

Towards an Accident Free Energy Regime in Ghana

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Abstract

This paper examines the legislative instruments governing the Ghanaian oil and gas industry with the view to identifying weaknesses that may compromise the health and safety standards and quality of life of the people. It reviews literature on the global and Ghana's energy regimes within the framework of its economic benefits and the challenges posed to the environment, people, flora and fauna as a basis for analysing the current legislative and regulatory environment and the proposed future legislations. The study observed that developed economies such as the United States of America have not totally escaped the challenges of oil and gas exploitation in spite of its well established oil and gas legislative and regulatory environment. Against this backdrop, the paper reveals that Ghana's current legislative and regulatory environment has little provision for issues of health and safety and the institutions are ill-resourced to prevent pollution. It thus made recommendations to enhance future legislations and demonstrates the importance of good legislative and regulatory environment in harnessing the benefits of oil and gas exploitation and reducing or eliminating its ills.

Keywords: occupational health and safety, Ghana, oil and energy

1. Introduction

The overdependence on the energy and mining sectors in the global economy has increased the world's attention to emerging oil economies like Ghana, Angola and Uganda. It is estimated that more than 90% of the world's mineral and oil deposits lay in the developing regions of the world (Razavi, 1996). Accordingly, most international energy companies are gradually, shifting their attention from Europe and North America to the new emerging energy economies in developing countries (Razavi, 1996).

Businesses, especially mining companies, have been known to move from regions with strict and high regulations to regions with flexible business regulations (Raynard & Forstater, 2002). The UK based Thor Chemicals Company for instance, transferred its processes and machinery to South Africa after it was heavily criticised by the UK Health and Safety Executive for exposing workers to mercury (Anderson, 1999).

Developing countries like Ghana having great energy and mineral potentials and seeking investors, have become a safe destination for many trans-national companies, some in the class of Thor Chemicals. But how does this country then ensure the tapping of the potentials in these sectors without compromising on health and safety standards and the quality of life of citizens? There is no doubt that the current euphoria of Ghana's oil find have blinded the nation's quest to ensemble a comprehensive oil policy that would optimize both the benefits and cost of oil production and consumption. Failure in this regard would have clear practical consequences. As Karl, (1997) noted "poor nations that are dependent on oil sales for key revenues are often adversely affected by their ownership of the revenues". These effects sometimes transcend beyond the boundaries of a single arena; Political, Social, Economic, Environmental, and Health.

2. The Global Energy Regime Benefits and Challenges

Crude oil accounts for over 90% of global energy consumption. Oil is a high energy density abundant fuel, which is relatively easy to transport and store, and is extremely versatile in its end uses (Youngquist, 20007). Despite the promotion in recent years for the adoption of alternative energy sources, there is literally, no conceivable industrial or domestic production procedure that does not involve the use of crude oil product in one form or the other. Oil accounts for over 80% of total national exports for Libya, Iran, Kuwait, Saudi Arabia, and

Venezuela and provides significant jobs, profits, and taxes for most countries (ILO 2002; EIG 2003).

Oil and gas production just like aviation is one of the safest industry but dangerous in the event of a simple operating error. Even in the absence of industrial accidents, the industry poses serious environmental, health and safety concerns. The physical alteration of the environment from oil exploration, drilling, and extraction can be greater than from a large oil spill (O'Rourke & Connolly, 2003). Oil and gas production is known to produce huge volumes of air, water, solid, and hazardous waste, including toxic substances such as benzene, heavy metals, hydrogen sulfide, acid gases, mercury, and dioxin (Texas Sustain Energy & Economic Development Coalition, 2001).

Huge proportions of these waste comes in the form of produced water. Produced water is water trapped in underground formations that is brought to the surface along with oil or gas. It is by far the largest and most environmentally costly by-product of oil production (U.S. Department of Energy, 2004). In other jurisdictions such as the USA, it is permissible to re-inject produced water back into wells specially designed as a method of disposing this harmful effluent.

Even with such an environmentally sound system of dealing with produced water, each year 58% of this waste in the USA is re-injected, 9% are sent to commercial facilities, and 8% are disposed of through evaporation pits. (US Environmental, Protection, Agency, 2000). What happens to the remaining 25% of this harmful effluent? A search on policy documents and compliance regulations provides no clue. Evidently, it is released into the environment in one form or the other. These harmful effluents pose risk of dangerous diseases as reported by Epstein and Selber (2002). Some of the dangers associated with exposures to effluents and other chemicals from the mining process include experiencing skin and eye irritation; headaches and mental disturbances; psychosis and peripheral neuropathies; chronic lung diseases and increased risk on cancer (Epstein & Selber, 2002).

