

ENVIRONMENTAL IMPACT ASSESSMENT IN OIL & GAS PROJECTS

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*This dissertation is submitted in partial fulfillment of the degree of B.A.,
LL.B. (Hons.)*



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CERTIFICATE

This is to certify that the research work entitled “**Environmental Impact Assessment in Oil & Gas Projects**” is the work done by **Devesh Sharma** under my guidance and supervision for the partial fulfillment of the requirement of B.A., LL.B. (Hons.) degree at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

Dr. Ashish Verma

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DECLARATION

I declare that the dissertation entitled “**Environmental Impact Assessment in Oil & Gas Projects**” is the outcome of my own work conducted under the supervision of **Dr. Ashish Verma**, at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

I declare that the dissertation comprises only of my original work and due acknowledgement has been made in the text to all other material used.

Devesh Sharma

Date: 9th April, 2015

TABLE OF CONTENT

- 1. INTRODUCTION**
- 2. ENVIRONMENTAL IMPACT ASSESSMENT IN INDIA**
 - 2.1 HISTORY OF EIA IN INDIA**
 - 2.2 LEGISLATIONS REGARDING EIA IN INDIA**
 - 2.3 EIA NOTIFICATION, 1999**
 - 2.4 EIA AMENDMENT, 2003**
 - 2.5 EIA NOTIFICATION, 2006**
- 3. EIA IN OTHER NATIONS**
 - 3.1 USA**
 - 3.2 U.K.**
 - 3.3 RUSSIAN FEDERATION**
 - 3.4 CANADA**
 - 3.5 SAUDI ARABIA**
 - 3.6 CHINA**
- 4. INTERNATIONAL INSTRUMENTS**
 - 4.1 KEY INTERNATIONAL INSTRUMENTS**
 - 4.1.1 INTERNATIONAL CONVENTION ON THE
PREVENTION OF THE SEA BY OIL, 1954**
 - 4.1.2 LONDON CONVENTION, 1972**
 - 4.1.3 STOCKHOLM DECLARATION, 1972**
 - 4.1.4 MARPOL, 1973**
 - 4.1.5 INTERNATIONAL CONVENTION ON CIVIL
LIABILITY FOR OIL POLLUTION DAMAGE, 1969**

**4.1.6 UNITED NATIONS CONVENTION ON LAW OF SEA,
1982**

4.1.7 BASEL CONVENTION, 1989

4.1.8 ESPOO CONVENTION, 1991

4.2 REGIONAL INSTRUMENTS

4.2.1 OSLO CONVENTION, 1972

4.2.2 BARCELONA CONVENTION, 1976

4.2.3 KUWAIT CONVENTION, 1978

4.2.4 OSPAR CONVENTION, 1992

**5. IMPACTS OF OIL & GAS ACTIVITIES ON THE
ENVIRONMENT**

6. CASE STUDIES

6.1 TRIAL SMELTER CASE

6.2 NORD STREAM PIPELINE CASE

6.3 BP OIL SPILL

6.4 ONGC OIL LEAK IN NAGALAND

6.5 ONGC OIL LEAK IN TAMIL NADU

7. CONCLUSION

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INTRODUCTION

EIA is an exercise to be carried out before any project or major activity is undertaken to ensure that it will not in any way harm the environment on a short term or a long basis. Any development which is going to take place from this project as well as the need of this project, monetary costs as well as the benefits that are involved also hold a very important role. But now the countries all over the world are giving much importance as to how much this project shall damage the environment and a detailed assessment of such a project has also been made a condition compulsory in order to proceed with such a project.

For nearly a century now, petroleum production and consumption has shown both the positive as well as the negative sides of its development. The industry has contributed to a very great extent to world economic growth and has improved the standard of living worldwide. On the other hand, the negative aspects of petroleum development has shown as the great damage which it has done to the environment. Hydrocarbons have though now become the most essential resource, but the harm the environment has to go through, in order to discover it none of them have given a consideration to it.¹

The process of Environmental Impact Assessment was basically introduced in order to find out what are the positive impacts in the form of development and higher standard of living vis a vis the negative impacts that is the damage that such projects are causing to the environment. Various other factors are taken into account in the form of social, cultural and other asthetic conditions. Such are the factors/conditions that are taken into consideration, while deciding that a project is viable enough to be commenced with or not.

An EIA is basically a report that concentrates on what are the problems, conflicts if there are any and what amount of constraint shall such a project cause on the natural resource if it does any. Such a report is very necessary to understand as to what the viability of the project shall be. It also takes into consideration whether the concerned project shall harm

¹ Zhiguo Gao, Article on "Environmental Regulation in the Oil & Gas Industries" Kluwer Law International

the livelihood of the people surrounding there, their homeland and what all are the development activities that would take place with the project that would be under consideration.² The EIA report also helps in finding out as to what all are the potential impacts that such a project shall be having and if there are any adverse impacts how can such adverse impacts be removed or reduced.

The main objective of an EIA is that to identify or find out the probable impacts that such a project shall be having. This is basically done at the early stage of planning and development of the project so that if there are necessary changes that are needed to be done so that can be done accordingly. In order to achieve the concerned objective, the EIA report is provided to all the necessary persons that would take all the necessary decisions with regard to the concerned project, the persons that are investing in the concerned projects, the various regulatory authorities and to the concerned State Govt. or the Central Govt. Once the report is taken into consideration by the concerned authorities, the persons involved in the project, various engineers, the concerned organizations, State or Central Govt. etc. they would take all necessary steps that are given in the project so that such a project does not cause much adverse impact on the environment all the positive benefits of the concerned project can be achieved.

In the recent years, many projects that were of major importance could not get clear approval as the project was causing serious harm to the surrounding environment and the people living around the proposed project. Some of the projects were rejected as they were causing a great amount of resource depletion thus in turn were violating the principle of sustainable development. Others were rejected as the concerned locals or public were not supporting the project or heavy amount of costs were involved in them, or they were causing major resource depletion, thus in turn affecting the principle of sustainable development.³ Taking into consideration all these factors it is very necessary that when a major project is taken into consideration, the person financing the concerned project should very well be aware about the adverse impacts that such a major project. And if there are such adverse impacts in order to get such clearances they should have a

² Aruna Murthy, Article on "Environmental Impact Assessment in India and its Drawbacks", 2006.

³ Holder, J. (2004), Environmental Assessment: The Regulation of Decision Making, Oxford University Press, New York: 2 ed, Prentice Hall, Harlow, 2002

very well developed plan as to how such adverse impacts can be removed, so that the concerned project is not rejected.

Because of great pressure by the citizens of the USA, the US Govt. came up with the National Environment Policy Act (NEPA) in the year 1970. This act then further acted as the base for development of Environmental Impact Assessment in the USA and then further worldwide. Seeing the passing of such an Act by the US Govt. various other states were also motivated in order to do the same and thus various countries all over the world started making legislations regarding EIA in their respective countries.⁴

Multinational companies like Carlsberg- Natomas and Reading and Bates were provided with licenses for conducting exploration activities in the Bengal offshore, Cauvery offshore and Kutch offshore in the early seventies. However the efforts of these companies failed and none of the companies were able to discover oil & gas in India, in the early 1970's. This led to the exploration industry majorly relying on National Oil Companies that were Oil and Natural Gas Corporation Ltd. And Oil India Ltd. It is roughly estimated that about 25 Million Metric Tonnes (MMT) of crude oil is produced by ONGC and about 3 MMT of crude oil is produced by Oil India Ltd. Refinery.

Currently National Oil Companies ONGC and OIL are holding about 72% of the total Petroleum Exploration License (PEL) and Multinational and Private Companies are holding the remaining 28%. Similarly NOC's hold 74% of Mining Leases while remaining 26% are held by Multinational and Private Companies.

⁴ Aruna Murthy, Himansu Sekhar Patra, Report on "Environmental Impact Assessment Process in India and its Drawbacks", prepared by Environment Conservation Team, September 2005, Page 2

ENVIRONMENTAL IMPACT ASSESSMENT IN INDIA

HISTORY OF EIA IN INDIA

The concept of environmental protection is very ancient in India. Even in the rig veda, the concept of environmental protection is mentioned, and various punishments have also been prescribed to the persons causing damage to the environment. With such ancient teachings and age old practices we have very well aware became about the fact that it is necessary to stay in perfect harmony with the environment.⁵

Nevertheless change in the lifestyle, urbanization, industrialization and the infrastructure development are increasing at an alarming rate which has lead to cause a great amount of damage to the environment in the form of pollution, resource depletion, degradation and various other losses to the environment.⁶ The degradation in the environmental conditions is increasing at an alarming rate because of the major developmental projects that are being taken undertaken in India. Therefore there is an immediate need that the rules, laws and the policies that have been made with regard to environmental protection be improved.⁷

It is it necessary that the development which is going to undertake with the concerned project must also be environment friendly. In doing so, environmental consequences must be characterized early in the project cycle and accounted for in the project design.⁸ Such can only be provided if a proper EIA is conducted. The basic purpose of using an EIA is that it helps in founding out that what are the potential environmental problems that this project can have and how can this project be further re-planned so that the potential threat

⁵ http://www.academia.edu/3389498/EIA_practice_in_India_and_its_evaluation_using_SWOT_analysis accessed on 25th March, 2015 at 2230 hrs.

⁶ Land Use Planning for Optimum Utilization of Land Resources- Dept. of Land Resources, Govt. of India, Ministry of Rural Development- July, 2012

⁷ Ibid to Reference No. 5

⁸ To Study the Inception and Evolution of Environmental Impact Assessment in the World and in India and to Analyze and Comment upon the Environmental Clearance Process in the Country- Mr. Govind Singh

that this project has can be removed accordingly. The EIA process then further allows that the concerned necessary information shall be provided to: ⁹

- a) The project proponent;
- b) The regulatory agencies; and
- c) All stakeholders and interest groups.

so as to achieve the ultimate goal of ensuring sustainable development of a country's industrial and development growth by taking the people along. EIA takes into consideration both the development as well as the environmental concerns into consideration at the time of preparing the final report. While preparing the report it also takes into consideration the mitigation measures that are also necessary with regard to the project development. With EIA one is able to prevent the future liabilities if there occurs any and also alterations that are very expensive can also be avoided with the help of this.

The foundation of environmental impact assessment (EIA) in India was first laid down in 1976-77 when the Planning Commission had asked the Department of Science and Technology (DST) to examine river-valley projects from environmental angle. The concerned scope of the task was then further increased also to those projects in which approval of the concerned Public Investment Board was also required.¹⁰ But the concerned actions were only administrative actions and there was no legal backing in order to support them. In order to provide this legal backing the Govt. of India, then came with the Environment (Protection) Act on 23rd May, 1986.¹¹

In order to achieve the objectives of the Act, one thing that was necessary was to make EIA statutory or provide it with a legislative support. On 27th January, 1994 the MoEF made it compulsory that all the projects that were coming under Schedule 1 their

⁹ <http://envfor.nic.in/divisions/iass/eia/Chapter1.html> accessed on 25th March, 2015 at 2100 hrs

¹⁰ <http://www.cseindia.org/node/383> accessed on 25th March, 2015 at 2115 hrs

¹¹ Potential Benefits and Challenges in Applying Regional EIA: A Case Study of Special Investment Regions in India, Masoom Mallick, Aditya Singh

expansion or modernization shall require Environmental Clearance. Such clearance was made compulsory with the concerned EIA notification. Since then there have been about twelve amendments made in the EIA notification of 1994.¹²

The MoEF recently notified new EIA legislation in September 2006. The notification makes it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbors and airports) and industries including very small electroplating or foundry units to get environment clearance. However, unlike the EIA Notification of 1994, the new legislation has put the onus of clearing projects on the state government depending on the size/capacity of the project.¹³

LEGISLATIONS REGARDING EIA IN INDIA

Before dealing with any of the legislations we should first consider the essential requirement that was setup for the signatories of the country under the Earth Summit, 1992. Under Article 17 of the Earth Summit, “*Environmental Impact Assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment.*” These principles are also contained in Agenda 21, an action plan elaborating strategies and integrated programmes to halt and reverse the effects of environmental degradation and to promote sustainable development.

EIA NOTIFICATION, 1994

Under the S.O. 60(E): Here, the Central Govt. under notification provided under Sub. rule (3) of Rule 5 of the Environment Protection Rules, invited objections from the public within sixty days from the date of publication of the said notification, against the intention of the Central Govt. to impose restrictions and prohibitions on the expansion and modernization of any activity or new projects being undertaken in any part of India unless environmental clearance has been accorded by the Central Govt. or State Govt. in

¹² [http://envfor.nic.in/legis/eia/so-60\(e\).html](http://envfor.nic.in/legis/eia/so-60(e).html) accessed on 25th March, 2015 at 2230 hrs

¹³ To Study the Inception and Evolution of Environmental Impact Assessment in the World and in India and to

Analyze and Comment upon the Environmental Clearance Process in the Country- Mr. Govind Singh

accordance with the procedure specified in that notification was published as SO No. 80(E) dated 28th January, 1993.¹⁴

After, all objections have been considered by the Central Govt.

