THE ROLE OF

ENVIRONMENTAL IMPACT ASSESSMENT IN

NIGERIA'S OIL AND GAS INDUSTRY

Mohammed Nuruddeen Isah

A thesis submitted in partial fulfilment of the requirements

for the degree of Doctor of Philosophy

Cardiff University

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School of Earth and Ocean Sciences
Cardiff University
Park Place
Cardiff CF10 3AT
United Kingdom

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ABSTRACT

Nigeria has serious environmental degradation resulting from pollution related to the oil and gas industry. The Department of Petroleum Resources reports that there were over 4,200 oil spill incidences in Nigeria over the last 50 years, ranging from minor spills to over half a million barrels in one single incident; yet there are no coherent policies on the environment to deal with the on-going pollution problems. Significant improvements can be achieved by good Environmental Impact Assessments (EIA) and strict adherence to regulations. The history, strengths and weaknesses of EIA application and implementation in the oil industry are reviewed and assessed. The main research method was the use of a bespoke questionnaire sent to 705 recipients of whom 560 responded, and who were identified as a representative cross-section of stakeholders; including oil industry personnel, academics, government organisations personnel, representatives from local communities affected by the pollution, and Non-Governmental Organisations (NGOs). The questionnaire survey was used to determine the views of the stakeholders on the role of EIA in Nigeria's oil and gas industry; it also investigated the levels of the respondents' involvement, experience and participation in EIA. The data from the questionnaire was analysed using statistical methods, which elucidated the nature of the perceived conflict between the oil companies and government organisations, against academics and stake-holder communities. The results clearly demonstrated the ingrained views and perceptions on each side of the dispute. In addition the results highlighted the constraints and challenges faced by various stakeholders in conducting EIA in Nigeria, and emphasized the need for changes in the way EIAs were conducted in the oil industry. The research identified components of particular concern within the Nigerian EIA structure, process and implementation; and raised questions about the adoption or external Agency or industry imposition of 1st World designed EIAs in Nigeria.

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CHAPTER ONE: INTRODUCTION

1.1 Rationale

Nigeria's oil boom dated back to the mid 1960s, with proven oil and gas reserves of 38 billion barrels and 187 TCF, which ranks the country as the biggest producer of petroleum in Africa and 12th largest in the world (Michele et al., 1999). Unfortunately, such natural magnanimity has had a more negative impact on the economy irrespective of it contribution to 20% of the Gross Domestic Product (GDP), 65% budgetary revenue and 95% of foreign exchange earnings (CIA's World Factbook, 2004). Nigeria's oil wealth has brought appalling physical and attitudinal hardship to the citizenry, especially people in the oil-producing communities. The Niger Delta reserve is the sole producing basin since the discovery of oil in Eleme in 1965. Physical adversities associated with oil production in Nigeria include gas flaring and oil seepages into the ecosystem.

Gas flaring is as old as oil production in the Niger Delta, and the waste involved in the practice prompted the 1967-1970 civil wars. Gas flaring is an anthropogenic activity involving the wasteful emission of greenhouse gases (GHGs) that causes global warming, fluctuations in the climate, and disequilibrium in the earth. Nigeria ranked 2nd to Russia in gas flaring in the world with about 23 billion m^3 of gas flared (World, 2002). Conversely, oil spill is predominant in Ogoniland region; this activity involves the release of oil into the maritime environment from vandalized or old pipelines. Consequently, oil spill destroys aquatic lives, contaminates drinking water, leaves fishermen jobless, and results in severe threat to public health.

Attitudinal effects related to the physical problems are accountable for the emergence of militia and pressure groups that are perceived to be individuals crying foul for their selfish interest rather than that of their immediate communities. Recent kidnap of oil workers, payment of ransom by multinationals, and bombing of government establishments are some of the socio-physical events emanating from such sociological change, no thanks to the marginalisation of the region during the regime of the military, laissez-faire approach of the democratic government, and unethical operation of the multinational companies.

The bane of the Nigerian oil and gas industry is the environmental policies and regulations of the government. For example, lip-services was paid to the issue of gas flaring as

demonstrated by the myriad of extension to the gas flaring deadline by the government, the latest being given as December 31st, 2012 (Ayoola, 2011). Furthermore, the regulating agencies are negligent of their responsibility as evidence from the recent subsidy scam in the Nigerian National Petroleum Corporation (NNPC) and corruption of the companies' watchdog, the Department for Petroleum Resources (DPR). The abuse of the Environmental Impact Assessment regulations by the major players has stemmed from the deficiencies in the line of duty by government officials. Environmental impact policies are a low priority in the implementation and practices of the multinationals.

The rationale of this study is to examine current EIA practices in the Nigerian oil and gas sector with a view to identifying the causative problems and consequently, how the results can be used to resolve the problems inherent in oil and gas exploration in Nigeria.

1.2 Research Questions

This research was undertaken to identify and evaluate the problems connected with EIA implementation by the Nigerian government. The work is based on bespoke questionnaires that were designed to identify the education and experience of people actively engaged in EIA, to elucidate all the issues the EIAs raise, and to provide a framework under which solutions could be proposed.

In this context, an analysis of the survey results addresses the following research questions:

1. Is the Government of Nigeria biased against or incapable of addressing environmental issues?

2. Is the oil industry following the right environmental practices as stated by the current law?

3. Are the Government Agencies capable of conducting meaningful EIAs?

1.3 Aims of the research

- To review the current methods and process of EIA regulations and application by the oil companies in Nigeria, and the impact assessment on the environment in relation to exploration activities within and outside the Niger Delta region.

- To review the current practices of the oil and gas industry in terms of the strengths and weaknesses of the current laws of the country, and the way they affects the environment.

- Assess the role of government in the current practice of EIA processes and application, and review the legislative framework of EIA in Nigeria.

- To review the role of government and agencies in charge of overseeing the activities of the oil and gas sector with respect to EIA application and implementation.