It is important to measure in quantitative terms, levels of associated waste of oil and gas production. According to Templet (1993), petroleum refining produces 1048 pounds of pollution per job, as compared to 460 pounds of pollution per job for paper manufacturing, 222 pounds for plastics manufacturing, 61 pounds for tobacco production, and 28 pounds for food production. With Ghana's oil industry expected to generate over 200 direct jobs, invariably the expected level of pollution would be 209,600 pounds according to Templet's 1993 framework. But how adequate is the regulatory and legislative environment in dealing with this level of menace?

One of the best regulatory and legislative oil and gas environments is that of the USA. It operates through a network of closely knitted environmental, health and safety rules, emission disclosure laws, and adequately funded and resourced institutions. This notwithstanding, each year the oil and gas industry in the United States alone creates more solid and liquid waste than all other categories of municipal, agricultural, mining, and industrial wastes combined (O'Rourke & Connolly, 2003). Pollutants from oil spill alone led to the release of 12 million gallons of oil in the *Exxon-Valdez* spill. Nesmith and Haurwitz (2001) have estimated that 67 million gallons of crude oil, gasoline, and other petroleum products leaked from U.S. pipelines in the last decade. These pollutions are still eminent in the USA despite the presence of regulatory and legislative environment.

Moreover the Piper Alpha accident which occurred in the north sea of Aberdeen was one of the worst case scenarios of offshore platform accidents. In the view of Pate-Cornel (1993), this accident was due to accumulation of errors and questionable decisions which emerging oil industries and engineering systems must derive lessons from. The disaster caused the death of 165 men (out of 226) on board the platform itself, and two men on board a rescue vessel and cost billions of dollars in property damage.

The most recent of oil spill is the *Gulf of Mexico* BP Deepwater Horizon oil rig explosion which occurred in 2010. This disaster led to a spill of about 4.9 million barrels of crude oil into the ocean destroying marine life and posing serious health implications. The cost of the disaster is estimated at over \$80 billion and 18 lives were lost. These are a few of the cost of oil and gas production. Other studies have also found that oil refineries often underreport spills and leaks to industry regulators (O'Rourke & Connolly, 2003).

The argument put forward by this paper is that, if in the midst of all these regulations in some of the developed energy economies, health and safety issues are still unbridled, what becomes of the Ghanaian energy regime? Are the regulatory and legislative environments of Ghana adequate in dealing with the accompanying environmental concerns of the emerging oil industry with non or little regulatory and legislative frameworks?

3. The Ghanaian Energy Regime Benefits and Challenges

With over 1.8 billion barrels of oil reserves, Ghana stands as a strategic partner of the global oil community which is worth roughly two billion dollars a day (Doyle, 1994). It is estimated that, Ghana's oil industry would generate over 200 direct jobs and 80 indirect jobs; move over 5000 producers and marketers from the informal

sector to the formal sectors every year; move over 1000 inputs and other service providers from informal to formal sectors; support over 10 entities (of an average of 500 each i.e. 5000 employees), large scale investments in the sectors of agriculture, ICT, oil and gas; set over 20 resource support service providers and marketing service centers (of an average of 50 employees each i.e. over 1000 employee), in two years (MDPI, 2011).

Ghana's Jubilee field is currently producing 70,000 bpd from 4 wells and 2 wells scheduled to come on-stream later in the year. All 9 well when fully operational and producing at optimum would churn out 120,000 bpd at peak production (Brock, 2010). These statistics which are believed to have a resounding influence on Ghana's economy tend to skew the discussion of the impact of oil towards the economic benefits it would bring. The costs associated with the mining of oil are literally forgotten. But do oil production, transportation and consumption have a cost?