SO No. 80(E): in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby directs that on and from the date of publication of this notification in the Official Gazette, expansion or modernization of any activity (if pollution load is to exceed the existing one, or new project listed in Schedule I to this notification, shall not be undertaken in any part of India unless it has been accorded environmental clearance by the Central Government in accordance with the procedure hereinafter specified in this notification;¹⁵

REQUIREMENTS & PROCEDURE FOR SEEKING ENVIRONMENTAL CLEARANCE OF PROJECTS:¹⁶

Under the concerned notification under 1(A), the person who is undertaking a new project or is further modernising or expanding of any industry specified in **Schedule I** shall submit an application to the Secretary, Ministry of Environment and Forests, New Delhi

The concerned application would be made under the performa specified in **Schedule II** of the concerned notification as well also provide with the project report which shall also consist of an Environmental Impact Assessment Report, prepared in accordance with the guidelines issued by the Central Govt. in the Ministry of Environment and Forests from time to time. In case of submission of insufficient data, to the Ministry they shall be provided an opportunity to review the plans and further provide with the sufficient data. In case of non-submission of data for the second time, shall give the Ministry sufficient ground for rejection of the concerned application.

¹⁴ Ibid to Reference No. 12

¹⁵ Ibid to Reference No. 12

¹⁶ MINISTRY OF ENVIRONMENT AND FORESTS ENVIRONMENT IMPACT ASSESSMENT NOTIFICATION S.O.60(E), dated 27/01/1994

II In case of the following site specific projects:

- (a) mining;
- (b) pit-head thermal power stations;
- (c) hydro-power, major irrigation projects and/or their combination including flood control;
- (d) ports and harbours (excluding minor ports);
- (e) prospecting and exploration of major minerals in areas above 500 hectares;

The project authorities will intimate the location of the project site to the Central Government in the Ministry of Environment and Forests while initiating any investigation and surveys. The Central Government in the Ministry of Environment and Forests will convey a decision regarding suitability or otherwise of the proposed site within a maximum period of thirty days. The said site clearance shall be granted for a sanctioned capacity and shall be valid for a period of five years for commencing the construction, operation or mining.

The reports that are filed by the concerned applicant and the EIA report filed by the concerned applicant shall be duly considered by the IAA (Impact Assessment Agency) constituted by the MoEF itself and if required under **Schedule III** of the said notification may refer to a committee of experts. At that time the impact assessment agency has full authority of inspection, and can even enter into the premises of the concerned applicant.

The concerned assessment shall be completed within 90 days from receipt of the requisite documents and data from the project authorities and completion of public hearing and decisions conveyed within thirty days thereafter.

IIIA. No construction work, preliminary or otherwise, relating to the setting up of the project may be undertaken till the environmental and site clearance is obtained.

4. Concealing factual data or submission of false, misleading data/reports, decisions or recommendations would lead to the project being rejected. Approval, if granted earlier on

the basis of false data, would also be revoked. Misleading and wrong information will cover the following:

- False information
- False data
- Engineered reports
- Concealing of factual data
- False recommendations or decisions

SCHEDULE I: LIST OF PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE FROM THE CENTRAL GOVERNMENT

1. Nuclear Power and related projects such as Heavy Water Plants, nuclear fuel complex, Rare Earths.
2. River Valley projects including hydel power, major Irrigation and their combination including flood control.
3. Ports, Harbours, Airports (except minor ports and harbours).
4. Petroleum Refineries including crude and product pipelines.
5. Chemical Fertilizers (Nitrogenous and Phosphatic other than single superphosphate).
6. Pesticides (Technical).
7. Petrochemical complexes (Both Olefinic and Aromatic) and Petro-chemical intermediates such as DMT, Caprolactam, LAB etc. and production of basic plastics such as LLDPE, HDPE, PP, PVC.
8. Bulk drugs and pharmaceuticals.
9. Exploration for oil and gas and their production, transportation and storage.
10. Synthetic Rubber.

11. Asbestos and Asbestos products.
12. Hydrocyanic acid and its derivatives.
13. (a) Primary metallurgical industries (such as production of Iron and Steel, Aluminium, Copper, Zinc, Lead and Ferro Alloys).
(b) Electric arc furnaces (Mini Steel Plants).
14. Chlor alkali industry.
15. Integrated paint complex including manufacture of resins and basic raw materials required in the manufacture of paints.
16. Viscose Staple fibre and filament yarn.
17. Storage batteries integrated with manufacture of oxides of lead and lead antimony alloys.
18. All tourism projects between 200m- 500 metres of High Water Line and at locations with an elevation of more than 1000 metres with investment of more than Rs.5 crores.
19. Thermal Power Plants.
20. Mining projects (major minerals) with leases more than 5 hectares.
21. Highway Projects except projects relating to improvement work including widening and strengthening of roads with marginal land acquisition along the existing alignments provided it does not pass through ecologically sensitive areas such as National Parks, Sanctuaries, Tiger Reserves, Reserve Forests
22. Tarred Roads in the Himalayas and or Forest areas.
23. Distilleries.
24. Raw Skins and Hides
25. Pulp, paper and newsprint.
26. Dyes.

27. Cement.
28. Foundries (individual)
29. Electroplating
30. Meta amino phenol

SCHEDULE II: APPLICATION FORM

SCHEDULE III: COMPOSITION OF THE EXPERT COMMITTEES FOR ENVIRONMENTAL IMPACT ASSESSMENT

SCHEDULE IV: PROCEDURE FOR PUBLIC HEARING

EIA NOTIFICATION, 2003

This notification basically consists of certain amendments to the 1994 Notification:

S.O 319 (E): In paragraph 1, for item (ii), the following item shall be substituted, namely :-

- (ii) Mining processes and operations, except mining project (major minerals) with lease areas of more than five hectares covering –
 - (a) all new mining operations including renewals of mining leases, or
 - (b) existing mining leases in sanctuaries or national park and areas covered under Project Tiger, or
 - (c) mining is being done without permission of the competent authority.”

S.O 506 (E): in Schedule – I, for item No. 2 the following item shall be substituted namely:-

2 - River valley projects including Hydel Power Projects, Major Irrigation Projects and their combination including flood control project except projects relating to improvement work including widening and strengthening of existing canals with land acquisition upto a maximum of 20 meters, (on both sides put together) along the existing alignments provided such canals do not pass through ecologically sensitive areas such as national parks, sanctuaries, tiger reserves and reserve forests.

S.O. 801 (E): in paragraph 3- after sub-para (f), the following shall be inserted, namely:-

“(g) any construction project falling under entry 31 of Schedule-I including new townships, industrial townships, settlement colonies, commercial complexes, hotel complexes, hospitals and office complexes for 1,000(one thousand) persons or below or discharging sewage of 50,000 (fifty thousand) litres per day or below or with an investment of Rs.50,00,00,000/- (Rupees fifty crores) or below.

(h) any industrial estate falling under entry 32 of Schedule-I including industrial estates accommodating industrial units in an area of 50 hectares or below but excluding the industrial estates irrespective of area if their pollution potential is high.

S.O. 891 (E): In Schedule 1 to the said notification, for the Note, the following Note shall be substituted, namely:-

Note-Every project proposed to be located in –

(a) a critically polluted area; or

(b) within a radius of fifteen kilometers of the boundary of –

(i) reserved forests,

(ii) ecologically sensitive areas which include national parks, sanctuaries, biosphere reserves; and

(iii) any state,

shall require environmental clearance from the Central Government.”

S.O. 1087 (E): In the said notification.-

(1) in paragraph 2,-

(i) in sub-paragraph 1,-

(a) in item (a), in sub-item (iv), the word "and" occurring at the end shall be omitted ;

(b) after sub-item (v), the following shall be inserted, namely:-

"(vi) offshore exploration activities, beyond 10 kilometres from the nearest habitated village boundary, goothans and ecologically sensitive areas such as, mangroves (with a minimum area of 1000 sq.m.), corals, coral reefs, national parks, marine parks, sanctuaries, reserve forests and breeding and spawning grounds of fish and other marine life.":

(ii) in sub-paragraph II, after item (e), the following item shall be inserted, namely:-

"(f) greenfield airports, petrochemical complexes and refineries."

(2) in Schedule 1,-

(a) for item 4, the following item shall be substituted, namely:-

"4. Petroleum refineries including crude and product pipelines; isolated petroleum product storages.”

EIA NOTIFICATION, 2006

S.O. 1533

REQUIREMENTS OF PRIOR ENVIRONMENTAL CLEARANCE:

The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central

Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

- (i) All new projects or activities listed in the Schedule to this notification;
- (ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;
- (iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range.

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY:-

A State Level Environment Impact Assessment Authority hereinafter referred to as the SEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of three Members including a Chairman and a Member – Secretary to be nominated by the State Government or the Union territory Administration concerned.

CATEGORISATION OF PROJECTS AND ACTIVITIES:

All projects and activities are broadly categorized in to two categories - Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and natural and man made resources.

SCREENING, SCOPING AND APPRAISAL COMMITTEES:

The same Expert Appraisal Committees (EACs) at the Central Government and SEACs (hereinafter referred to as the (EAC) and (SEAC) at the State or the Union territory level shall screen, scope and appraise projects or activities in Category 'A' and Category 'B' respectively. EAC and SEAC's shall meet at least once every month.

APPLICATION FOR PRIOR ENVIRONMENTAL CLEARANCE (EC):

An application seeking prior environmental clearance in all cases shall be made in the prescribed Form 1, as given in Appendix II, after the identification of prospective site(s) for the project and/or activities to which the application relates, before commencing any construction activity, or preparation of land, at the site by the applicant.

STAGES IN THE PRIOR ENVIRONMENTAL CLEARANCE (EC) PROCESS FOR NEW PROJECTS:

7(i) The environmental clearance process for new projects will comprise of a maximum of four stages, all of which may not apply to particular cases as set forth below in this notification. These four stages in sequential order are:-

Stage (1) Screening (Only for Category 'B' projects and activities)

Stage (2) Scoping

Stage (3) Public Consultation

Stage (4) Appraisal

GRANT OR REJECTION OF PRIOR ENVIRONMENTAL CLEARANCE (EC):

The regulatory authority shall consider the recommendations of the EAC or SEAC concerned and convey its decision to the applicant within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned or in other words within one hundred and five days of the receipt

of the final Environment Impact Assessment Report, and where Environment Impact Assessment is not required, within one hundred and five days of the receipt of the complete application with requisite documents.

EIA IN OTHER NATIONS

In this chapter, an emphasis shall be made to various other nations (specially the nations that are major oil & gas producers in the current scenario) and how environmental impact assessment activity is conducted in their respective nations.

- USA

The United States of America has become one of the major oil producing countries of the world. This refers that a great amount of exploration and production activities are conducted in this respective nation.

The United States with regard to have passed the National Environmental Policy Act. The basic purpose of the passing of this Act, is provided in the Sec. 2 of the Act itself which provides that: **“To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.”**

This legislation as already discussed above talks about maintenance of the environment. This also talks about filing of environmental assessments and various environmental impact statements.

Whenever any such activity is undertaken here, that has an adverse impact on the environment, the concerned company/ persons in that particular case need to file these environmental assessments and various environmental impact statements.

Such assessments and the environmental impact statements are referred by the Office of Federal Activities. This is the authority that has the right to conduct such activities.¹⁷

¹⁷ <http://www.epa.gov/compliance/nepa/submiteis/index.html> accessed on 27th March, 2014

Such is the method as to how USA practices EIA in its respective nation, through the passing of a legislation and then including this aspect of Environmental Impact Assessment in it.

- **UNITED KINGDOM**

Another important oil producing nation in the world at this moment is the United Kingdom. The United Kingdom in the respect to Environmental Impact Assessment has passed the Town and Country Planning (Environmental Impact Assessment) Regulations 2011. The concerned legislation talks about the various affects that various public and private projects have on the environment.¹⁸

The Act has been divided into 13 parts and has 6 Schedules.¹⁹

The whole EIA process in UK has been divided into 5 broad categories:²⁰

- Screening
- Scoping
- Preparing an Environmental Statement
- Making a planning application and consultation
- Decision making

Therefore before conducting any activity the concerned person in the United Kingdom needs to submit the application before commencing any activity with regard to oil & gas activities.

RUSSIAN FEDERATION

The Russian federation and the home for natural gas producing giant company like Gazprom, is one of the leading oil & natural gas producers in the world.

¹⁸ <http://planningguidance.planningportal.gov.uk/blog/guidance/environmental-impact-assessment/preparing-an-environmental-statement/> accessed on 27th March, 2014

¹⁹ The Town and Country Planning (Environmental Impact Assessment) Regulations 2011

²⁰ Ibid to Reference No. 7

The Russian Federation itself has passed a variety of legislations with regard to environment. The list of the statutory documents which regulate issues related to conducting the Environmental Impact Assessment (EIA), organization and conducting the State Ecological Expertise of the EIA materials on the federal level by the Federal Service for Supervision of Natural Resource Usage (Rosprirodnadzor) and its local bodies and on the regional level by the authorities of the subjects of the Russian Federation.²¹

The Russian Federation has made compulsory for all projects that have a direct or indirect impact on the environment to conduct an EIA in respect of those projects. The various steps that are involved in the EIA activity in the Russian Federation are:²²

- Notification, Declaration of Intent and Terms of Reference
- EIA investigations and Preliminary EIA Materials
- Final Project Documentation
- State Ecological Expertise/ State Expertise

CANADA

Canada has emerged as one of the major powers in the oil & gas industry and now holds a very prominent position in the oil & gas market worldwide.