- Look at the successes and failures and performance of the regulatory bodies in charge of oil and gas industry in Nigeria.

- To review the role of the various stakeholders in EIA process in Nigeria, which includes the oil companies, the NGO`s, government and the local communities.

1.4 Objectives of the study

At the end of this study, the following are the expected outcomes:-

- To discover how EIA policies can assuage Nigeria’s environmental challenges related to oil and gas production.

- To identify the missing link between policy implementation and practice.

- To identify areas of improvement in the EIA policies in Nigeria relative to required global standards.

- To proffer a pragmatic approach for monitoring EIA practices in the oil and gas companies
- To recognize ways to increase efficiency of the monitoring agencies.

1.5 Overview of research

Over the last 50 years, Nigeria has witnessed serious environmental degradation occasioned by oil exploration and exploitation, refining, and product marketing (Adewale, 1988). Exploration activities have extended from the Niger Delta Basin to the Lake Chad Basin in the north-eastern part of the country, as showed in the map of Nigeria (Figure 1.1) and the south-east Niger Delta (Figure 1.2). Nigeria currently (2012) produces 2.6 million barrels of crude oil per day, making it the twelfth largest oil producer in the world. According to the Nigerian Ministry of Petroleum Resources, there are 150 oil fields and 1,481 oil wells in the Niger Delta region making it the largest oil reserve in Africa and tenth largest in the World. The country earns over $28 billion US dollars from oil revenue annually, as reported by the Central Bank of Nigeria (2009) and yet there are no coherent policies from the government to deal with the growing environmental problems.

Nigeria's main environmental challenges result from oil spills, gas flaring and deforestation. Oil spills in Nigeria have been a regular occurrence, and the resultant degradation of the surrounding environment has caused significant tension between the people living in the region and the multi-national oil companies operating in those areas.

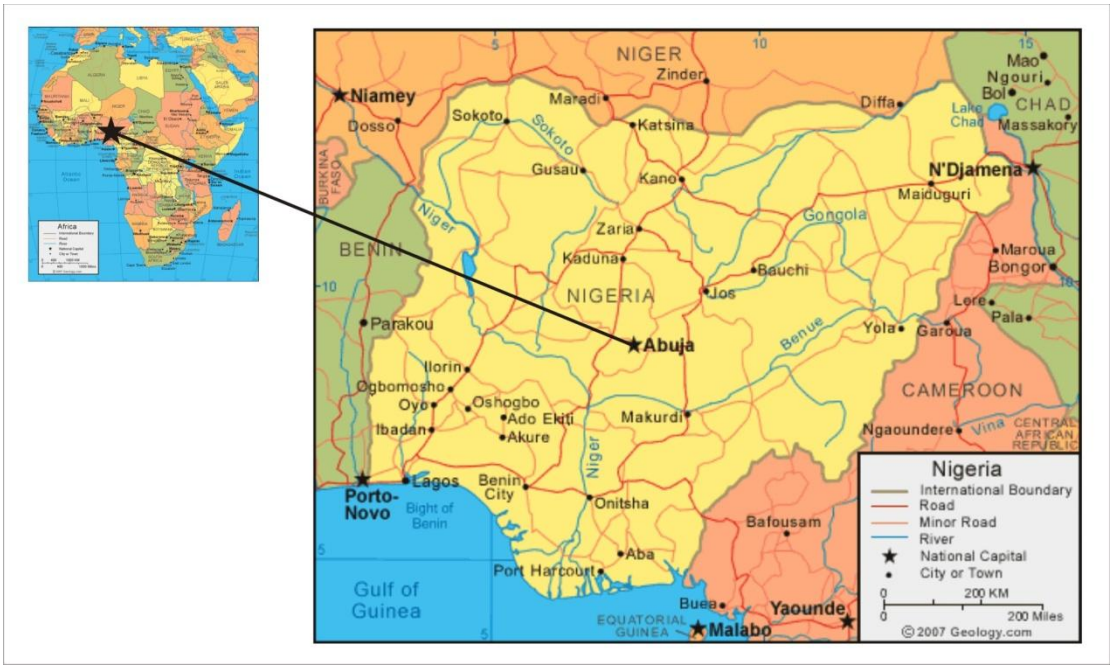

Figure 1.1: Map of Nigeria [WWW 1.1]

