Petroleum Revenue Management Framework Bill in Parliament. The bill is to address the challenges on how to ensure the use and management of the petroleum revenues in a transparent and accountable manner. The bill will also deal with how to apportion the oil revenue into what to spend now and what to save.

3. IS GHANA READY?

The exploration and production industry in Ghana has for sometime now experienced some environmental challenges as a result of their operations. In December 2009, Oil giant Kosmos Energy (Ghana) spilled about 600 barrels of low toxicity oil-based mud in its exploratory operations in the Jubilee fields in the Western Region of Ghana.

Tullow Oil also spilled some 37 litres of oil on January 1, 2010 as a result of breakage of their link pipes. In March 2010, some quantity of oil was again spilled into the sea by Kosmos. These and many challenges would be encountered as Ghana starts producing oil. This section seeks to find out if Ghana is really ready and capable of managing the challenges in the exploration and production industry.

3.1 Ghana National Petroleum Corporation and Environmental Protection Agency

The Environmental Protection Agency (EPA) is the primary institution established under the Environmental Protection Agency Act to ensure environmental protection in Ghana. In the case of the petroleum industry, the Ghana National Petroleum Corporation (GNPC) is also empowered to ensure sound environmental practices both offshore and onshore of Ghana. The mandate of the GNPC has international dimensions as it has to ensure that petroleum operations in Ghana do conform to international practices in all fields and also ensure that petroleum operations are done with outmost caution/practice to minimise any adverse effects on the environment.

PNDC Law 64 which established GNPC (Anon., 2010c) and made it responsible for managing the petroleum resources in Ghana and the Petroleum Exploration and Production Law, PNDC Law 84, supplemented by the Petroleum Income Tax Law, PNDC Law 188 of 1987 are the laws that regulate all issues related to upstream petroleum activities in Ghana. EPA and GNPC are the two major institutions empowered to manage, control and monitor compliance of environmental regulations in the petroleum industry (Anon., 2010d; Anon., 2010e).

3.1.1 Ghana National Petroleum Corporation

Ghana National Petroleum Corporation (GNPC), Ministry of Energy and the Environmental Protection Agency are to approve of the development of any block of oil and gas by an International Oil Company (IOC) only when the IOC has explicitly enumerated how efficient and effective it intends to develop an oil field with minimal negative impact on the environment. To ensure that a sound serene environment is maintained throughout the operations of the oil and gas companies, some questions need to be addressed;

- i. What are the current technologies being applied in the oil and gas industry.
- ii. In which environment are those technologies applicable?
- iii. How standardised are the equipment that are to be used in the oil fields?
- iv. What are the contingency measures put in place in case the primary measures fail?
- v. What will be the time lapse between the replacement in question 4?
- vi. Is the time lapse acceptable?

The Petroleum Exploration and Production Law establishes the contractual relationship between the State, GNPC and the prospective investor in the upstream operations. It defines the basic terms and conditions of any Petroleum Agreement, and spells out the rights and obligations of each party with appropriate sanctions. To ensure the safest operations in the oil and gas industry, the Law;

- i. Empowers GNPC to attach its officers to operations during all phases of operations.
- ii. It also provides for GNPC to arrange for Customs officers on the production facilities and production platforms to monitor metering and production operations to verify the quantities of oil and gas produced and lifted.
- iii. Before any oil is lifted and sold from the facilities, the Customs officers will have to certify the quantity and quality of crude.
- iv. GNPC personnel on board a production platform or floating production storage offshore (FPSO) and other facilities where oil and gas are produced, and metered are required to submit daily, weekly, monthly, quarterly and annual production reports.
- v. GNPC must arrange with the Navy for regular patrols in areas where production is taking place to protect installations, facilities and the products.
- vi. GNPC must require that comprehensive Health, Safety and Environmental (HSE) Manuals, detailing out how the company intends to handle the health, safety and environmental issues, policies and procedures, are submitted for review and approval before any operations are commenced.
- vii. All emergency plans for handling accidents must be discussed thoroughly between officials of GNPC, EPA and the investors before the commencement of operations.

3.1.2 Environmental Protection Agency

The Environmental Protection Agency (EPA) Act 490 of 1994 empowers EPA, Ghana, to perform several functions relating to the protection of the environment. Some of these functions include; to prescribe standards and guidelines relating to the pollution of air, water, land and any other forms of environmental pollution including the discharge of waste and the control of toxic substances; to ensure compliance with the laid down environmental impact assessment procedures in the planning and execution of development projects, including compliance in respect of existing projects and many others (Anon., 2010f). The Environmental Protection Agency (EPA) has therefore put in place guidelines for environmental assessment and management of offshore oil and gas development (Anon., 2010g).

3.2 Security

The Western Region is fortunate to have the presence of the Ghana Air Force, Ghana Navy and Second Infantry Battalion (2BN) army to provide strict security against any illegal oil bunkering operations. The security agencies if well resourced are capable of curbing any illegal activities and arresting high-profile perpetrators who might find themselves in illegal oil bunkering.

3.3 Ghana Maritime Authority

The Ghana Maritime Authority (GMA) which is the statutory body established by Act 630 of 2002 is empowered to monitor, regulate and coordinate the activities in the maritime industry, including the prevention of marine source pollution and the protection of the marine environment as provided in section 2(1) of its establishment Act. The GMA is under the umbrella body of the International Maritime Organization (IMO) and collaborates with such conventions as the Maritime Safety Convention, Maritime Security, Prevention of Marine Pollution Conventions and many others (Anon., 2002).

4. CONCLUSION

It is not possible to entirely avoid the natural consequences of the oil and gas impact on the environment as a result of production. However, it is important that the country does not lose sight of the effect of the oil and gas production on the environment by concentrating largely on the revenues that it would gain from the production of the crude. Even though the country in the past implemented weak, derisory and unenforceable mining laws in the mining industry, it cannot afford to repeat those same mistakes in the oil and gas industry. The Petroleum Revenue Management Framework Bill which comes into force very soon will help to address the challenges on how to ensure the use and management of the petroleum revenues in a transparent and accountable manner to the benefit of all Ghanaians. The established institutions, EPA, GNPC and GMA are well empowered and can monitor, manage and effectively control any environmental challenges in the production process to effectively mitigate any negative impact of oil and gas on the environment.

These institutions should expediently sanction any offenders of the law without fear or favour in ensuring safe environmental and health conditions of the people. If all these institutions and instruments are implemented and enforced, then Ghana is ready to be an oil producing country.

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