Various amount of Exploration & Production activities are conducted in the country.

With regard to EIA Canada has held a prominent support when USA was passing the National Environment Policy Act. The Canadian Govt. itself has shown a very responsible attitude when it comes to Environmental Impact Assessment in the country.

The Govt. in 1973 passed the federal Environmental Assessment and Review Process (EARP). In 1992, the Canadian Environmental Assessment Act was recognized as a law to replace EARP and to strengthen EIA in Canada. The Act came into force in 1995.²³

²¹ <http://www.arcticcentre.org/RussianEIA/legislation> accessed on 27th March,2015 2200 hrs

²² <http://www.arcticcentre.org/RussianEIA/Process> accessed on 27th March,2015 2215 hrs

Currently, The Canadian Environmental Assessment Agency is responsible for the Canadian Environmental Assessment Act, 2012. Therefore, Canada has shown great responsibility with regard to EIA, by passing of such a legislation.²⁴

The various steps that are involved with regard to the process of EIA are:²⁵

- i) a detailed description of the proposed project;
- ii) a screening process to determine whether an EIA is required;
- iii) a baseline study to identify past, present and future conditions against which the effects of the project will be assessed;
- iv) identifying and evaluating potential project effects;
- v) developing strategies to manage these effects;
- vi) a technical and public review of the information generated;
- vii) a decision as to whether the project should proceed and, if so, under what conditions; and, if the project is approved,
- viii) monitoring and managing actual outcomes.

SAUDI ARABIA

Saudi Arabia has known to be one of the largest crude oil producer in the world. It is also known to be one of the countries from which India buys most of its crude oil.

In Saudi Arabia, the main Legislation with regard to the environment is General Environmental Law and Rules for Implementation²⁶. In the concerned legislations itself the part with regard to rules of implementation provides as to what are the essential requirements that a company or a producer conducting such activity that has a direct or an indirect impact on the environment needs to keep in mind.

²³ <http://www.thecanadianencyclopedia.ca/en/article/environmental-impact-assessment/> accessed on 27th March, 2015 at 2230 hrs

²⁴ <https://www.ceaa-acee.gc.ca/default.asp?lang=en&n=9EC7CAD2-1> accessed on 27th March, 2015 at 2240 hrs

²⁵ Ibid to reference No. 12

²⁶ 28 Rajab 1422 H (15 October 2001)

The various steps that are involved in the conduct of EIA in Saudi Arabia involves:²⁷

- Environmental Monitoring
- Screening Phase
- Scoping Phase
- Evaluation Phase

CHINA

An economy which is booming in almost every segment or market of the society. China also plays a very important role in the oil & gas market. China has been very active in participation in order to keep the environment healthy & clean.

The People's Republic of China Govt. passed the Environmental Impact Assessment Law of People's Republic of China ,2002. Such a legislation was passed for the purpose that all those projects that either have a direct or an indirect impact first need to take various govt. clearances in order to continue with the project.

The concerned act has 38 Articles, dealing with various aspects of EIA activities of how to be conducted in the country.

The Act has 5 Chapters:

Chapter 1- General Provisions

Chapter 2- Environmental Impact Assessment for Plans

Chapter 3- Environmental Impact Assessment for Construction Projects

Chapter 4- Legal Liability

Chapter 5- Supplementary Provisions

The processes that are involved with regard to EIA in China are:

- Preparation of Environmental Plan
- Review of Plan

²⁷ Environmental Impact Assessment- Nature Environmental Studies & Consultations, WLL, 2011

- Screening
- Monitoring
- Approval of Plan

INTERNATIONAL INSTRUMENTS

Oil & Gas projects are very extractive, and they propose a great amount of danger to the environment. They also result in a great amount of risk to the biodiversity, ecosystem etc. The downstream operations in oil & gas projects, propose a great risk to surface water getting destroyed, acid rains etc.

Oil discovery and use are of ancient origin. In the early 1850's when oil was first struck in Pennsylvania. It was after the World War II, that the need of petroleum was felt. And in this modern era crude oil has become an essential commodity of human beings all over the world.

KEY INTERNATIONAL INSTRUMENTS

1.) INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION OF THE SEA BY OIL, 1954

The author here would first like to deal with this convention as old as 1954. The Preamble of the Convention itself provides that the signatories, *“DESIRING to take action by common agreement to prevent pollution of the sea by oil discharged from ships, and considering that this end may best be achieved by the conclusion of a Convention,”*

The Convention has 21 Articles, and these basically deal with the various obligations that all the contracting parties need to undertake while conducting oil related activities in the Sea.

The Convention also contains 2 Annexures²⁸

Annexure A: Dealing with prohibited zones

Annexure B: Dealing with Oil Record Book

²⁸ Original Text of the 1954 Convention

2. CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTES AND OTHER MATTER (LONDON CONVENTION 1972), LONDON, 1972

This convention is one of the first conventions that have dealt with the prevention of marine pollution from human activities in the form of Dumping of wastes.

The convention contains 22 Articles and 3 Annexures:²⁹

Annexure 1: Deals with Black Material (meaning such wastes that should not be dumped in the seas)

Annexure 2: Deals with Grey Material (Here, they mean material in which special care is required)

Annexure 3: Technical factors that should be taken into consideration before issuance of ocean dumping permits

In 1996, all the contracting parties entered into the Protocol of Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

The protocol basically emphasizes on a more modern approach. Some of the important points that the protocol takes into consideration are:

- Dumping of any kind restricted
- Polluter pays Principle Applicable
- Precautionary Approach are taken into consideration

3. STOCKHOLM DECLARATION, 1972

The United Nations Declarations on Human Rights, more generally referred as the Stockholm Declaration, 1972. This convention contains 26 principles, which the

²⁹ Original Text as on 13th November, 1972

signatories of this convention needed to follow as an obligation for being a part of this convention.³⁰ This was the first convention that for the first time at the international level had talked about the terms like:

- Sustainable Development: Art. 8 and Art. 9 of the Stockholm Declaration deal with the aspect of Sustainable Development. Art. 8 of the Convention provides for development with the need to improve the environment.
- The developed states helping the developing states to prevent pollution
- Safeguards required by the developing countries to be taken in this perspective.

These were some of the important parts or aspects that the concerned declaration dealt with.

4.) MARPOL, 1973

The International Convention for the Prevention of Pollution From Ships, 1973 is an international convention that deals with the prevention of marine pollution (MARPOL) from activities that are affected by ships that may arise due to operational activities of ships, dumping of wastes by ships, oil left by ships while moving around in the water.

In 1978, a Protocol to the convention was adopted in response to a spate of tanker accidents in 1976-1977.³¹

The Convention now contains VI Annexures, which have been brought forward after various amendments had been made in respective years. The annexures are basically given below:

Annexure I: Regulations for the Prevention of Pollution by Oil, 1983

Annexure II : Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk, 1983

³⁰ Original Text as on 1972

³¹ [http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx) accessed on 27th March, 2014 at 21:45 hrs

Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form, 1992

Annex IV Prevention of Pollution by Sewage from Ships, 2003

Annex V Prevention of Pollution by Garbage from Ships, 1988

Annex VI Prevention of Air Pollution from Ships, 2005

The concerned six annexures need to be signed by all the parties that are signatories to the convention.

5.) INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR OIL POLLUTION DAMAGE, 1969

This convention is basically a maritime treaty. The main part of this convention deals with the aspect that those who suffer harm from Oil Pollution damage they should be compensated.³² The concerned convention also includes three protocols, coming in the years 1976 and 1984 respectively.

6.) UNITED NATIONS CONVENTIONS ON THE LAW OF THE SEA, 1982

The United Nations Convention on the Law of the Sea, or the Law of the Sea Convention, more generally referred to is the convention that deals with the rights and responsibilities of every nations for the use of the world ocean, the environment and the management of the marine resources.³³

The convention basically deals with the issues regarding of territorial limits of various states in their respective states. Various terms such as:

- Contingency Zone
- Territorial Waters
- Exclusive Economic Zone
- Continental Shelf

³² Original Text of the Convention on 1969

³³ Original Text of the Convention on 10th December, 1982

Have been well defined, in the concerned convention. This convention is important to discuss here as offshore exploration activities result in a great amount of damage to the sea. Thus, this convention also discusses about conservation of marine flora and fauna.

7.) BASEL CONVENTION, 1989

The Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal, 1989 more commonly known as the Basel Convention, deals with regard to harm that may be caused due to transboundary movements that are taken place with carrying of hazardous wastes. This convention was basically drafted so that the LDC's (Low Developing Countries) who were more harmed by such activities so that they could be prevented by the same.

The convention contains 29 Articles, which all the signatories of the convention need to follow. Also it contains IX annexures, which the member states are committed to follow.³⁴

A protocol to the said convention was signed in 1997 **Protocol On Liability And Compensation For Damage Resulting From Trans boundary Movements Of Hazardous Wastes And Their Disposal**. The convention was basically made in order to fulfill the obligation of Principle 13 of the Rio Declaration, 1992. The concerned article was basically dealing with that compensation should be granted to victims of such pollution and other harmful activities.³⁵

The concerned protocol here deals with the compensation should be granted to the victims that are harmed because of the trans boundary movements of the hazardous wastes.

8.) ESPOO CONVENTION, 1991

The Convention on Environmental Impact Assessment in a Transboundary Context more commonly known as the Espoo Convention, is an international that deals with the

³⁴ Original Text of the Convention as on 22nd March, 1989

³⁵ Original Text of the Protocol as on

obligations on all the member states, to conduct environmental impact assessment at the early stage of planning of the project. Also it provides a necessary obligation on all the member states to provide about all the major projects that may harm the environment to give a detail about them as well.³⁶

The concerned convention is the only convention, that it is signed at the international level which makes conductance of EIA necessary at the international level. The convention has 20 Articles dealing with various obligations that the contracting parties need to fulfill. Also the convention has VII Appendixes. The convention has been amended twice, once in 2001 and once in 2004.

(B) REGIONAL CONVENTIONS

1.) OSLO Convention

The Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft also called the Oslo Convention was an international agreement designed to control the dumping of harmful substances from ships and aircraft into the sea. The concerned convention was signed in Oslo, Norway on February 15, 1972.

The convention came into force on April 7, 1974.³⁷

2.) BARCELONA CONVENTION, 1976

The 1976 Barcelona Convention for Protection against Pollution in the Mediterranean Sea, is a regional convention that deals with the prevention and to abate pollution that is caused by ships, aircrafts and land sources in the Meditteranean Sea.

The concerned convention deals with 29 Articles and also has an Appendix to it as “Appendix A”.³⁸

³⁶ Original Text of the Convention as in 1991

³⁷ Original Text as on February 15, 1972

³⁸ Original Text as on February 16, 1976

3.) KUWAIT CONVENTION, 1978

The Kuwait Regional Convention for co-operation on the Protection of the Marine Environment From Pollution by oil and other harmful or noxious materials arising from human activities on land or at sea, especially through indiscriminate and uncontrolled discharge of these substances, presents a growing threat to marine life, fisheries, human health, recreational uses of beaches and other amenities, in the region of Bahrain, Iran, Iraq, Kuwait, Saudi Arabia.³⁹ The Convention has 34 Articles.

4.) OSPAR CONVENTION, 1992

The Convention for the Protection of the Marine Environment of the North-East Atlantic. This is basically a legislative convention that talks about prevention of marine pollution in the North-East Atlantic region.

The Convention has 34 Articles, which discusses about various obligations that the contracting parties need to fulfill under the concerned convention. The convention has V Annexures.⁴⁰ Most of the contracting parties of this convention are those only that were to the OSLO Convention as this convention (OSPAR Convention) being a continuation of the respective OSLO Convention.

³⁹ Original Text as on April 24, 1978

⁴⁰ Original Text as on 1992

IMPACTS OF OIL & GAS ACTIVITIES ON THE ENVIRONMENT

The concerned chapter here shall be dealing with the potential impacts the oil & gas activities have on the environment, we can sum the same into two categories:

- **DIRECT IMPACTS⁴¹**

These impacts can be referred to those impacts that take place once any activity directly comes in interaction or comes directly in contact with any of the components either it be social, environmental or economic component. The exploration and production activities generally harm the environment once they come in contact with any of the components of the environment. For e.g. when hazardous wastes are dumped into water the marine flora and fauna are affected. This is an example of direct impact on the environment.