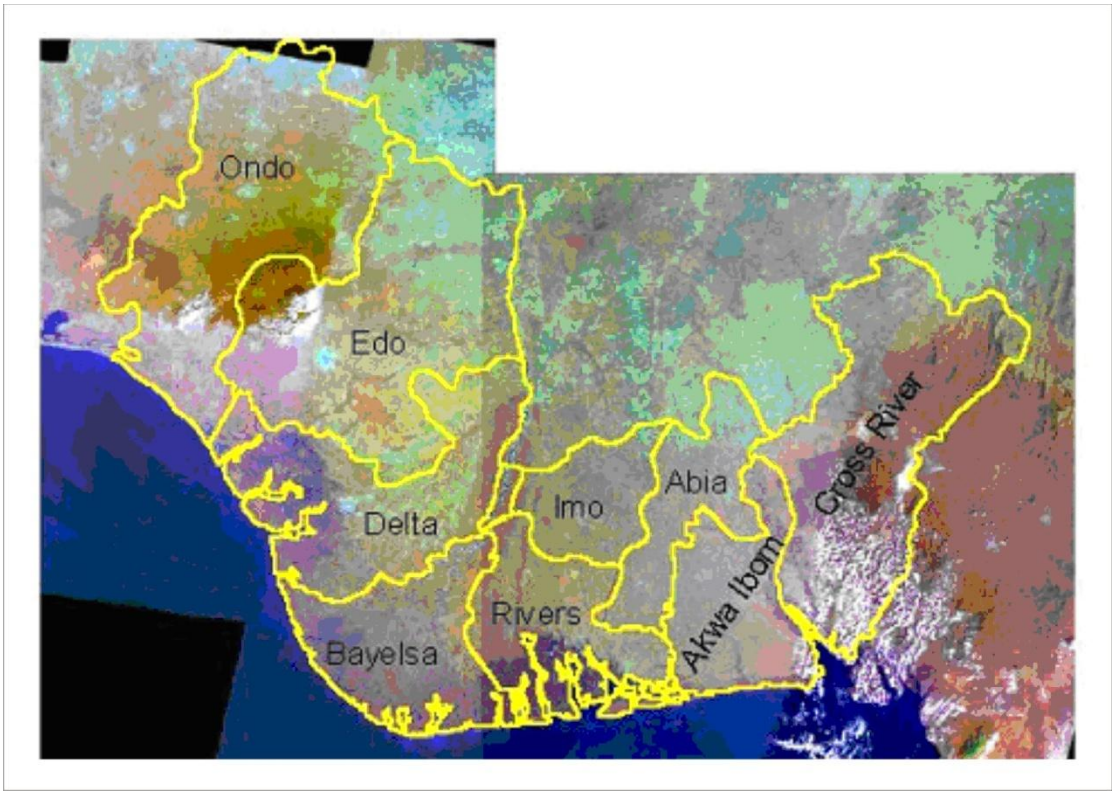

Figure 1.2: Showing the location of the Niger-Delta [WWW 1.2]

Figure 1.3: Showing an oil spill in the Niger Delta [WWW 1.3]

Figure 1.4 Showing a leaked oil well at Elume village. The pool around the well heads is composed of crude oil [WWW 1.4]

It was reported by the Department of Petroleum Resources (DPR, 2010) that there have been over 4,000 oil spill incidences in Nigeria over the last 50 years, ranging from minor spills involving just a few hundred barrels to over half a million barrels in one single incidence

(Ndifon, 2007) (Figures 1.3 and 1.4). It is only in the past decade that environmental groups, the government, and the foreign oil companies began to take steps to mitigate these events. The perceived indifference of both the government and the oil companies to the environment in the Niger Delta region has been exacerbated by Nigeria's lack of coherent environmental control policy.

In view of the of the rapidly deteriorating condition of the environment, due to oil exploration and exploitation in Nigeria, there is now an urgent need to protect and preserve this environment. The country needs to align itself with the global movement towards the preservation of the country's environments; and this can only be achieved by means such as environmental impact assessments and strict adherence to regulations. This research investigates the framework of the existing regulations and legislation, and critically assesses their efficiency in managing Nigeria's oil and gas industry. The findings will be targeted towards generating real solutions to the serious environmental problems in the country.

Environmental policies and management strategies have advanced in the Nigerian petroleum industry. The allegations of involvement of communities and other local interests in the destruction of oil facilities resulting in large-scale environmental hazards in the Niger Delta, particularly in the past five years, adds a new dimension to the resolution of the environmental question. While the local people may suffer from the constraints of incomplete scientific knowledge about long-term welfare, implications of environmental degradation, events particularly in the 1990s indicates that environmental awareness among the people in the oil producing Niger Delta has been on the increase (Orubu et al., 2002).

The importance of Nigerian oil to the economy was realized as far back as 1971, one year after the Nigerian civil war, when the Nigerian National Oil Company (NNOC) was established to maintain governmental control in the oil industry (Amu, 1997). In 1971 Nigeria joined the Organization of Petroleum Exporting Countries (OPEC) as the eleventh member. In 1977, the NNOC was merged with the Ministry of Petroleum Resources under Decree, No. 33. The former name, NNOC was thus changed to Nigerian National Petroleum Company (NNPC). The same Decree, No. 33, also established the Petroleum Inspectorate as an integral part of the NNPC. Its sole responsibility is the statutory control and regulation of all industry activities - upstream and downstream.

The creation of the NNPC from the former NNOC meant the NNPC combined the commercial functions of the NNOC and additional functions for supervision of exploration, production, transportation, processing and petroleum refining.

This study researched the role of government and other agencies in EIA evolution, application, and practices. It also looked at the shortcomings of Nigerian environmental policies, with emphasis on environmental impact as a result of oil exploration and exploitation. Activities in the past and current mitigation and future solution for the environment will be reviewed.

1.6 Previous studies on Nigeria's oil industry

Previous studies by scholars and researchers on the role of EIA in Nigeria, ranged from studies on the legislative framework (Femi Olokesusi, 1998), oil spills and gas flaring (Orubo, 1999), evolution of EIA systems in Nigeria practices and short comings (Ogunba, 2004), and oil exploration and environmental degradation: the Nigerian experience (Adeyemi and Tolulope, 2004). The first serious scholarly study on the Nigerian oil industry was undertaken by Schatcl (1969) who focused on the evolution of the industry's operations in the light of the importance of oil for the country's future energy needs. A study by Pearson (1970) concentrated on the impact of the oil industry on Nigerian's economic development. A substantial number of other studies followed, most of which have dealt with economic and investment ignoring entirely the impacts on the environment (Embolu, 1975; Odofin, 1979; Onoh, 1983; Soremekun, 1995a; Eromodsele, 1997). Other studies by Turner (1977) and Inonvbere and Shaw (1988) concentrated on the impacts of oil on political developments in the country. Studies on EIA in Nigeria were done by Femi Olokesusi (1998), who critically assesses the legal and institutional framework of EIA in Nigeria. In his studies he assessed the legislations and guidelines produced by the Federal Environmental Protection Agency (FEPA) and identified some problems, such as deliberate restrictions of public involvement and participation by government or consultants; this usually leads to unnecessary delays or high cost of projects especially in the oil industry. His work however, did not look at environmental implications as a result of failure or non-performance of EIA. Research by Okorodudu-Fabura (1988), Dan-Habu (1996**),** and Isichei (2000) showed that the initial focus of environmental awareness and legislation in Nigeria was on the petroleum industry. This initial belief in the country was that only the petroleum sector required close environmental

monitoring. Environmental legislation came in the form of pollution reduction measures that reacted to local problems within the petroleum industry. Several industry regulations, under the authority of the Petroleum Act, 1969, were enacted to regulate the exploration of petroleum in Nigeria, and control pollution.

