



A Report on  
**Managing environment risk in offshore operations in the oil and  
gas industry.**

**By**

Asit Kumar Parida  
SAP ID:500064663

**Guided By**

Nitesh Kumar Patra  
Executive Engineer (Electrical)  
Oil and Natural Gas Corporation Limited  
Mumbai, India

**A DISSERTATION REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR**

MBA in Oil and Gas management

OF

**CENTRE FOR CONTINUING EDUCATION**

**UNIVERSITY OF PETROLEUM & ENERGY STUDIES, DEHRADUN**

*Asit Kumar Parida.*

Sign of Student

*Nitesh Kumar Patra*

Sign of Guide

## Acknowledgement

This is to acknowledge with thanks the help, guidance and support that I have received during the Dissertation.

I have no words to express a deep sense of gratitude to the management of CCE, UPES for giving me an opportunity to pursue my Dissertation, and in particular **Mr. Sushil Kumar Singh**, Program Coordinator for his able guidance and support.

I must also thank **Mr. Nitesh Kumar Patra**, Executive Engineer, ONGC Ltd. And **Mr. Sunil Kumar Soren**, Junior Engineer, IOCL for their valuable support.

I also place on record my appreciation of the support provided by **Mr. Anadi Charan Maharana**, Principal, JNV and other staff of JNV for their help regarding the Library and resources.

Signature: *Asit Kumar Parida.*

Name of the Student: Asit Kumar Parida

Residential Address: Ras Govind Pur, Mayurbhanj, odisha - 757016

Mobile: +91-9438397796

e-mail: 99asit@gmail.com

Date: 30-May-19

Place: Baripada, Odisha

## Declaration by the guide



Oil and Natural Gas Corporation Limited

2nd Floor,  
Vasudhara Bhavan

Bandra (E), Mumbai- 51  
Phone-022-26275028

Oil and Natural Gas Corporation Limited  
Bassein & Satellite Asset  
Office of Sub Surface Manager

Vasudhara Bhavan

Bandra (E), Mumbai- 51

Date: 29.05.2019

---

**Subject: Declaration by the Guide**

---

---

This is to certify that the Mr. ASIT KUMAR PARIDA, a student of **MBA in Oil & Gas Management**, SAP ID: 500064663 of UPES has successfully completed this dissertation report on "Managing environment risk in offshore operations in the oil and gas industry" under my supervision.

Further, I certify that the work is based on the investigation made, data collected and analysed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfilment for the award of degree of MBA.

---

Signature: *Nitesh Kumar Patra*

Name & Designation: Nitesh Kumar Patra, Executive Engineer(Electrical)

Address: 2nd Floor, Vasudhara Bhawan, Bandra(E), Mumbai-51

Telephone: 022-26275028

Mobile: 9969221700

e-mail: patra\_nitesh@ongc.co.in

Date: 29.05.2019

Place: Mumbai

---

# **Table of Contents**

1.Introduction.....	3
2.Review of Literature.....	4
3.Prolem Statement.....	4
4.Need for the Research.....	4
5.Objectives.....	5
6. research Methodology.....	5
7.Sources of Data.....	6
8.Sampling.....	6
9. Expected Outcome of the Study.....	7