- **INDIRECT IMPACT⁴²**

These basically cover those impacts that do not directly occur on the environment, but may occur indirectly. Such impacts are known as indirect impacts. An example of indirect impact is the decrease in water quality due to the release of waste waters and other crude oils into the sea. This would have an indirect impact how, as to the aquatic flora would die (direct impact) and once the aquatic flora is dead, activities like fishing, fishing harvest etc would come to an end. This would in turn then affect the incomes of the fishermen, and all the others that are involved in such processes. Such impacts are characterized as indirect impacts. The indirect impacts may also include effects related to changes to the pattern of land use or road network, population density. In the process, air, water and various natural systems as well as the ecosystem may also be affected.

⁴¹ Technical EIA Guidance Manual for Offshore and Onshore Oil & Gas Exploration, Development and Production- IL&FS Ecosmart Limited, Hyderabad, August, 2010

⁴² Ibid

- **CUMULATIVE IMPACTS**⁴³

Cumulative impact means an impact that has occurred as a result of the inclusion of the project calculated in the EIA together with other projects in the same area causing related impacts. These impacts take place when the incremental impact of the project are included with the combined effects of other projects that would have taken place in the past, or are currently in process or that might take place in the reasonable future time.

- **INDUCED IMPACT**⁴⁴

The cumulative impacts can be due to increased actions of projects and activities that might occur if the action which is under assessment is implemented such as growth increasing impacts and other effects related to increased changes to the pattern of land use in the future or increased road network, population density or growth rate (e.g. excess growth may be increased in the zone of an area which is under the influence of an offshore and onshore oil and gas industry, and in the process it causes increased effects on various components of the environment). Increased actions may not be officially announced or even might not be a part of action plan. The increase in the workforce and also the nearby communities would also contribute to this effect.

Generally they have no direct relationship with the concerned action that is under assessment, and they also hold impact on the growth-inducing potential of an action. Newly constructed roads that initiate from those constructed for a concerned project, enhanced recreational activities (e.g., hunting, fishing etc.), and making of new service facilities can be considered as examples of induced actions.

However, the cumulative impacts due to increased development or third level or even secondary indirect impacts are difficult to be put to a value or to be quantified. Because of higher levels of uncertainties, it is difficult to assess the impacts in a long time period. An EIA practitioner can only prepare an estimate as to what such changed impacts may be and the possible extent of their implications on the environmental factors. The

⁴³ Ibid

⁴⁴ Ibid

concerned expert appraisal committee would exercise their discretion on a case by case basis for considering the changed impacts.

The impacts that are caused because of the offshore activities should be discussed in detail:

- **OIL**⁴⁵

Oil is released from a variety of sources during E & P activities. Most oil that enters into the marine environment from such activities is in water that is produced or produced water, sometimes the space drainage that takes place from machinery as well as deck may also contain small quantities of oil. Dropout of oil during well testing and well work-overs is another potential source of oil from offshore activities, but generally they are not given much importance.

Another important source of oil is the release of oil during drilling, the offshore installations operations and from shipping. Generally shipping does not have much impact or is not give much importance with regard to this perspective.

- **CHEMICALS**⁴⁶

The discharge of chemicals that arise from drilling activities and discharge of chemicals in produced water. The use of chemicals is considered to be a very complicated activity for the production of oil and gas. The main use of chemicals is for drilling and production operations.

Chemicals are also used for the purpose of maintaining pipelines and to ensure the pipeline integrity; these include biocides .

Unwanted effects from chemicals that are released into the marine environment can include long term toxic effect to marine organisms. Some of the long term effects especially hormone interfering, mutagenic and reprotoxic are issues of serious concern.

⁴⁵ Assessment of impacts of offshore oil and gas activities in the North-East Atlantic- Offshore Industry Services, 2009

⁴⁶ Environmental Impacts of the Oil & Gas Industry- Jacqueline Barboza Mariano & Emilio Lebre La Rovere

Persistent and bioaccumulative chemicals can magnify in the food chain and they result in high exposure levels for top predators like seabirds and marine mammals and for human seafood consumers. Low concentrations of some substances are dangerous enough to interfere with the hormone and immune system and reproduction processes. Biological effects generally extend beyond individual marine organisms to a whole population with adverse impacts for species composition and the various ecosystem structures.

Offshore chemicals are also serious concerns for the working environment on offshore installations; some chemicals may even cause allergy, skin irritation or very serious effects such as cancer.

- **ACCIDENTAL DISCHARGES⁴⁷**

Accidental discharges of oil and various chemicals can arise from a variety of different sources, including failure of machinery, or human errors during the process of offloading and filling of tanks, cleaning operations and drainage of sea sumps. There are concerns that the ageing of infrastructure may enhance the risk of accidents that generally result in spills of oil and chemicals. Since 2000 there has been an increased awareness by industry for the need to report/inform of all spills irrespective of the size of the spill. This may be due to improved regulatory controls and improved environmental awareness.

- **AIR POLLUTION**

The offshore oil and gas industry requires a great amount of power in order to extract, process and export hydrocarbons. Also the main source of emissions result from the power generation. Flaring of hydrocarbons is also essentially required during well testing and well clean-up operations to ensure for the safety at the platform. These are the main sources of the major part of the atmospheric emissions. Tanker loading and offloading also play a major role in emissions, particularly volatile organic compounds (VOCs).

⁴⁷ Environmental Impacts of the Oil and Gas Industries- Fisheries Research Services

- **LIGHT**⁴⁸

There are immediate concerns over the various impacts on birds and other aerial fauna from flaring and lighting from offshore structures. An assessment of the scale of impact in United Kingdom waters concluded that during certain weather conditions large flocks of birds may get attracted to offshore platforms. However, relatively few species have got attracted in sizable numbers and those that were had large and stable breeding populations thus showing that there is no significant environmental impact being occurred.

- **INSTALLATIONS AND PIPELINES**⁴⁹

In the United Kingdom sector over 34,000 km of oil and gas related pipelines have been laid, of which 7718 km are considered to be major trunk pipelines carrying either oil or gas. The majority of pipelines in the United Kingdom are inter-field lines transporting hydrocarbons from one field to a platform at another field where the hydrocarbons are usually processed and transferred to a trunk pipeline. In the Norwegian sector the total length of pipelines is estimated to be approximately 12 170 km, with about 50% being used to transport gas.

The footprint of the pipeline is dependent on the length, diameter and whether it is trenched or not. The sea bed current and the type of sediment also effect the accumulation and scouring of the sediment which is around the pipeline and, if the pipeline is trenched, the frequency of the appearance of spans (i.e. areas where the pipe emerges from the trench). The accumulation and scouring of sediment and the appearance of spans that is dependent on the concerned local and pipeline and the various conditions. Assuming that we take into consideration a 10 m wide corridor along the pipeline which may potentially be affected by pipe laying operations, then approximately 340 km² in the United

⁴⁸ Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope- The National Academies

⁴⁹ Assessment of impacts of offshore oil and gas activities in the North-East Atlantic- Offshore Industry Services, 2009

Kingdom sector and 120 km² in the Norwegian sector are also impacted by oil and gas related pipelines. It can also be assumed that the majority of pipelines that once a pipeline is laid, the impact on the environment does not extend beyond the area directly beneath the pipeline itself. For those that are buried the impact is less.

In addition to the pipelines, the large number of installations will also cause a physical impact on the seabed, but due to the large variety of dimensions of the different installations, the total area affected is not known.

Parallel to the pipelines, it can be assumed that only the area directly beneath the installation is affected by the physical presence of platforms and similar structures. Due to the number and length of pipelines placed on or under the seabed the overall physical impact of pipelines is considered greater than those from the other installations or operations mentioned above.

CASE STUDIES

TRIAL SMELTER CASE⁵⁰

In 1896, a smelter was located in Trail, British Columbia, began operating under American ownership. However, in 1906, the Consolidated Mining and Smelting Company of Canada, Ltd. brought the smelter plant in Trail. This company expanded the plant in size and also in turn in its capacity to smelt zinc and lead ores. However, in 1925 and in 1927, two large, 400-foot smoke stacks were built.

This was resulting increase in the amount of sulfur emitted into the air. Within the same time period the amount of sulfur that was released from the plant on a monthly basis also doubled from what it was in 1924. The amount of sulfur that was being released in 1924 was about 4,700 tons per month. But in 1927, the amount of Sulphur increased upto 9,000 tons per month. The amount of sulphur increased because of the smelting operation of zinc and lead had now one of the largest in North America. Finally, the consequences of these harmful amounts of sulfur that were being released were finally noticed in the State of Washington.

The effects came into notice because every ton of sulfur that was released into the air two tons of sulfur dioxide were created consequently. The increase in sulfur dioxide was detected through the rains. In the period between 1928 and 1935, USA started filing complaints with the Government of Canada that the sulfur dioxide emissions which were being released from the Trail smelter was causing damage to the Columbia River Valley. On August 7, 1928, the issue was taken into consideration by the International Joint Commission by the United States and Canada (IJC-UC) for settlement. The IJC-UC on February 28, 1931 decided that the Trail smelter should limit its sulfur dioxide emissions and that the Canadian Govt. was bound to pay the United States US\$350,000 as compensation for damages.

⁵⁰ 1941, U.N. Rep. Int'L Arb. AWARDS 1905 (1949)

Despite the IJC-UC decision, the conditions at the Trail remained stagnant and there was no improvement in the position. Consequently, by February 1933 the U.S. Government again started to file complaints to the Canadian Government about the problem the smelter was again creating. These set of complaints led to a convention on emissions which was signed by the two parties on April 15, 1935.

The Convention provided that a Tribunal shall be formed to determine the answers to four questions:

1. Whether there was damage being done to Washington State by the smelter since January 1, 1932?
2. If it was found that the smelter had created enough damage should it be made to stop from doing so in the mere future?
3. Should any restrictions be imposed on the operation of the smelter?
4. Does this amount to payment of compensation with regard to issues (2) and (3)?

When both the parties presented their arguments to the Tribunal in January of 1938, the Tribunal said that the governments on April 16, 1938 it took a final decision with regard to Question 1, but it required a little more time to answer the other 3 issues. It also asked that the smelting operation at Trail would not be allowed to proceed work as observations were being made on it to study the effects of its sulfur dioxide emissions. The two governments agreed for the trial restrictions (1938-1940). The Tribunal's decision with regard to question 1, it was that the Government of Canada would be paying to the United States US\$78,000 for damage that the Trail Smelter had been doing to the State of Washington from 1932 to October 1, 1937.

This compensation was primarily for damage done to land along the Columbia River valley in the United States. The Tribunal decided that the United States had not displayed enough evidence for damage to livestock or businesses in Washington State from the operation of the Trail smelter.

Following the trial restrictions, the Tribunal gave its answer to the final 3 questions on March 11, 1941. It had decided that the Trail Smelter should refrain from causing any

future damage to the State of Washington from its sulfur dioxide emissions. To ensure this, it mandated that the smelter maintain equipment to measure the wind velocity and direction, turbulence, atmospheric pressure, barometric pressure, and sulfur dioxide concentrations at Trail. Readings from these instruments were to be used by the smelter to keep its sulfur dioxide emissions at or below levels determined by the Tribunal. Moreover, copies of the readings were to be supplied to both governments monthly so that they could see the smelter's compliance. If the smelter could not keep to the prescribed sulfur dioxide levels, then compensation could be awarded to the United States as determined by the Tribunal and the Canadian Government.

Despite the U.S. Government's contention that the emissions from Trail damaged the land, livestock, and businesses in almost 140,000 acres along the Columbia River valley in northern Washington State, the Tribunal only found that real damage had been done to the uncleared forest land and cleared farm land along the Columbia River. In November of 1949, the U.S. Secretary of State wrote a note to the Canadian Ambassador to the United States to offer to refund to the Canadian Government US\$8,828.19 of the money that the Canadian Government had paid to the United States as compensation for damages caused by operation of the Trail smelter. This money was what was left over from the US\$428,179.51 that the Canadian Government had paid as damages after the U.S. Government had paid off all of the claims of individual property owners in Washington State against the Trail smelter. The Canadian Government accepted this refund in January of 1950.

NORD STREAM PIPELINE CASE

Nord Stream, formerly known as the North European Gas Pipeline (NEGP), is a planned 1200 km long dual pipeline for natural gas from Vyborg in Russia to Greifswald in Germany through the Baltic Sea. If constructed, Nord Stream will be among the longest offshore pipelines of the world, and will have the capacity to supply 55 billion cubic metres (bcm) of natural gas each year. The gas will originate in the already developed

Yuzhno-Russkoye field, and, later on, in the Yamal Peninsula, Ob-Taz Bay and the Shtokmanovskoye (Shtokman) fields.

HISTORY⁵¹

In 1997, a shared company, North Transgas Oy, was founded between Russia's Gazprom and the Finish Company, Neste. Their main task was basically to find out alternative routes so that the pipeline from Russia, passing through the Baltic Sea can be taken to Germany. whose main task was to examine new, alternative pipeline transit routes from Russia through the Baltic Sea to Germany. In 1998, the company submitted a feasibility study that concluded that a pipeline project through the Baltic Sea would be technically feasible and economically efficient.