A study by Nerry and Akpofure (2000) examines the statutory regulatory framework for the EIA process, duplications of function by various agencies, and overlapping responsibility. It also examined the misinterpretations of various statutes, which often leads to delays in the executions of the EIA process in Nigeria. However, their work has no environmental considerations in terms of pollution as a result of oil exploration in Nigeria, and there was no clear role for non-governmental organisations (NGOs). Nerry and Akpofure (2000) also emphasised the need for community participation. They further suggested the establishment of a community-based oil spill committee with the sole aim of educating people and preventing sabotage-induced oil spills, which contributes to about 18% of the total oil spills in Nigeria in the late 80s to about 60% by 2012, according to reports by United Nation Environmental Programme (UNEP) on Environmental Assessment of Niger-Delta, (August, 2011)

A significant contribution towards our understanding of oil exploration and environmental degradation was given by Tolulope (2004), who focused on the incidences of oil spillages in Nigeria with their negative impacts on the environment. One of the particular emphases of his studies was the extent of spill hazards and the tendency of petroleum to pollute the environment and the ecosystem.

One of the major contributions on EIA studies in Nigeria was by Ogunba (2004). His study was conducted amidst mounting criticism of EIA carried out in Nigeria under the three independent EIA systems, the Petroleum Act (1969), the EIA Decree 86 (1992), and the Town and Country Planning Decree 88 (1992). The author traces the evolution of Nigeria's systems and appraises current practice and shortcomings. He traced the path of development of the Nigerian EIA systems within the framework of Gibson's model of EIA evolution (Impact Assess. Project Appraisal, 20 (3) 2002, 151–159). His studies revealed that the Nigerian EIA system shows some adherence to Gibson’s (2002) four stage models, but how it also shows some similarities with many other country’s EIA systems around the world.

The appraisal of Nigerian EIA systems can be approached from the viewpoint of how well it has progressed along a path of evolution. The model proposed by Gibson (2002) is based on his studies in Canada, and is particularly relevant to such an appraisal. It is therefore relevant and possible to evaluate the development and structure of individual Nigerian EIA systems against this model to evaluate how well the systems are progressing towards the best possible concept and practice.

The transition towards EIA maturity is often gradual and fraught with problems. Nevertheless, the movement is generally positive, and this is apparent if one takes a closer look at the transition of Nigerian EIA systems from the reactive pollution control of the 1960s up to the relatively advanced environmental assessment of the present time.

1.7 History of the oil industry in Nigeria.

The first major oil exploratory work carried out in Nigeria was conducted by the Nigerian Bitumen Corporation; a Nigerian subsidiary of a German company. Between 1907 and 1914, the Nigerian Bitumen Corporation was forced to withdraw from the country due to the beginning of the First World War. After the war the company was not allowed to resume operations since the British colonial authorities gave preference to oil exploration by British companies (NNPC, 1976).

In 1938, a joint venture between the two major oil companies Shell and BP was granted a licence to explore for oil over the entire Nigerian territory. This gave them a monopoly over oil exploration for the entire country. Shell-BP began drilling activities in 1951. In 1953, 450 barrels/day of oil were discovered at Akata-1 well. But it was only in 1956 that Shell-BP discovered oil in commercial quantities for the first time at Oloibiri, Bayelsa State. Encouraged by this success Shell-BP expanded operational and drilling activities between 1958 and 1960. They made one of the most important and promising discovery at Bomu oil field in the Ogoni area in 1958. ca. 350.000 barrels/day) in 1996 (Quinlan, 1999) (Table 1.1).

Table 1.1 Percentage Share of Nigeria's Crude Oil Production by Company, 1970-2011

Year	Shell-BP	Gulf*	Mobil	Agip	Elf	Texaco	Ashland **	Other
1970	74.47	20.05	4.68	0.45	0	0.35	0	0
1971	72.96	17.76	4.79	2.17	1.54	0.68	0	0
1972	67.50	16.86	9.17	2.87	3.04	0.56	0	0
1973	63.41	17.76	10.90	4.60	2.93	0.40	0	0
1974	59.99	16.36	13.14	6.86	3.55	0.10	0	0
1975	63.50	12.38	10.64	8.79	3.91	0.42	0.36	0
1976	59.53	14.14	11.14	8.92	3.67	1.67	0.47	0.46
1977	58.18	13.85	10.64	10.21	3.79	2.53	0.33	0.47
1978	57.20	13.80	10.52	11.08	4.08	2.27	0.46	0.59
1979	56.93	16.27	10.57	9.62	3.40	2.34	0.35	0.52
1980	56.69	16.57	10.59	8.93	4.17	2.10	0.41	0.54
1981	51.37	19.58	11.17	8.79	5.05	2.39	0.66	0.99
1982	50.82	16.37	10.57	9.96	7.21	2.91	1.26	0.90
1983	50.15	14.13	13.15	9.58	7.24	3.56	1.26	0.93
1984	50.27	13.47	12.82	9.09	7.05	4.71	1.77	0.82
1985	49.89	16. 56	11.98	9.95	6.23	3.10	1.56	0.73
1986	48.30	16.85	12.30	9.12	5.87	4.45	2.44	0.67
1987	49.26	15.96	12.31	8.83	6.18	4.38	2.55	0.54
1988	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1989	52.72	15.58	12.42	7.70	5.28	3.41	1.12	0.77
1990	51.18	15.29	13.16	9.50	5.30	3.24	2.11	0.22
1991	50.74	16.23	14.45	7.42	5. 03	3.12	1.62	1.39
1992	49.50	16.18	16.76	7.15	4.96	2.96	1.26	1.22
1993	48.15	16.48	21.19	6.99	5.07	0	0.96	1.17
1994	48.15	16.48	21.19	6.99	5.07	0	0.96	1.17
1995	46.11	19.87	14.81	7.70	6.56	2.80	0.96	1.18
1996	46.11	19.87	14.81	7.70	6.56	2.80	0.96	1.18
1997* **	42.14	18.08	20.83	6.55	5.90	3.58	1.09	1.83
1998	38.28	20.00	24.64	6.70	5.74	3.11	n/a	1.53
1999* **	39.58	17.50	25.00	6.66	5.00	3.13	0.83	2.29
2000	40.1	6.00	27.80	9.80	6.60	3.11	0	2.60