## **1.Introduction**

### **1.1 Environmental Threats from Oil and Gas Operations**

Oil and gas industry operations occur in every corner of the globe, in a diverse range of habitats and ecosystems. These operations often place large pressures on the local environment and inhabitants, and as global population growth continues to rise, so too does the demand for useable energy and resources. In 2013, consumption and production increased for all fuel types, surpassing previously record high levels for all fuels except nuclear.<sup>1</sup> For fossil fuels, global consumption rose more rapidly than overall production, resulting in further production pressure for oil and gas companies. Meeting the rising global energy demand comes with high risks and costs to both society and the environment. Oil and gas companies are thus faced with the challenge of meeting the world's expanding energy demands while minimizing the negative externalities associated with these operations. While there are both international and national regulations regarding best practices, many of the risks these corporations face are site specific, requiring detailed background research and precautionary measures that cannot be solved using a generalized framework. To address these concerns, oil and gas companies must develop their risk management systems and operational practices to minimize harmful environmental impacts and incidents. By embedding environmental concerns into all aspects of daily operations, these companies can achieve socially beneficial outcomes, while avoiding potential disasters and more stringent legislation. Inserting environmental proactivity is crucial because unsustainable business practices pose serious threats to the environment at both local and global levels. Oil and <sup>2</sup> gas exploration often threatens to destroy habitats, cause biodiversity loss and produce harmful air emissions.<sup>2</sup> Incidents and oil spills can result in soil and groundwater contamination as well as marine and freshwater discharges. These accidents can occur in diverse locations with impacts varying in severity based on the stage of operation.

### **1.2 Environmental Risk Management Integration**

Firms must incorporate environmental concerns into daily operations because external sources have not proven to be effective in changing corporate environmental risk valuation procedures. Over the years, international frameworks, declarations, and <sup>3</sup> treaties have been developed to combat the challenges associated with protecting the environment. Unfortunately, these international agreements have not proven to be an effective method to compel large oil and gas companies to manage their environmental impact. This is primarily due to the fact that the frameworks and treaties are not accepted and subsequently adopted by all countries.

## **2.Review of Literature**

The primary goal of internalizing environmental risks is to reduce corporate environmental impacts by limiting the number and severity of incidents that occur from the exploration, production and refining of oil and gas. Minimizing the number of incidents and mitigating their environmental impacts if and when they do occur may help address environmental concerns such as pollution, industrial accidents and global climate change. There is a large capacity for oil and gas companies to internally improve their practices to prevent future stringent legislation as well as increase profitability by restricting the number of fines paid annually for environmental degradation. Integrating risk management practices into all aspects of business should be an industry-wide objective as improving environmental performance has proven to create a competitive advantage for oil and gas corporations. Energy companies should seek to align internal business values and environmental goals with external perceptions of the company, which can be accomplished by explicitly embedding environmental risks into daily processes.

## **3.Problem Statement**

Traditional approaches of addressing environmental business risks is comparable to the manner in which corporation must tackle financial risks. Before undertaking a project, the company should determine all possible risks associated with operations at the specific site and the probability of each adverse event occurring. Using a cost-benefit analysis, the company can then estimate the total social burden of an event occurring. Using American Petroleum Institute regulations and international guidelines, the firm should then determine the total amount of the environmental burden that it is responsible for. While this risk analysis method is fairly ridged, adopting company specific valuation measures and considerations will help improve the flexibility of this framework. The quality of information provided for the assessment does pose a challenge for corporations, as the impacts and probability of an event occurring are often uncertain. Oil and gas companies looking to tackle environmental challenges therefore may need to incorporate less traditional approaches to their risk management systems.

## **4. Need for the research**

Oil and gas exploration and production operation have potential for variety impacts on environment. These impacts depend upon the stage of the process, the size and the complexity of the project, the nature and sensitivity of the surrounding environment and the effectiveness of planning, pollution prevention, mitigation and control techniques.

The followings are the potential impacts, with proper care and attention may be avoided, minimised or mitigated.

- Human, socio-economic and cultural impacts
- Atmospheric Impacts
- Aquatic impacts
- Terrestrials impacts
- Ecosystem impacts
- Potential emergencies

## **5.Objectives**

A requirement of the Health Safety and Environmental Management System is that a company defines and documents its health, safety and environmental policies and strategic objectives and ensures that such policies are consistent, relevant and of equal importance with other company policies and objectives. The underlying tenet is commitment: commitment to define and implement corporate strategies aimed at the protection of health and safety of individuals and of the environment; commitment to respond to the concerns of the community as a whole and develop partnerships with stakeholders. The policies must be implemented and maintained, and be communicated to employees and the public. Under a Health Safety and Environmental Management System, a company should commit to meet, or exceed, all relevant regulatory and legislative requirements, and to apply responsible standards where laws and regulations do not exist. A Health Safety and Environmental Management System commits a company to the setting of HSE objectives and to continuous efforts to improve performance, including the reduction of risks and hazards to health, safety and the environment to levels which are as low as reasonably practicable.