In December 2000, the European Union validated the Baltic Sea pipeline project as a —Project of Interest¹⁸⁷ in accordance with the Trans-European Energy Networks guidelines (TEN-E).¹⁸⁷ Between 2001 and 2004, two major German energy companies, E.ON Ruhrgas and BASF/Wintershall, became closely linked to the project, whereas the Finish company, Fortum (earlier known as Neste), pulled out of the Baltic Sea pipeline project in 2005, after Gazprom made an announcement in 2004 that made further Finish participation needless.

In 2005, the North European Gas Pipeline company (later renamed in Nord Stream AG) was founded by Gazprom (51%), E.ON Ruhrgas (24.5%) and BASF/Wintershall (24.5%).¹⁸⁹ It is remarkable that this incident had such a major political impact that Russia's President (now Prime Minister) Vladimir Putin and Germany's Chancellor (now Chairman of the Shareholders Committee of the Nord Stream AG) Gerhard Schröder were present.¹⁹⁰

In 2006, the Nord Stream AG joint venture was joined by the Dutch energy company Gasunie, which bought from E.ON Ruhrgas and BASF/Wintershall each a share of 4.5%, a total of 9%.¹⁹¹ Its youngest shareholder, the French energy provider, GDF SUEZ,

⁵¹ Nord Stream: Not Just a Pipeline: Bendik Solum Whist

joined the Nord Stream AG in 2010. Today, shares of Nord Stream AG are distributed as follows: Gazprom (51%), E.ON Ruhrgas (15.5%), BASF/Wintershall (15.5%), Gasunie (9%), and GDF SUEZ (9%).¹⁹²

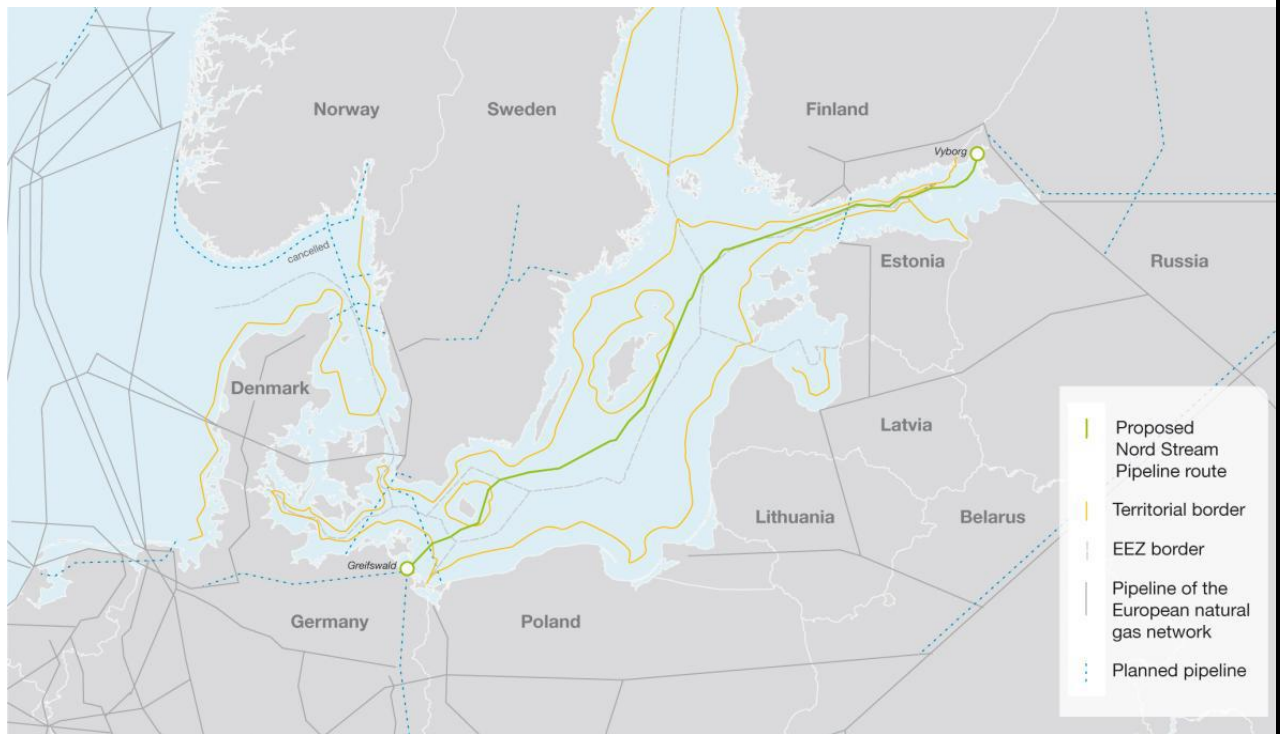
Construction of the pipeline started in April 2010 and the first pipeline is estimated to be fully operational by the end of 2011. The second pipeline is estimated to be fully operational in 2012, but construction of the second line has not yet started.

FACTS⁵²

Nord Stream AG is a joint venture of five major European energy companies: Gazprom, E.ON Ruhrgas, BASF/Wintershall, Gasunie, and GDF SUEZ. Gazprom remains the largest shareholder with a 51% stake. The joint venture's headquarters are located in Zug, Switzerland and a branch office is located in Moscow, Russia.

The Nord Stream pipeline will consist of two parallel lines. Line 1 is already under construction and so far the estimated date of when the first gas reaches Europe, the end of 2011, seems accomplishable. The pipeline will have an overall length of 1,224 kilometers and will travel from Vyborg, Russia through Finish and Swedish exclusive economic zones (EEZ) to Greifswald, Germany, in the figure given below:

52



Both lines together will have a supply capacity of 55 bcm per year and will be one of the longest offshore pipelines worldwide.¹⁹⁷ The source of the gas is located in the Yuzhno-Russkoye oil and gas reserve, Yamal Peninsula, Ob-Taz bay and Shtokmanovskoye fields.¹⁹⁸ According to Gazprom, the Yuzhno-Russkoye field is estimated to have proven reserves of approximately 1000 bcm,¹⁹⁹ whereas the Yamal Peninsula is estimated at 16 trillion cubic meters (tcm) of proven reserves. An additional 22 tcm have recently been discovered on the Yamal Peninsula and adjacent offshore fields.²⁰⁰ Concerning the Ob-Taz bay and Shtokmanovskoye fields, no information is available on Gazprom's official web page.

The overall costs of the Nord Stream pipeline are estimated at 7.4 billion EUR. The shareholder companies, proportionate to their respective share, will provide 30% of the costs. Seventy percent of the costs will be provided through direct investments by the international banking sector. This amount will only cover construction costs. Operational and maintenance costs are not included, according to a study of the Swedish Defense Research Agency by Robert L. Larsson. In fact, Larsson says that the costs may have

been underestimated and, according to energy and financial experts, the costs could reach as high as 10–15 billion EUR.

Several experts have also questioned why the transit route through the Baltic Sea was chosen. In their opinion a land-based solution passing through the Baltic States and Poland (known as the Amber pipeline) or updating and building a second line on the Yamal pipeline, passing through the Ukraine and Poland, would have been much cheaper than the sea-based option. But, despite the additional costs, the Nord Stream AG rejected the land-based options because —there is a need to become independent of politically unstable transit states, and ... a second Yamal pipeline will not contribute to route diversification.

Nord Stream will deliver large amounts of gas to Europe and it will contribute toward satisfying Europe's energy demand in the long run. However, there are several facts that are disturbing about this project: the unclear financial situation, the preference of a much more costly solution because of —unstable transit states like Poland and the Baltic States, which are all members of the European Union. In this context, it should be kept in mind that the Nord Stream pipeline project was ranked by the European Commission as a —Project of Interest according to the TEN-E guidelines. It also remains unclear whether the numbers concerning proven gas reserves provided by Gazprom can and should be used as a solid base for enormous investments in the Russian gas sector. In addition, the distribution of shares between the shareholders also leaves room for interpretation, since Gazprom has nearly unrestricted power over the Nord Stream pipeline due to its 51% stake.

LEGAL FRAMEWORK

According to the 1982 UN Convention on the Law of the Seas (UNCLOS) Article 79, ‘All States are entitled to lay submarine pipelines and cables on the continental shelf [of another state].’ The coastal state may not impede the laying of pipelines per se, but it may take ‘reasonable measures’ to preserve the environment and its natural resources, and the delineation of the pipeline ‘is subject to the consent of the coastal State’ (UN 1982). Regarding installations and structures in the Exclusive Economic Zone (EEZ), such as

the planned service platform, UNCLOS Article 60 gives the coastal state ‘the exclusive right to construct and to authorise and regulate the construction, operation and use of’ such installations, as well as ‘exclusive jurisdiction’ over the structure once it has been built (UN 1982).

In addition to UNCLOS, the Convention on Environmental Impact Assessment in a Transboundary Context, commonly known as the Espoo Convention or EIA Convention, sets out an obligation to prepare an Environmental Impact Assessment (EIA) of any project ‘that is likely to cause a significant adverse transboundary impact,’ including ‘largediameter oil and gas pipelines’ (UN 1991: 4, 12). The EIA, which in this case will be prepared by the Nord Stream consortium, must include ‘possible alternatives to the proposed activity, including a no-action alternative’ (UN 1991: 5). Sweden, Finland, Denmark and Germany are so-called Parties of Origin to the Espoo Convention, as the pipeline will pass through their EEZs. Russia would also have been a Party of Origin, had it ratified the Espoo Convention. Currently Russia is only a signatory power but still takes part in the EIA process. Construction permits are given by Parties of Origin when they have approved that the EIA is satisfactory. Affected Parties (such as Poland, Estonia, Latvia and Lithuania) have no legal say in the approval / licensing process, but they may take part in the EIA process and, hence, voice their opinion in the matter.

THE GENERAL RIGHTS AND OBLIGATIONS UNDER THE RELEVANT MARITIME ZONES IN RESPECT OF THE LAYING OF PIPELINES IN THE BALTIC SEA⁵³

The Nord Stream project has a transboundary impact on the coastal countries of the Baltic Sea: Denmark, Germany, Poland, Russia, Lithuania, Latvia, Estonia, Finland and Sweden. Each of the states mentioned above are parties to the United Convention on the Law of the Sea, 1982. Art. 58(1) of the Convention provides the freedom to the parties to lay submarine pipelines in the coastal states’s Exclusive Economic Zone,

Art. 79(1) of the Convention provides with the authority to the states to lay down submarine pipelines on a continental shelf. The whole of the Baltic Sea, lies within an area of

⁵³ Marine Environmental Protection and Transboundary Pipeline Projects: A Case Study of the Nord Stream Pipeline: Alexander Lott Merkourios

200 nautical miles (nm), from the coast. Therefore, Nord Stream is the subject of two chapters specifically:

Part V- dealing with the Exclusive Economic Zone

Part VI- dealing with the issues regarding the continental shelf

The route of the Nord Stream Pipeline, touches or crosses the territorial seas of three nations:

- Russia
- Germany
- Denmark

And it involves the Exclusive Economic Zone of Sweden and Finland, and also other three respectively mentioned states. There was an advantage to the project, as the Gulf of Finland is narrow, the outer limit of sea of Estonia and Finland, had been developed with the objective that their maritime boundary should never reach closer to 3 nautical miles. The territorial sovereignty of both the states was not taken into consideration at all. Rather on the contrary, an EEZ that had a width of six miles was established. The simple purpose of this EEZ was to solve the purpose of free passage.

THE APPLICABILITY OF THE CONCEPT OF ARTIFICIAL INSTALLATIONS AND STRUCTURES TO SUBMARINE PIPELINES

The Nord Stream pipeline, is a very long distance pipeline. The distance that this pipeline covers is very great. It cannot be compared with other pipelines, that are used for offshore exploration purposes. Nord Stream Pipeline, has a totally different legal regime, as compared to these pipelines. Because the area covered by the other pipelines is short, less clearances are required, and also the initial cost of construction is also very less, as compared to other pipelines.

Pipelines are of two kinds in nature. One is Intra and the Other is Inter. Intra Field Pipeline is the one that connects or joins two or more installations in a specifically limited geographical area. Then, we have the inter-state field pipelines. This pipeline adjoins installations in two different states. Both of the pipelines are a part of the

Installation and are covered within the purview of Articles 60 and 80, of the United Nations Convention on the Law of the Sea.

The terms ‘installations’ and ‘structures’ have not been defined in the UNCLOS. But with relevance to Art. 60(1)(b), we can derive the conclusion that such are being used for any economic motive. Therefore installation and structures cover within their purview the economic advantage of the seabed resources, which involve power generation, fish aggregation devices etc.

The Nord Stream, has no link or direct connection to the exploitation of the natural resources that are involves with it. Therefore it is not covered within the purview of Articles 60 and 80, and thus they cannot be considered to artificial installation or structure. As this pipelines covers the Baltic Sea, as well as several states within its purview it has become a topic of public international law.