2001	40.2	0	25.00	8.90	5.80	4.30	0	3.80
2002	44.2	0	24.30	8.40	5.80	6.8	0	2.1
2003	44.8	0	23.00	8.50	7.2	6.9	0	3.1
2004	47.8	0	24.70	8.90	6.2	7.2	0	4.6
2005	48.4	0	31.80	8.40	6.4	7.2	0	3.8
2006	49.9	0	32.20	8.50	5.9	7.4	0	3.7
2007	50.1	0	26.90	8.70	6.3	7.6	0	3.7
2008	52.6	0	27.80	9.50	6.9	7.8	0	3.6
2009	55.8	0	27.00	10.0	6.7	6.9	0	3.4
2010	56.7	0	28.00	10.2	6.8	7.4	0	3.3
2011	59.2	0	24.5	7.0	6.9	7.1	0	2.3

* Now Chevron ** Ashland lost its oil licences in 1997; Addax bought the licences in 1998.

Sources: 1970-85 data from NNPC (1986a); 1986-96 data from OPEC Annual Statistical Bulletin (various years); 1990 figures from Quinlan (1992, 2); 1997 data from Weekly Petroleum Argus (21 April 1997); 1998 estimates from petroleum Review (April 1999), estimates from Petroleum Economist (Quinlan 1999)

From 1999 to 2012 a new civilian administration took over power from the military and therefore new arrangement for the country's oil export came into place where individuals and politicians were included in oil allocations and export.

According to the Petroleum Review Bulletin (April 1995, 1997 and 2001) production of crude oil continued with new discoveries in Bonga and Bonny in the early 1990s. Nigeria's foreign oil-based earning increased between 2000 to 2008; a period marked by serious instability in the Niger Delta region. This was a result of dissatisfaction in the way both the government and oil companies handled environment issues. In percentage terms, Nigeria's share of World crude oil production rose from 0.03% in 1958, to 1.22% in 1966, fell to 0.36% in 1968 (this was due to Nigerian civil war that started in 1967 and ended in 1970) from then, Nigerian's share increased enormously to 1.23% in 1969, to 2.25% in 1970, reaching 3.86% in 1974. In the 1980s, the country's share dropped to 2.18% in 1983 and again in 1987, rising to 3.16% in 1997 (Table 1.2) (OPEC Annual Statistical Bulletin 1990-2002) From the year 2000 3 out of the listed 7 companies that operated in Nigeria either lost their bid to operate or merged with other companies to form a larger company; such companies includes, Gulf Oil, Ashland, while Shell-BP became Shell Petroleum Development Company (SPDC).

Table 1.2 Nigerian Crude Oil Production, 1958-2011

Year	Production (000s barrels/day)	% share of the World total	Year	Production (000s barrels/day)	% share of the World total
1958	5	0.03	**1985**	1,500	2.61
1959	10	0.05	**1986**	1,465	2.42
1960	20	0.09	**1987**	1,325	2.18
1961	55	0.23	**1988**	1,445	2.28
1962	70	0.27	**1989**	1,715	2.67
1963	75	0.27	**1990**	1,810	2.75
1964	120	0.41	**1991**	1,890	2.89
1965	275	0.87	**1992**	1,950	2.97
1966	420	1.22	**1993**	1,985	3.01
1967	320	0.87	**1994**	1,990	2.97
1968	145	0.36	**1995**	2,000	2.95
1969	540	1.23	**1996**	2,150	3.09
1970	1,085	2.25	**1997**	2,285	3.16
1971	1,530	3.01	**1998**	2.377	3.18
1972	1,815	3.39	**1999**	2.337	3.17
1973	2,055	3.51	**2000**	2.372	3.19
1974	2,260	3.86	**2001**	2.256	3.16
1975	1,785	3.20	**2002**	2.117	3.08
1976	2,065	3.44	**2003**	2.275	3.15
1977	2,085	3.33	**2004**	2.356	3.18
1978	1,895	3.01	**2005**	2.451	3.19
1979	2,300	3.50	**2006**	2.439	3.18
1980	2,055	3.28	**2007**	2.352	3.19
1981	1,440	2.43	**2008**	2.168	3.09
1982	1,285	2.25	**2009**	2.345	3.18
1983	1,235	2.18	**2010**	2.440	3.21
1984	1,390	2.41	**2011**	2.456	3.21

Source: BP Statistical Review of World Energy (1960-2011)

The destination of Nigeria's oil exports in terms of the world market fluctuated considerably over the years. In the first phase 1958-61, virtually all the oil production was exported to Britain and the Netherlands; the home countries of Shell-BP. In the 1960s, new export markets were found in Western Europe, USA, Latin America, Africa and Japan. In the early 1970s, the USA became the largest single buyer of Nigerian oil. In 1973, for example, over half of the Nigerian oil exports went to Western Europe, 27% to the USA, 13% to the Caribbean and 5% to Japan (Madujibeya, 1975). The share of Nigerian oil exports to the USA declined to 14.1% in 1984 as a result of the world-wide recession in the early1980s.