3.1 The Legislative and Regulatory Environment of Ghana's Energy Regime

Ghana's oil industry is controlled and regulated by four main set of legislative instruments;

- Ghana National Petroleum Corporation(GNPC) Act, 1983 (PNDCL. 64)
- The Petroleum Exploration and Production Act, 1984 (PNDCL. 84)
- Petroleum Revenue Management Act, 2010
- The Petroleum Commission Act, 2011

The GNPC Act, 1983 (PNDCL. 64), establishes the Ghana National Petroleum Corporation, its objects, functions and powers. The GNPC was established to play supervisory role in the petroleum related agreement entered into by the government of Ghana and to advise the government on such matters. The Petroleum Revenue Management Act, 2010 establishes the framework for the management of petroleum revenues and related matters. The Act is basically concerned with the efficient and effective management and utilization of the petroleum revenue. The Petroleum Commission Bill, which was passed into an Act on 31-05-2011, establishes a petroleum commission to oversee the regulation and management of petroleum products and provide for related matters. The bill which had 23 clauses establishes the Petroleum Commission as a body corporate with perpetual succession. The Commission has the mandate to promote planned, well executed, sustainable and cost efficient petroleum activities to achieve optimal levels of resources exploitation for the overall benefit and welfare of citizens.

Currently, the only provision that makes any direct reference to health and safety needs of the industry is section 32(a)-(d) of the Petroleum Exploration and Production Act 1984 (PNDCL. 84) This is reproduced below:

32. (1) The Secretary (the representative of the Republic of Ghana in negotiations for and entry into petroleum agreements) may, by legislative instrument, make regulations prescribing all matters that by this Law are required or permitted to be prescribed or are necessary or convenient to be prescribed for carrying out or giving full effect to this Law.

(2) Without prejudice to the generality of subsection (1) of this section, the Secretary may prescribe regulations for or with respect to -

- (a) Ensuring the safe construction, maintenance and operation of installations and facilities used in connection with petroleum operations;
- (b) The safety, health and welfare of persons employed in petroleum operations and generally for all necessary safety measures;
- (c) The prevention of pollution and the taking of remedial action in respect of any pollution which may occur in connection with petroleum operations;
- (d) The inspection of areas in which petroleum operations are being carried out and of any plant, machinery and equipment within those areas.

The Environmental Protection Agency (EPA) is the leading public body for protecting and improving the environment in Ghana. Its mandate includes ensuring that air, water and land are cleaner and safer. The EPA stands as a strategic partner in the oil industry to control levels of pollution of oil production. However, this feat would be far from being achievable if Ghana relies on an under funded and poorly resourced EPA to regulate an industry that is dominated by powerful oil lobbyists. The EPA specifically must take keen interest in pollution from oil and gas production and must adopt relevant corporate strategies to minimize the associated environmental impact of oil production in Ghana.

Moreover, this paper makes a proposition for the institution of an occupational health and safety commission whose mandate shall be to forestall health and safety impacts of all industries including the oil and gas industry.

3.2 Upcoming Regulations

There are however other bills which have been tabled before parliament awaiting parliamentary assent to be enacted into law. These bills include:

- Offshore petroleum (Health and Safety) Bill, 2011
- The Petroleum exploration and production Bill, 2010
- Offshore Petroleum (Maritime Pollution prevention and control) Regulations, 2011
- Ghana Maritime Offshore Installations (Safety) Regulation, 2011

What is evident from the above exposition is that, the existing laws do not provide concrete steps for dealing with eminent environmental, occupational, health and safety needs of the industry. The enacted laws appear more like blanket statements regarding the role of the Secretary in postulating health and safety regulations. Much as this paper does not seek to diminish the relevance of such provisions, it is imperative that, for the purpose of consolidating the benefits of Ghana's oil find, concrete schemes of regulations making specific statements of what must be done to ensure the environmental, health and safety needs of the industry are adequately catered for.

4. Conclusion

Ghana stands to gain a lot by drawing inspirations from oil legislations in other jurisdictions. Specifically future legislations should encompass;

- A clean Air Act, which shall set National Emission Standards for Hazardous Air Pollutants from oil & gas and other industries. A semblance of this Act exists in Canada, United States of America, and United Kingdom
- Clean water Act, which will control National Pollutant and Spill Prevention Countermeasure Requirements. Semblance of this act can be seen in the United States
- Community Right-to-Know Act, which will put stringent obligations on oil firms to self report environmental, occupational health and safety issues of their operations. The equivalence of this act in Ghana could be the Ghana Extractive Industry Integrity Transparency Initiative (GEITI)

Currently the regulatory bodies for oil exploration, production and distribution in Ghana cut across series of government corporations and authorities. These include the Ministry of Energy; Ghana National Petroleum Corporation (GNPC); Energy Commission; Ghana Maritime Authority; and Environmental Protection Agency (EPA). Of particular interest to health and safety issues is the critical role of the EPA. Furthermore, the pervasiveness of oil spills, environmental and health hazards associated with oil production demands that the industry is regulated at every stage.

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