ENVIRONMENTAL IMPACTS

- **MARINE SCIENTIFIC RESEARCH IN THE CONTEXT OF SEABED STUDIES ON THE PIPELINE ROUTE⁵⁴**

The coastal state has the right to reject for a permit of laying down a submarine pipeline in its Exclusive Economic Zone. A State may also do not provide consent with regard to scientific investigations that are being conducted in their Exclusive Economic Zone. With the Nord Stream Pipeline project in action it also helps us in finding, surveying as well as assessing the marine environment that is currently present in the Baltic Sea. Such is also a precondition for conducting an EIA with regard to finding out whether the seabed is suitable enough that a submarine pipeline can be laid down or not.

The first question is that whether such investigations come within the purview of marine scientific research as provided in the Part XIII of the United Convention on the Law of

⁵⁴ Gazprom vs. other Russian gas producers: The evolution of the Russian gas sector: Lars Petter Lunden, Daniel Fjaertoft

the Sea. The UNCLOS does not provide a proper definition for marine scientific research.

It is also provided that the right to lay pipelines, should not be differentiated from marine scientific research.

However, traditionally marine scientific research is understood as having the following meaning: ‘Any form of scientific investigation, fundamental or applied, concerned with the marine environment, ie that has the marine environment as its object ... [including] subsoil or seabed in the marine environment’. Therefore it includes all form of scientific investigation within its purview. Further the concept has been divided into further four categories:

- Chemical Oceanography
- Marine Biology
- Physical Oceanography
- Marine Geology and Geo-Physics

The marine scientific research of the Nord Stream Pipeline bring within its purview, sediments and topography of the sea bed, and also includes all the physical properties of the seabed.

In indentifying the scope of marine scientific research, there has been used a distinction between the words ‘fundmental’ and ‘applied’ scientific research.

Thus, applied scientific research includes physical seabed investigations carried out for, inter alia, military or commercial purposes

Thus with due respect to differing views the present author maintains that scientific investigations carried out in the marine environment in the context of the freedom to lay pipelines should be regarded as applied scientific research which fall under the scope of Part XIII of the LOSC.

THE IMPACT OF THE DUMPED CHEMICAL MUNITIONS TO THE NORD STREAM PROJECT⁵⁵

Already a large amount of old weapons had been dumped into the Baltic Sea, heavy amounts of Germany's unused chemical warfare was also dumped into the sea. Such was dumped in the disabled ships that were subsequent to the Second World War. A heavy amount of chemical warfare has already been dumped in the Baltic Sea as well as in the Danish Straits. Both the dumping sites comes under the vicinity of the Nord Stream Pipeline. There was a confidential USSR document, which provided the quantities and the types of chemical warfare were being released into the Baltic Sea. The information was revealed in 1992, and provided that around 356,872 tons of chemical munitions had already been dumped into the Baltic Sea. This resulted in finding out that the dumping site in the Gulf of Finland was very well in the vicinity of the pipeline. USSR have not yet confirmed about this document.

The EIA of the Nord Stream (more specifically the transboundary EIA) did not in its report include about the risk factor about the presence of the heavy amount of chemicals already present in the Baltic Sea, due to the chemical munitions already present in the Baltic Sea. The Russian navy had dumped many chemical munitions after 1947 and onwards.

The long term effects of the chemical munitions that have been dumped into the sea are unknown and it is also very difficult to estimate that whether these food chains would enter into the human food chain.

CONCLUSION

Nord Stream as a long-distance gas transmission pipeline cannot be regarded as an artificial installation or structure and thus falls outside the scope of Articles 60 and 80 of the LOSC. Significantly, coastal States have the right to withhold their permission for the laying of submarine pipelines in their EEZ or on their continental shelf under Article 79(2) and thus essentially impair the freedom to lay submarine pipelines granted in Articles 58(1) and 79(1) of the LOSC. That provided the legal basis for the corresponding

⁵⁵ Ibid to Reference No. 55

discretionary right that the parties of origin possessed in relation to the Nord Stream project. In that respect eventually all five parties of origin gave their consent to the laying of the Nord Stream submarine pipeline in their waters.

Significantly, the Nord Stream project raised the question whether seabed studies and investigations of the marine environment for the purpose of laying a submarine pipeline may be classified as marine scientific research under Part XIII of the LOSC. With respect to differing views the present author maintains that fundamental and applied marine scientific research embraces essentially all forms of scientific investigations, including the commercial ones conducted not for the purposes of exploration or exploitation, eg the laying of submarine pipelines.

In that regard, coastal States normally grant their consent for marine scientific research projects conducted by other States in their EEZ or on their continental shelf in conformity with Article 246(3) of the LOSC. However, States may under Article 246(5) of the LOSC in their discretion withhold such permission. As illustrated by the Estonian refusal in 2007 to grant its permit to the Nord Stream consortium, such a discretionary right may be subject to conflicting interpretations.

Finally, the precedential transboundary EIA conducted by the Nord Stream consortium demonstrated the importance of including all reasonable alternatives, as provided in Appendix II(b) to the Espoo Convention, in the assessment in order to safeguard an indisputable acceptance to a proposed project. The present author maintains that in determining whether a particular alternative should be considered as reasonable and subject to Appendix II(b) of the Espoo Convention, the alternative's cost-effectiveness, the ecosystem approach, the precautionary principle and the principle of sustainable development may be regarded as the principal indicators. Based on these criteria and taking into account the sensitiveness of the Baltic Sea marine environment the land-based alternative of the Nord Stream submarine pipeline should have been included in the transboundary EIA documentation.

BP OIL SPILL

FACTS⁵⁶

The 2010 Gulf of Mexico blowout brought more than oil to the surface. It's a chronicle of a season of anguish and panic, deep uncertainties, and the emotional topography of the blowout. April 20, 2010 though a bit imprecise, the time, approximately 9:50 P.M., marks the chain of fateful events that changed the life of many. A floating machinery system roughly the size of a forty-story hotel was being drilled for months into the seafloor in the Gulf of Mexico. Its creators named the drilling rig the Deep water Horizon. Oil giant BP contracted the Deep water Horizon's owner, Transocean, and various companies and crews to drill deep into the seafloor forty-odd miles southeast of the Louisiana coast. The target had also been named: they called it the Macondo formation. A churning drill bit was sent from a world of light and warmth and living beings for a depth of more than three miles under the sea surface, to a world of eternal darkness, unimaginable pressure. The drill bit met a gas pocket. That tiny pinprick, that pressure, mere bubbles, a mild fizz from deep within suddenly converted into a sudden influx of gas into the well, rushing up the pipe, expanding like crazy, through the open gates on the seafloor, one more mile to the sea surface. The beings above were finding it difficult to manage it. A variety of people faced a series of varied decisions. They didn't make all the right ones. And then suddenly there was an explosion. 11 men died on the spot. Seventeen people were severely injured. One hundred and fifteen survive with pieces of puzzle lodged in their hands. As per the chain of events explained by BP, the entire cause and effect relationship is as follows:

The cements failed to prevent the oil and gas from entering the well. Staff of both Transocean and BP incorrectly interpreted the negative pressure test by tragically explaining away the pressure they were seeing on one gauge. This led them to release the downward fluid pressure on the well by replacing the heavier fluid with seawater in a well that they falsely believed because the kill line was clogged with the "snotty"

⁵⁶ The Gulf of Mexico oil disaster: A case study on the projected economic impact on tourism among the Gulf States of Louisiana, Mississippi, Alabama, and Florida: Richard Andrew Robinson Jr.

spacer—was not exerting upward pressure. It was. The pressure in the drill pipe, which they chose to ignore, was telling them that the cement had failed. They didn't notice other warning signs because they by passed gauges and routed displacement fluid and their irregularly concocted spacer overboard. But as gas reached the rig, when the crew might have prevented disaster, they routed the flow to a mud-gas separator whose capacity was soon overwhelmed. Gas owing directly onto the rig got sucked into generators, causing them to surge and spark, igniting a series of explosions. Fire and gas emergency systems that should have prevented those explosions failed. The blowout preventer should have automatically sealed the well but it, too, failed.

IMPACTS:

The marshlands and the estuaries that are situated throughtout the Gulf Coast have proven to be important breeding grounds and also have acted as source of nursery for the fishing and shrimping industries. In the year 2008, it was estimated by the National Fisheries Service, that the commercial and the shellfish harvest, that was taking place from the five U.S. Gulf States was around 1.3 billion pounds, values at \$651 million. "Oil spills are extremely harmful to marine life when they occur and often for years or even decades later," said Jacqueline Savitz, a marine scientist and climate campaign director at Oceana, an environmental group. It was also provided by Ms. Savitz, that the oil spills were coating sea birds and thus in turn affecting their flying abilities and also that such a spill was also affecting the systems of the marine organisms, and that they were having breating, eyesight and reproduction problems. Ms. Savitz, also provided that the Gulf of Mexico, is a hub for four species that were endangered in nature. They being sea turtles, snapper, Bluefin tuna and grouper. "Each of these can be affected," she said. She said that, "Turtles were coming on to the surface so that they could breathe and in turn if they get coated by oil or even if they swallow oil, it will result in their death". Ms. Savitz also provided that the Gulf is one out of the only two nurseries for the Bluefin Tuna.⁵⁷

As BP was held responsible they were needed to bear with all the costs as well as the organization duties that were associated as a part of the liability to be borne by them. A part of the liability of the BP also was dependent on thow much quantity of oil had been

⁵⁷ Four years after the BP Deepwater Horizon Oil Disaster- Ocean Conservancy

leaked. Therefore, the company in its financial interest needed to do almost everything it could do.⁵⁸

- (1) Say you think it's leaking at a much smaller rate than it is and
- (2) Hide as much of it as possible and
- (3) In as many ways as possible, try to prevent people from seeing the parts you can't hide.

BP had earlier provided with the information that only 5000 barrels of oil was being spilled every day. Later, it was found that the figure what BP was informing was less than 10 times, of the actual amount of oil that was being spilled everyday. BP in order to dissolve oil and also to make up with financial liability that was involved, the company started releasing dispersants into the sea. Dispersed oil stays in the ocean. Because it dissolves into the sea, it's impossible to see or measure. Like a cake "hides" a rotten egg mixed into the batter, dispersants hide the oil. It's still a rotten egg, but now it becomes impossible to retrieve it. These dispersants provide the same purpose which a dishwashing detergent provides which dissolves oil and grease. Once these dispersants dissolve oil into the water, the water becomes polluted which is a home to various marine flora and fauna. These dispersants in order to make the oil dissolve into the water breaks them into smaller particles which makes easy for the marine organisms to consume. If the concerned sea mammals consume these oil particles, such would prove very toxic for these animals. The mixture of oil and water proves very harmful for the marine organisms, in turn it proves toxic to them. The aim of the officials was confined to a single point agenda that oil was needed to be stopped by any means possible. Then the company implemented a new activity called 'control burns'. In this activity they were setting the sea on fire, and they had assured that the life of all the marine organisms shall be protected. The Gulf of Mexico had already experienced such a similar incident in the June 1979 when a Mexican drilling rig Ixtoc I had blew out. It almost took a time period of 9 months to control the oil flow and in the meanwhile around 140 millions of crude oil had got wasted. Around 80% of the invertebrates were killed on the Texas Beach because

⁵⁸ Four Years Into The Gulf Oil Disaster: Still Waiting For Restoration: National Wildlife Federation

of the release. Also because of the incident hundreds of millions of crabs had also died on the Mexican Beaches.

The Mexican Gulf is a very large area, but the national importance it holds, is more vast beyond its size. The Gulf is a hub where many migrating creatures pitch in, during the migrating season and then fly out of it once the migrating season over. Those migrating creatures were as well affected because of the oil spill. Oil spill also affected the birds as their wings started becoming dysfunctional resulting in a great loss for these species. Certain animals that normally inhabit the open Atlantic, travel to the Gulf to breed. The most endangered species that is the sea turtle, the Kemp's ridley, migrates from the western Atlantic to the far north of New England. But the concerned turtle only breeds in the Gulf. Those adults that had already laid their eggs were already suffering a very hard time, but the newly born hatchlings were having an even harder time to survive.⁵⁹

The impacts of the spill were not only limited to marine life. Human beings were also affected with the spill. The marines had anyhow rescued some of the oiled animals, but it was impossible, to clean those marine organisms that were killed in this disaster. Many fishing families, were not being able to overcome with the said disaster, as many from their families had got destroyed in the disaster. Almost 12 species that had already been under the category of endangered had almost become vulnerable. The disaster caused by the spill could easily be seen, as the dead bodies of sharks, dolphins, whales, turtles were floating around on whole of the Gulf. The fisherman community had suffered a lot because of this spill. The oil that was spilled in the whole of Gulf, it was not easy to remove that oil. The officials had stopped fishing in the concerned area. Because of the spill, the whole source of earning for the fisherman had come to an end. As fishing was not allowed in the Gulf, it was very difficult for the fisherman in those regions to earn their livelihood. A fisherman who fishes really at a hard pace, earns only an amount of hundred thousand dollars a year, reducing the expenses. But because of the years of taking out of the oil, the amount of income that they lost because of the spill, BP could

⁵⁹ <http://www.gulfspillrestoration.noaa.gov/affected-gulf-resources/> accessed on 27th March, 2015 at 1930 hrs

never have compensated them enough for this loss. A group of shrimp fishers sued the company for damages.