## **6.Research Methodology**

In addition to traditional risk based approaches like cost-benefit analyses, there are various other strategies companies can utilize to embed environmental considerations into daily operations. Companies have the option of exhorting employees in complying with corporate risk management strategies. Through annual publications and company statements on the importance of considering environmental threats from operations, the company can bring these concerns to the front of the employees' minds and to a top priority for operational awareness. There are also several kinds of incentive based approaches available for oil and gas companies to use. One option is to include environmental performance in to the promotion process. Evaluating an employees' ability to adhere to and advance corporate

environmental initiatives may encourage individuals to pay more attention to these environmental objectives. If job retention and promotion is based on environmental performance, there is a higher likelihood that individuals will adhere to the environmental risk management framework. By placing a monetary value on environmental good works through bonus-based incentives, companies can emphasize the importance of considering environmental risks before initiating operations. Bonus based incentives may encourage employees to place a higher value on environmental performance. Unfortunately, a bonus-based incentive system is accompanied by a few severe pitfalls that make its implementation detrimental. By placing a monetary value on environmental accomplishments, employees have the option to decide whether to future the environmental goal or another goal of the company. The environment's value cannot be traded off against financial valuations; meaning energy companies must rely on one of the other two incentives-based approaches.

## **7.Sources of Data**

This Section describes the sources of data from regulatory framework that exists under international (regional and global) regimes, and examines some of the approaches that may be adopted under national regimes

- appropriate international and national laws, regulations and guidelines;
- coherent procedures for decisions on projects/activities;
- legislation with clearly defined responsibilities and appropriate liabilities;
- enforceable standards for operations;
- appropriate monitoring procedures and protocols;
- performance reporting;
- adequately funded and motivated enforcement authorities;
- existence of adequate consultation and appeal procedures; and
- appropriate sanctions and political will for their enforcement.

## **8. Sampling**

### *International and regional frameworks*

Global and regional treaties and conventions are, in principle, binding in the first instance on national governments, which are obliged to implement such arrangements through national legislation. The speed and timing of implementation at the national level is, however, highly variable. It is prudent, therefore, for the international exploration and production industry to ensure that the intent of such treaties is respected, regardless of whether or not at that time a particular country in which it is operating has enacted the relevant legislation. This ensures that eventual changes in legislation to meet international requirements can be fully respected.

### *National frameworks*

Environmental regulations may be found under a variety of national laws. In some cases these are included in clauses inserted into petroleum laws and planning laws; in others, specific legislation has been developed dealing with such matters as environmental



assessment, pollution, water and air quality, protection of waterways, environmental health and safety, protected areas, nuisance and noise.

## **9.Expected Outcome of the Study**

Oil and gas companies often face extreme pressures to provide the world with its global energy needs while maintaining an excellent environmental performance record. While international and national regulations provide a partial solution to addressing global environmental threats from oil and gas exploration, production and refining activities, the degree of success of this legislation has been limited. As environmental issues become a more integral concern of the global community, the increased pressure is put onto these energy companies to adjust practices in a way that minimizes threats to the environment.

Embedding environmental considerations into daily operations may continue to be an effective route to dealing with the environmental risks associated with oil and gas operations. Energy companies will constantly face the challenge of minimizing environmental impacts while maximizing shareholder value and therefore need to adopt a process that effectively and efficiently enables them to do both. Integrating environmental risk management processes into all aspects of oil and gas activities may be challenging for some corporations, but if these companies approach environmental risks in the same manner as other business risks and capital projects, then developing, implementing and enforcing a company specific management framework should not be a challenge. Although it is complicated to eliminate all risks affiliated with energy related activities, the addition of internal environmental risk management approaches with existing national and international regulations may prove to be an effective method for combating global environmental concerns.