Nigerian oil exports to the USA then recovered and peaked at 52.6% of the country's total oil exports in 1989. At the same time, increased production of North Sea oil in the 1980s contributed to a relative decline of Nigerian oil exports to Western Europe (Khan, 1994), leaving the USA as the main importer of Nigerian oil. The main exports markets for Nigerian oil remain the USA and Western Europe, with a share of 48% and 37.8% of the total respectively in 1997 (Tables 1.3, 1.4), and Figure 1.5 showing Nigeria's oil destinations. Germany was the largest western European importer of Nigerian oil, closely followed by France; Britain as Nigeria's former colonial power, accounted for only 0.2% of Nigerian's oil exports (OPEC Annual Statistical Bulletin 1998, 2000, 2005 and 2011).

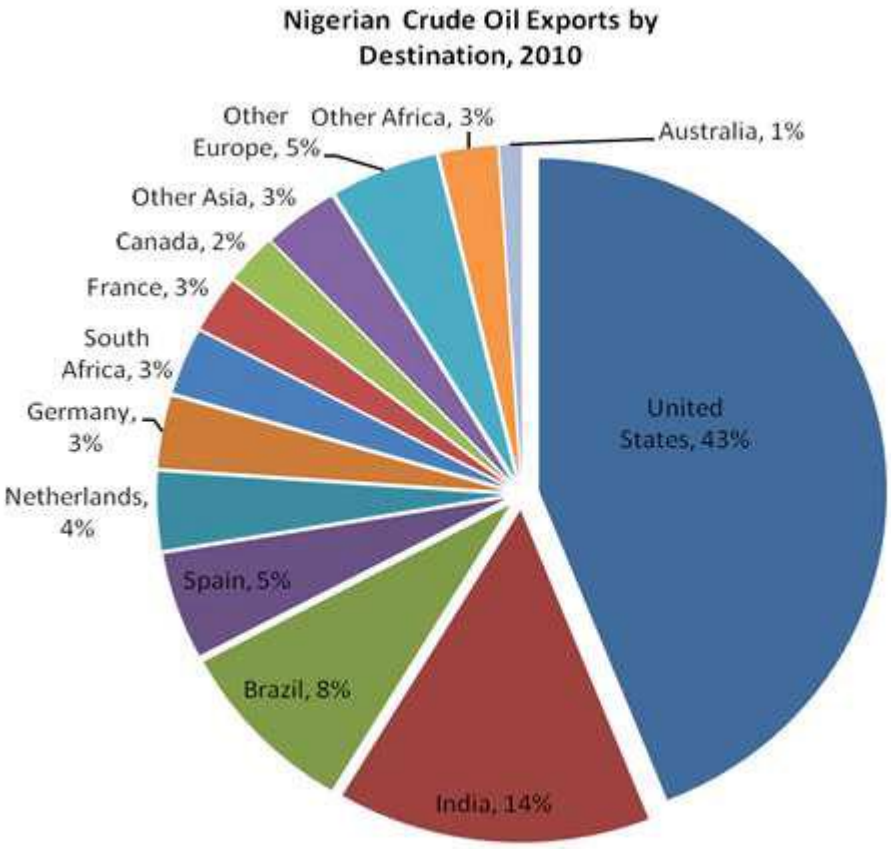

Figure 1.5.Showing Nigerian's oil destinations by percentage in 2010[WWW 1.5]

Table 1.3 Nigerian's Oil Exports by Destination (per cent), 1984-2011

Year	United States	West. Europe	Latin America	Africa	Far-East Asia	Other	Total
1984	14.1	72.3	8.1	3.7	n/a	1.8	100
1985	16.8	62.4	16.1	3.3	n/a	1.4	100
1986	34.8	54.4	4.1	4.4	n/a	2.3	100
1987	49.7	40.4	1.7	6.0	n/a	2.2	100
1988	49.9	40.0	1.8	6.1	n/a	2.2	100
1989	52.6	37.1	1.6	4.6	n/a	4.1	100
1990	50.7	39.5	1.6	4.8	0.1	3.3	100
1991	43.6	45.3	2.5	5.0	n/a	3.6	100
1992	44.2	43.6	2.8	5.0	0.6	3.8	100
1993	45.9	32.7	4.0	5.3	7.4	4.7	100
1994	41.8	38.4	4.1	4.8	6.9	4.0	100
1995	40.4	33.0	5.4	8.4	9.6	3.2	100
1996	45.2	41.0	3.8	2.4	5.4	2.2	100
1997	48.0	37.8	4.3	4.0	4.3	1.6	100
1998	47.0	33.0	6.5	3.5	7.5	2.5	100
1999	47.5	33.5	6.0	3.0	8.0	2.0	100
2000	46.0	34.0	5.0	3.0	10.0	2.0	100
2001	45.0	34.0	5.5	3.5	10.0	2.0	100
2002	43.8	33.2	5.5	3.5	11.0	3.0	100
2003	44.7	32.5	4.7	2.5	14.2	1.4	100
2004	43.6	33.0	4.4	3.6	14.6	2.2	100
2005	42.0	32.0	4.5	3.6	15.5	2.4	100
2006	43.1	31.3	4.6	3.2	15.6	2.2	100
2007	42.8	31.8	4.4	3.2	15.6	2.2	100
2008	43.0	30.5	4.5	3.5	16.2	2.3	100
2009	42.0	30.8	3.2	3.8	17.5	2.7	100
2010	43.0	30.2	3.4	3.8	17.3	2.3	100
2011	43.3	29.4	3.0	3.4	18.5	2.4	100

Production of crude oil began from December 1957 (Shell-BP, 1960). On the eve of Nigeria's independence in 1960, the two largest Dutch and British oil companies Shell and BP were the dominant oil companies in the country and remained so until recently (2012); Shell remained the most dominant oil company in Nigeria. The successes of Shell-BP and encouragement by the British government attracted more oil companies to operate in Nigeria. From the late 1950s concessions were granted to a number of non-British oil companies. All six major world oil companies, which later dominated Nigeria's oil industry (Shell-BP, Mobil, Chevron, Elf, Agip and Texaco), were already present in the country by early 1960s.