The tourism industry was also very affected by this spill. These spots which acted as family picnic spots also got destroyed. The tourism industries in the States of Florida, Louisiana and Alabama were the ones that were most affected by this spill. It was predicted by the analysts that the loss that the Katrina Hurricane had brought in the Gulf Region in the year 2005, would return back again, and in the year 2010 such a disaster took place. Between the energy, fishing, shrimping, and tourism industries, the Gulf region lost an estimated 250,000 jobs in 2010 .Oil that had come onto the surface and also that had travelled inland through strong storms and winds, also affected the quality of the crops that were grown in the region, specifically rice and sugarcane. The area had almost become inhabitable. The means of living of many people around the region was destroyed by this incident. With this incident, the entire living of the people changed because most of the lifestyle involved around sea food, the beaches, the coast etc. The reason is that once a food chain is destroyed it is very difficult to get things back to normal. Carbon dioxide is also a very important aspect for this disaster. The marine animals, water and the local people were the ones that were most harmed by this incident, the measures that were taken for controlling of the oil e.g. that of burning of the oil also had negative impacts on the environment. The amount of carbon dioxide that was released during this incident also resulted in a great amount of global warming. In the blowout, 206 million gallons of oil mixed with the Gulf's 660 quadrillion gallons of water. This heavy amount of water was easily capable enough to dilute the oil. The carbon dioxide that was released during this incident was not being able to dilute, rather mixing with other gases it was causing a very great harm to the atmosphere. The spill had greatly hampered the atmosphere, the climatic conditions worldwide, and also had affected the heat balance on the entire planet. It was destroying whole of the polar system was killing the wildlife of the arctic regions, coral reefs were getting destroyed, the level of the sea water had increased at an alarming rate, the ocean water had turned very acidic and the Shell fish was also getting dissolved ⁶⁰

⁶⁰ Ibid Reference to No. 60

JUDGEMENT

The Govt. had provided civil penalties against the Defendants under the Sec. 311 (b) (7) of the Clean Waters Act. The second claim provided that the defendants are liable to the United States under the Oil Pollution Act, for past, present and future removal costs and whatever damages are needed to be provided because of the discharge of oil.

The court held:

“As the oil field was an offshore one and it being a deepwater horizon one, a MODU was being used as an offshore facility when the incident occurred. BP and Anadarko, were co-lessees of the area, in which the offshore facility was located and were the responsible parties with regard to the discharge of oil that had occurred beneath the surface of the water. Transocean, being the owner/ operator of the MODU, is not being held responsible under the OPA for the discharge of oil, that had occurred beneath the surface of the water, though it has to pay for the removal costs under S. 1004(c)(3). The liability for the OPA removal costs and the damage is joint and several, they were needed to be bore by both BP and Anadarko. The Government is entitled to a declaratory judgment against BP and Anadarko.”

For purposes of CWA Section 311(b)(7) and with respect to the subsurface discharge, oil discharged from the Macondo Well, an offshore facility. Conversely, the Court finds that the subsurface discharge was not from the vessel, the DEEPWATER HORIZON. Furthermore, because it is undisputed that BP and Anadarko were owners of the offshore facility, BP and Anadarko are liable for civil penalties under the Section 311(b) (7).⁶¹

BP had agreed to pay \$4.5 billion in governmental penalties. With regard to the penalties there had been \$4 billion will resolve the criminal charges. Also, in addition to this another 525 million \$ had been needed to be paid to the Securities and Exchange Commission, as BP had lied to the investors about the amount of oil that was spilling in into the Gulf. A federal grand jury also charged two top officials of BP that were on board filed indictment charges against them on the day the explosion took place with 23 criminal counts. Two men were also charge for the slaughter of the seaman and were held

⁶¹ Case Study: Deepwater Horizon Oil Spill: Cold Jet

for indirect slaughter of all the 11 men that had died in the blast, and also they were held under the purview of criminal violation under the Clean Water Act. The grand jury also filed charges against the second highest ranking representative of BP that was at the company's unified command post. He was charged of being hiding of information from the Congress and allegedly also lying to the law enforcement officials. The company also would plead guilty a felony court, as there was obstruction of Congress, a misdemeanor count under the Clean Water act and a misdemeanor count again under the Migratory Bird Treaty. BP had also with the US Govt. made an agreement that they would be setting up a 20 billion \$ trust, to provide an assurance that funds shall be available. The purpose of making this trust fund was that claims could be satisfied with regard to the adjudication by the Gulf Coast Claims Facility final judgments in litigation and litigation settlements, state and local response costs and claims, and natural resource damages and related costs.⁶²

In 2011, BP contributed a total of \$10.1 billion to the fund, including our second year commitment of \$5 billion to the trust and the cash settlements received from MOEX USA Corporation (MOEX), Weatherford US., LP (Weatherford), and Anadarko Petroleum Company (Anadarko). This brings the total amount contributed to the trust to \$15.1 billion. The remaining committed contributions totaling \$4.9 billion are scheduled to be made in 2012 which includes the \$250 million settlement with Cameron. The trust disbursed \$3.7 billion in 2011 and the total paid out since its establishment amounted to \$6.7 billion by the end of 2011.⁶³

⁶² BP Oil Spill: Compensation, Agency Costs, and Restitution: David F. Partlett, Russell L. Weaver

⁶³ Ibid to Reference No. 62

ONGC OIL SPILL IN NAGALAND:

Spills from the Oil and Natural Gas Corporation (ONGC) well sites have severely destroyed Changpang and Tsorri villages in the district. More than two thousand people saw the farmlands, forests and water sources that they used to rely on being getting contaminated by the spillage. Further, health problems in the district have increased significantly in this area since the spillage, with higher rates of water-borne diseases, malnutrition, miscarriages, cancer, kidney failure and nerve problems.⁶⁴

Oil & Natural Gas Corporation started the process of extraction from 1981, once they got the approval from the Government of Nagaland in the year 1973. ONGC did not obtain the free, informed and prior consent of the indigeneous people before starting the process of extracting oil form the villages which is an essentiality under Art. 371 (A). The provisions of Art. 371 (A) clearly mention that both mineral and surface resources belong to the communities and not the State. There were continued protests by a number of civil societies resulting in the govt. withdrawing permission in the year 1994. There has been improper and careless care of the oil well sites. This has resulted in a great amount of oil spillage which has been continuing for more than 18 years now, and still is on going which has resulted in the people of the villages and their livelihood getting destroyed by it. It was found that when it was asked from ONGC to stop the extraction process it had already produced more than 1.2 million metric tons of oil, from the concerned area. It is also found out that has not used any portion of the profit, for the mainteanance of the oil wells in the concerned areas. None of the portion of the profit have not been used for the proper working of the site, so that it does not cause any damage to the villagers and in the nearby area.⁶⁵

Because of the great amount of oil spill that is taking place from the oil fields at Changpang, since the year 1994, the people residing in this village have been facing a great amount of problem as their natural habitat is getting destroyed totally and their daily lifestyle is also getting affected. Since the oil spillage is so heavy that there have been

⁶⁴ http://www.telegraphindia.com/1120511/jsp/northeast/story_15473962.jsp accessed on 27th March, 2015 1945 hrs

⁶⁵ <http://ejatlas.org/conflict/oil-spillage-in-nagaland-india> accessed on 27th March, 2015 at 2015 hrs

many social, economic and environmental impacts, which has resulted in a paramount violation of Human Rights, specially under the Constitution of India and under the Universal Declaration of Human Rights. The concerned state govt. is very well aware about this Human Right Violation, about the immense amount of oil spillage from these not at well maintained oil rigs. Because of the oil spill the water and soil is getting contaminated which has resulted in the agricultural practices of the villagers being getting affected, and thus their income in turn getting affected.

A Public Interest Litigation (PIL) with regard to this problem has been filed in Guwahati High Court in the year 2012. The PIL has been filed against ONGC, the Govt. of Nagaland and all the other authorities that are involved in not attending the matters that have been with regard to this great amount of oil spillage which is being continued in Chanpang and Tssori villages in Wokha district of Nagaland. A compensation of whopping Rs. 1000 crores for damages has been prayed for in the High Court. The PIL filed an application under Article 226 of the Constitution of India for the issuance of a Writ in the nature Mandamus or any other appropriate writ, order or direction of like nature to deal with the emergent situation. This large oil spillage which has taken place in the villages of Champang and Tssori in the district of Nagaland has been due to the willful negligence of the authorities and thus this PIL has been filed so that such authorities can be asked to take proper steps so that such a mistake is never repeated again in the future. This negligence by the authorities have resulted in the villagers their lifestyle being affected. Livelihood of the villagers have been affected. Because of the oil spill there has been a great amount of damage to the soil and water which has resulted in the agricultural practices of the farmers also getting affected.⁶⁶

There has been an extraction of roughly around 1.02 metric million tonnes of crude oil from the extraction that took place between the years 1981 to 1994. But the account of oil extracted between the years 1981 to 1994, there has been no account of it. ONGC had been able to drill around 29 wells in the Changpang area. Here around 21 wells were oil bearing while 2 wells were gas bearing. Seeing this great amount of oil spill ONGC

⁶⁶ <http://kanglaonline.com/2011/09/pil-seeking-rs-1000-crore-compensation-filed-for-oil-spill-in-nagaland/> accessed on 27th March, 2015 at 2230 hrs

should have taken appropriate steps in order to reduce this oil capping, but due to negligence of the authorities, the spill continued for such a long period and thus resulted in such a great amount of loss.⁶⁷

ONGC OIL LEAK IN TAMIL NADU .⁶⁸

Around 100 acres of farmland in a village in Nagapattinam were destroyed due to the spill from the ONGC pipeline on November 6, 2012. Ministry officials said that the leak had been there since August, but people of Manjavadi village detected it only now after they found their farmlands flooded with oil. The oil was being sent to Narimanam for refining. This is the fourth such spill from the same pipeline this year. ONGC is currently building a new pipeline but it did not decommission the old one which is corroded at several places. As per officials, a major disaster was averted because there were rains but had it been summer, the damage could have been more because oil is highly inflammable. The Ministry could ask the oil major to submit a detail status report of all its old pipelines in India. As per international norms in cases like this, the government has to commission a third-party inspection to fix responsibility. The Environment Protection Act, 1986, empowers the Ministry to direct errant companies to even stop operations. There are several oil companies that own old pipes running through populated areas across the country.

⁶⁷ Ibid to Reference No. 66

⁶⁸ <http://www.livemint.com/Home-Page/3U7N2PEsrGcmS7YMDCmEUO/Ministry-raises-concerns-on-ONGC-oil-leak.html> accessed on 29th March, 2015 at 2015 hrs

CONCLUSION

Before 1992, India had been following the discretionary model of EIA as given under the Water and Air Acts in India. This model failed to provide significant enquiry with respect to consent applications, public hearing and participation but aimlessly focuses more upon the non-democratic elements of confidentiality and secrecy leaving the authorities responsible for granting or refusing consent or clearance, keeping them unaware about the important material facts required for decision-making. The anti-pollution Acts keeps the public in dark about the information they require for environmental hazards. On the other hand, EIA, which is cheaper and also a precautionary instrument for environment management, has no statutory recognition in these anti-pollution acts. These acts are enacted to maintain and promote clean and healthy environment and also to prevent, subside and control environment pollution and degradation.

The aftermath of Bhopal gas tragedy, saw the beginning of environment protection. The defective model of Environment Impact assessment was introduced in the anti-pollution acts. The Government on realizing the need for protection of environment, introduced the Environment Impact Assessment Notification of 1994, which made EIA mandatory and incorporates the essential elements of public hearing. However, the 1994 Notification is confined and covers only limited projects as provided in the schedule. But all projects need to escape the mandatory requirement of EIA and public hearing so as to prevent degradation of the environment.

The 1994 EIA notification is confidential and does not provide the right to the public to access it but it makes available the same to experts on demand. The public has right to access only the executive summary of the EIA prepared by the project authorities which is kept in various offices.

In other words, to ensure the protection of the environment and peoples' right to information, an urgent need is felt to amend the anti-pollution Acts and the EIA Notification. EIA should be made mandatory for all those projects which deplete the environment directly or indirectly. The legislator should enact environmental laws which

are meaningful and effective and should include provisions for deemed consent or clearance and restriction on inspection by the public at large of the consent register should be dispensed with and the copies of the EIA report should be made available to the public also. The public should have the power to appeal to a court or tribunal against a decision of an environment protection agency for ensuring proper administration of the environment law.

To enforce our fundamental right to healthy environment, it should be made mandatory to conduct EIA for all development projects that damage the environment. In order to force the decision making agencies to work in a just, fair and reasonable manner, the public should be conferred a statutory right of access to the deliberations of the environment protection agencies. Like the western countries, the EIA should be made an integral part of the environmental legal regime in India and also public participation should be initiated in environment matters, since every project affects the public at large, forests and animals. There remains a wide gap between principles and practice, which if not looked into would frustrate the purpose of the Notification.

In the recent years, Mumbai has witnessed three oil spills which have not been reported by media and these spills have not revoked any policy. This can be associated with most of the environment disasters in the country.

Oil spills are one of the biggest ecological disasters which is enormous and is often ignored. The observed impact is recorded but the latent impact goes unnoticed. The recent oil spills have come as a test of India's preparedness and ability to handle shipping disasters. Having a strong response system and disaster management plan is vital. India started with a strong framework -- the National Oil Spill Disaster Contingency Plan (NOSDCP) -- in place to meet such events in 1993. The Ministry of Defence was made the nodal authority for implementation of this contingency plan. According to the plan, every Indian port should by now have had a response system in place. The reality, however, is that not a single port in the country can say it has a response system.

The most striking feature of any policy to address the problem of oil spills has been the huge gap between official words and action. Several national and international

conventions address the issue. The Oil Pollution Preparedness, Response and Cooperation (OPRC) Convention, drafted in 1990 and adopted internationally in 1995, aimed to put in place measures to deal with pollution incidents, either nationally or in cooperation with other countries. The convention added a protocol on Hazardous and Noxious Substances (HNS) in 2000, which came into effect in 2007. The OPRC-HNS protocol provides a diplomatic and legal framework for international cooperation in combating major incidents and the threat of marine pollution. Apart from this, India and other South Asian countries like Bangladesh, Sri Lanka and the Maldives are bound to the South Asia chemical pollution contingency plans funded by the United Nations Environment Programme and the International Maritime Organization. Both conventions call for strong risk assessment and mitigation capabilities at major and intermediate ports. Ironically, all of this is missing in the Indian context.

Thirty-six offshore drilling installations fall within India's exclusive economic zone. Of these, only six were installed after 2006. That year is important as it was the year when an improved procedural document on environment impact assessment (EIA) was prepared. It became mandatory for any industrial activity of this scale to get an EIA done before operations began. The Ministry of Environment and Forests (MoEF) places oil drilling operations in Category 1 of the EIA and calls for absolute preparedness in terms of environment security and risk assessment. Sadly, these laws and studies often prove useless in the Indian context. Of the 36 oil drilling installations, only six are under the ambit of the EIA. Most of these are located in India's western waters, with companies like ONGC, RIL and CAIRN being the major commercial giants controlling these waters. The fact that so many installations have not gone through a thorough environmental examination is surprising.

General limitations of the Legislative Framework:

- The existing provisions that the country is having right now is basically evolved on after a report basis assessment and are basically more concerned with the negative impacts of the offshore activities. There is a lack of a general multilateral convention that specifically deals with all the Environmental Issues that are there with regard to petroleum and natural gas operations.

- The issues with regard to onshore activities have never been given much importance at the regional or at the international level. None of the regional or international instruments discuss about the onshore operations and problems. Most of the treaties have not at all taken into consideration to on land petroleum operations.
- At the international level as well there has been treaties that have talked about petroleum environmental regulations but more strict action is required for the same. There are various organizations at different level, but there is lack of coordination between them. Because of this reasons there have been found contradictory provisions and requirements which are existing at the international level, regional level or even between them.
- Some of the treaties at the international level have such provisions that are very confusing or difficult to understand. For example, the MARPOL, 1973, priorly it excludes the jurisdiction over any kind of pollution or any discharge of oil during the process from its ambit, but with the coming of the annexure of the convention it brings under its purview some aspects of offshore operations.
- Some of the provisions in treaties with regard to legal developments in the future are very vague. Some of them do not have any kind of operational obligations attached with them. This problem can be resolved if periodical conventions are made in order to complete all these lacunas that are present in the existing treaties.
- The liabilities that are provided under Art. 14 of the Model Production sharing Contract need to be of a more deterrent nature. If there is any negligence by the contractor, because of which there has been a harm or damage to the environment, there should be a penal liability for such act of negligence by him. This is essential because with the existence of only civil liabilities it is very easy for him to escape the liability, without understanding the fact, that a great amount of damage has been done by him to the environment. It is also a fact that there are various incidents or damages in which social and environmental impacts go unnoticed, unreported and even in cases where people are suffering of the

environmental damage, but due to it not being reported, people are not compensated. There have been incidents of oil leak from ONGC pipelines, but due to it not being reported, the victims have not been compensated.

One of the major findings in this study is that the mainstream provisions of the legal framework come from national jurisdiction. Most of the environmental regulation of direct application to the oil and gas industry are domestic laws and stipulations. The dominant component has a number of interesting features.

Firstly, the development at the national level is uneven, more complex in some jurisdictions while elementary in others.

Second, it appears in India that downstream activities is focussed more upon. Numerous standards have been formulated to regulate emission and discharge from consumption.

Third, the result of petroleum environmental regulation at the national level is not satisfactory. But Petroleum development and consumption have always been associated with various impacts on the environment. In the Petroleum industry, Environment has not been focussed upon and the environmental regulations under this industry is a recent development over the last 25 years.

The environment has will permanently change the circumstances in which the oil and gas industry operates. Environment regulations in the oil and gas sector represents both a challenge and an opportunity to the industry to manage risks.

An effective EIA model must encourage an integrated use of social and natural sciences principles, techniques, or methods to analyze a broad range of complex environmental problems. Positivist believe that the integrated use of scientific techniques can produce the “value neutral” results. On the other hand, the public policy makers claim that “politics” or “interpersonal value” based interactions can determine the best possible solution. In practice both these views are essential for the effectiveness of EIA.

BIBLIOGRAPHY

ACADEMIC JOURNALS & RESEARCH PAPERS

1. **THE TRAIL SMELTER CASE: INTERNATIONAL AIR POLLUTION IN THE COLUMBIA VALLEY: KEITH A. MURRAY**
2. **LESSONS LEARNED FROM ENVIRONMENTAL IMPACT ASSESSMENTS: A LOOK AT TWO WIDELY DIFFERENT APPROACHES – THE USA AND THAILAND: JOHN W. STAMPE,**
3. **ENVIRONMENTAL EFFECTS ASSESSMENT OF OIL AND GAS DEVELOPMENT ON A GRASSLAND ECOSYSTEM: LAWRENCE CHRISTOPHER NASEN**
4. **BP OIL SPILL: COMPENSATION, AGENCY COSTS, AND RESTITUTION, DAVID F. PARTLETT, RUSSELL L. WEAVER**
5. **EUROPEAN ENERGY SECURITY AND NORD STREAM: A CASE STUDY OF THE NORD STREAM PIPELINE, ITS OPPORTUNITIES AND RISKS FOR EUROPE, AND ITS IMPACT ON EUROPEAN ENERGY SECURITY: ULF BALZER**
6. **FROM RUSSIA WITH GAS: AN ANALYSIS OF THE NORD STREAM PIPELINE'S IMPACT ON THE EUROPEAN GAS TRANSMISSION SYSTEM WITH THE TIGER-MODEL BY: STEFAN LOCHNER AND DAVID BOTHE**
7. **THE GULF OF MEXICO OIL DISASTER: A CASE STUDY ON THE PROJECTED ECONOMIC IMPACT ON TOURISM AMONG THE GULF STATES OF LOUISIANA, MISSISSIPPI, ALABAMA, AND FLORIDA: RICHARD ANDREW ROBINSON JR.**
8. **A COMPARISON OF SIX ENVIRONMENTAL IMPACT ASSESSMENT REGIMES**
9. **ENVIRONMENTAL IMPACT ASSESSMENT IN RUSSIA: SERGEI M. GOVORUSHKO'**

- 10. PROMOTING AND STRENGTHENING PUBLIC PARTICIPATION IN CHINA'S ENVIRONMENTAL IMPACT ASSESSMENT PROCESS: COMPARING CHINA'S EIA LAW AND U.S. NEPA: JESSE L. MOORMAN AND ZHANG GE**
- 11. ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR OIL & GAS AND POWER PROJECTS: CRAIG A. REID**
- 12. ENVIRONMENTAL IMPACT ASSESSMENT OF OIL AND GAS SECTOR: J. B. ALAM, A. A. M. AHMED, G. M. MUNNA AND A. A. M. AHMED**
- 13. ENVIRONMENTAL IMPACT ASSESSMENT IN INDIA: GEORGE CYRIAC, SHAMIK SANJANWALA**
- 14. CASE STUDY: DEEPWATER HORIZON OIL SPILL: GEAR CLEAN**
- 15. NORD STREAM: NOT JUST A PIPELINE AN ANALYSIS OF THE POLITICAL DEBATES IN THE BALTIC SEA REGION REGARDING THE PLANNED GAS PIPELINE FROM RUSSIA TO GERMANY: BENDIK SOLUM WHIST**
- 16. ENVIRONMENTAL IMPACT ASSESSMENT GENERAL PROCEDURES: PACIFICA F. ACHIENG OGOLA**
- 17. ENVIRONMENTAL REGULATION IN THE OIL & GAS INDUSTRIES, ZHIGUO GAO**
- 18. CUMULATIVE ENVIRONMENTAL EFFECTS OF OIL AND GAS ACTIVITIES ON ALASKA'S NORTH SLOPE: THE NATIONAL ACADEMIES**
- 19. MARINE ENVIRONMENTAL PROTECTION AND TRANSBOUNDARY PIPELINE PROJECTS: A CASE STUDY OF THE NORD STREAM PIPELINE: ALEXANDER LOTT MERKOURIOS**
- 20. ENVIRONMENTAL IMPACT ASSESSMENT IN INDIA AND ITS DRAWBACKS- ARUNA MURTHY**
- 21. ENVIRONMENTAL ASSESSMENT: THE REGULATION OF DECISION MAKING: HOLDER, J**
- 22. ENVIRONMENTAL IMPACTS OF THE OIL & GAS INDUSTRY- JACQUELINE BARBOZA MARIANO & EMILIO LEBRE LA ROVERE**

23. MARINE ENVIRONMENTAL PROTECTION AND TRANSBOUNDARY PIPELINE PROJECTS: A CASE STUDY OF THE NORD STREAM PIPELINE: ALEXANDER LOTT MERKOURIOS

WEBSITES:

1. http://www.academia.edu/3389498/EIA_practice_in_India_and_its_evaluation_using_SWOT_analysis
2. <http://envfor.nic.in/divisions/iass/eia/Chapter1.html>
3. <http://www.epa.gov/compliance/nepa/submiteis/index.html>
4. <http://www.cseindia.org/node/383>
5. [http://envfor.nic.in/legis/eia/so-60\(e\).html](http://envfor.nic.in/legis/eia/so-60(e).html)
6. <http://www.epa.gov/compliance/nepa/submiteis/index.html>
7. <http://planningguidance.planningportal.gov.uk/blog/guidance/environmental-impact-assessment/preparing-an-environmental-statement/>
8. <http://www.arcticcentre.org/RussianEIA/legislation>
9. <http://www.arcticcentre.org/RussianEIA/process>
10. <http://www.thecanadianencyclopedia.ca/en/article/environmental-impact-assessment/>
11. <https://www.ceaa-acee.gc.ca/default.asp?lang=en&n=9EC7CAD2-1>
12. [http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)
13. <http://www.gulfspillrestoration.noaa.gov/affected-gulf-resources/>
14. http://www.telegraphindia.com/1120511/jsp/northeast/story_15473962.jsp
15. <http://ejatlas.org/conflict/oil-spillage-in-nagaland-india>
16. <http://kanglaonline.com/2011/09/pil-seeking-rs-1000-crore-compensation-filed-for-oil-spill-in-nagaland/>
17. <http://www.livemint.com/Home-Page/3U7N2PESrGcmS7YMDCmEUO/Ministry-raises-concerns-on-ONGC-oil-leak.html>

LEGISLATIONS:

- 1. ENVIRONMENT PROTECTION ACT, 1986**
- 2. WATER ACT, 1973**
- 3. AIR ACT, 1973**
- 4. ENVIRONMENTAL IMPACT ASSESSMENT NOTIFICATION, 1994**
- 5. ENVIRONMENTAL IMPACT ASSESSMENT NOTIFICATION, 2006**
- 6. NATIONAL ENVIRONMENT POLICY, 1970**
- 7. TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2011**
- 8. CANADIAN ENVIRONMENTAL ASSESSMENT ACT, 2012.**
- 9. ENVIRONMENTAL IMPACT ASSESSMENT LAW OF PEOPLE'S REPUBLIC OF CHINA , 2002**

INTERNATIONAL CONVENTIONS:

- 1. INTERNATIONAL CONVENTION ON THE PREVENTION OF THE SEA BY OIL, 1954**
- 2. LONDON CONVENTION, 1972**
- 3. STOCKHOLM DECLARATION, 1972**
- 4. MARPOL, 1973**
- 5. INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR OIL POLLUTION DAMAGE, 1969**
- 6. UNITED NATIONS CONVENTION ON LAW OF SEA, 1982**
- 7. BASEL CONVENTION, 1989**
- 8. ESPOO CONVENTION, 1991**