Table 1.4 Nigeria's Proved Oil and Gas Reserves, 1984-2011

Year	Oil			Gas		
	Reserves (billion barrels)	Reserves as % share of World Total	Reserves / Production Ratio (years)	Reserves (trillion cubic metres)	Reserves as % share of World Total	Reserves / Production Ratio (years)
1984	16.7	2.4	32.8	1.0	1.1	Over 100
1985	16.6	2.3	31.0	1.3	1.4	Over 100
1986	16.0	2.3	30.2	1.3	1.3	Over 100
1987	16.0	1.8	34.1	2.4	2.2	Over 100
1988	16.0	1.7	32.2	2.4	2.2	Over 100
1989	16.0	1.6	27.5	2.5	2.2	Over 100
1990	17.1	1.7	27.1	2.5	2.1	Over 100
1991	17.9	1.8	26.0	3.0	2.4	Over 100
1992	17.9	1.8	26.6	3.4	2.5	Over 100
1993	17.9	1.8	25.8	3.4	2.4	Over 100
1994	17.9	1.8	26.1	3.4	2.4	Over 100
1995	20.8	2.1	30.2	3.1	2.2	Over 100
1996	15.5	1.5	19.9	3.0	2.1	Over 100
1997	16.8	1.6	20.2	3.3	2.2	Over 100
1998	17.8	1.7	22.6	3.5	2.3	Over 100
1999	17.9	1.7	23.7	3.7	2.6	Over 100
2000	21.7	2.1	23.7	3.6	2.7	Over 100
2001	29.5	2.2	24.6	3.7	2.8	Over 100
2002	31.7	2.5	26.5	3.7	3.1	Over 100
2003	32.7	2.5	24.8	3.9	3.3	Over 100
2004	33.5	2.6	25.7	4.2	3.5	Over 100
2005	35.8	2.6	27.6	4.2	3.6	Over 100
2006	33.9	2.7	28.2	4.3	3.7	Over 100
2007	33.6	2.8	29.1	4.4	4.1	Over 100
2008	35.7	2.9	32.3	4.6	4.3	Over 100
2009	36.8	3.0	33.7	4.7	4.6	Over 100
2010	37.0	3.1	36.8	4.9	4.7	Over 100
2011	37.2	3.2	38.9	5.2	5.0	Over 100

Sources: BP Statistical Review of World Energy. However the official proven oil reserve of Nigeria's oil stops at the end of 2011; no further new discoveries were found or updated.

1.8 Nigerian's oil policy and legislation (1914-2010)

Nigeria's petroleum policy has never been entirely coherent due to factors such as the frequent changes in petroleum officials and various changes of government (Frnas, 1998). Therefore any generalisation must be treated with caution in terms of state involvement in the Nigerian oil industry.

Obi and Soremekun (1995) identified three different historical phases. The first phase extended from the colonial period until the end of the1960s, and involved little state participation in the oil industry. The second phase started from 1967 as a response to political changes during the civil war of 1967-1970; this phase was characterised by a remarkable increase in state participation up to the end of the 1970s to mid 80s. For this phase Obi and Soremekeun (1995) argued that Nigeria moved from collection of oil rent to direct intervention in the running of oil industry. The third phase began as a response to the economic crisis of the late 1980s and the introduction of the structural adjustment programme (SAP) in 1986.

The history of environmental policy in the Nigerian petroleum industry dates back to 1914 when the Minerals Ordinance was enacted by the colonial administration. The main objective of the Ordinance was to prohibit the pollution of watercourses in the process of mining and prospecting for any mineral, including petroleum. The Mineral Oils (Safety) Regulations (1963), Petroleum Regulations (1967), as well as the Oil in Navigable Waters Act (1968), among others, are examples of post-independence statutory efforts directed at environmental protection in the petroleum industry. Environmental policy in the industry did not however enter into an active phase until the enactment of the Petroleum Act (1969), which gave the Minister in charge of petroleum matters, significant powers to make regulations relating to all aspects of petroleum operations, including protection of the environment.

More specifically as from 1988, after the establishment of the Federal Environmental Protection Agency (FEPA), the Department of Petroleum Resources (DPR) became more pro-active in its role as the environmental watchdog of the petroleum industry; with its activities closely guided within the framework of the National Policy on the Environment (NPE) launched in 1989. Drawing its authority from the numerous Statues and Regulations, which conferred on the Director of Petroleum Resources (DPR) the power to set up strict

environmental standards for the petroleum industry, in 1991 the DPR released the Environmental Guidelines and Standards for the Petroleum Industry (EGASPIN). The EGASPIN was reviewed in 1998, and again for the last time in 2002. But, as previously stated, most of the legislation and statutes were on the operations and control, but not the wider implication of the impacts to the environment. A summary of the important legislation from the beginning of oil discovery to date is as follows:

- Minerals Ordinance (1914). Prohibits the pollution of water courses in the process of mining and prospecting for minerals in Nigeria. Amended 1925, 1950, and 1958, including petroleum.
- Oil Pipeline Act (1956). Provides, among others, for the prevention of pollution of land and water resources. Amended 1965 to include petroleum and production activities.
- Public Health Act (1958). Provides a legal framework for the preservation and management of public health.
- Criminal Code (1958). Provides a legal framework for seeking redress from environmental degradation.
- Mineral Oils (Safety 1963). Provides a framework for health, safety and 'environmentally friendly' exploration and regulations production activities.
- Petroleum Regulations (1967). Provides a framework for safe petroleum operations, including environmental protection.
- Oil in Navigable Waters Act (1968). Prohibits discharge of oil into navigable water courses and other areas.
- Petroleum Act (1969). The major legislation on the petroleum industry to date. Provides encompassing framework for related regulations of upstream and downstream petroleum activities so as to protect the environment.
- Land Use Act (1978). Reforms existing land ownership rights through nationalisation with adequate and fair compensation to be paid for loss of surface rights.
- Associated Gas Re-injection Act (1979). Statutory basis for the regulation of gas flaring in Nigeria. Amended 1984 and 1985.
- Harmful and Toxic Wastes (Criminal Provisions) Decree No. 42 (1988). Provides a legal anchor for redressing the dumping of toxic and hazardous wastes.
- Federal Environmental Agency (Decree No. 58, 1988). Provides a quasi legal framework for checking environmental crimes, and establishes a protection agency in charge

of environmental standards for different pollutants and related legislations.

- Industrial Pollution Act (1991). Regulates the generation and disposal of industrial waste through abatement regulations and environmental permits.
- Effluent Limitations Regulations (1991). Provision of standards for industrial effluent discharge and emissions into the atmosphere.
- Environmental Impact Assessment (Decree No.86), (Assessment Act, 1992). Provides a statutory basis for EIAs, as part of project development authorisation process.
- Guidelines for Establishment of Petroleum Refinery, Petrochemicals, and Gas Processing Plants in Nigeria (1993). The guidelines contain procedures and regulation governing the establishment or building new refineries and gas plant in the country.
- Environmental Impact Assessment Procedure for Nigeria (1994). Contains regulation and process for guiding prospective companies to operate in accordance with law and to abide by the country's environment regulation.
- Petroleum Drilling and Production (Amendment) Regulations (1995). Contains methods and procedures regulated by law for drilling operations to be conducted in any part of the country.
- Sectoral Guidelines for Oil and Gas Industry Projects (oil and gas exploration and production – onshore/off-shore) (1995). This outlines strict regulation for exploration of oil and gas in Nigeria.
- Oil and Gas Free Export Zone Decree No.8 (1996). This allows free trade and export within the gulf of Guinea, Sao Tome and Principe.
- Environmental Guidelines and Standards of Petroleum Industry in Nigeria (EGASPIN) Department of Petroleum Resources (2002). This guideline is used by the department of petroleum resources to enforce standards and compliance to environmental regulation in the country.

1.9 Impacts of oil operations on the environment (1950-2010)

The environmental consequences of oil industry activities in Nigeria have been investigated by a number of researchers in the past, including Awobanjo (1981), World Bank (1995), Moffat and Linden (1995), Grevy (1995), Olomo and Omene (1995), NDSE (1997) Famuyiwa (1998), Eromosele (1998), Chukwe et al. (1998), and Onosode (2003). The oil industry has the essential characteristics of modern extractive industries in that the

environmental consequences have significant immediate effects, and there are wider implications for sustainable development in the region's activity.

Every aspect of oil operations, though in varying degrees, has significant negative implications for the environment. These impacts on the environment are caused by single operationals, or by combinations of a number of different operations. The resulting environmental consequences impose economic effects on the local people. Finally, social tension tends to result from compensation disagreements arising from environmental damage claims by the host communities.

A careful analysis of some of the causes of environmental impacts of gas flaring instance (Orubu (1999), has shown negative effects on the immediate environment; particularly on plant growth and wildlife, as well as on human health. The greenhouse gases such as methane and carbon dioxide emitted from gas flaring contribute towards global warming, which, if not checked, could accelerate the problem of climate change on Earth. Apparently, it was this which explains the interest of the World Bank and the Global Environmental Facility in proposing a gas flare reduction project for the oil fields of the Niger Delta in the 1990s (Moffat and Linden, 1995). It has been estimated that the total emission of carbon dioxide from gas flaring in Nigeria amounts to about 35 million cubic tonnes a year, and it is on record that Nigeria has the highest gas flare rate in the world (World Bank 1995, 2000/2001). Associated gas flared with crude oil over the period 1970-2000, stood at 97%. While for the period 1980-1989, this decreased to about 72%, falling marginally to an average of 70 to 72% during the period 1990-2000.

Massive oil spills occurring in rivers in the Niger Delta have done very significant damage to the aquatic ecosystem, particularly in the mangrove swamp forest zone. The history of oil spills in the Nigerian oil industry from 1956-2008, and the total number of reported incidences of spills is put at 4,835; resulting in a cumulative spill volume of 2,382,373 barrels of crude oil. Of this amount only about 15.91% was recovered, that is 84.09% of cumulative spill (2,003,337 barrels) was released into the environment. A number of these spills have been attributed to corrosion of ageing facilities (SPDC, 1995), and the relative disregard of good oilfield practices (Nwankwo et al., 1998; Ndifon, 1998). Transportation of petroleum products through the system of pipelines has been one of the most visible sources of environmental hazards in the industry. A network of more than 3,000 kilometres of pipeline links different parts of the country. Without effective monitoring by the appropriate

authorities, this system of oil transportation has continued to be the source of environmental hazards, with pipelines accidentally damaged, failing due to old age, or through sabotage. Shell in 2009 claimed that sabotage accounted for more than 60% of all oil spilled at its facilities in Nigeria.

One of the major problems facing Nigerian oil industry today is the issue of piracy and oil theft by organised criminal gangs. Pirates are stealing Nigeria's crude oil at a phenomenal rate, siphoning nearly 300,000 barrels per day and selling it illegally on the international trade market. (Volume 2. NNPC, 2009 Annual statistical bulletin)

Nigeria lost about N7.7 billion in 2002 as a result of vandalism of pipelines carrying petroleum products (The Guardian Newspaper, page 2, 2003) The amount, according to the Pipelines and Products Marketing Company (PPMC, 2004) a subsidiary of NNPC, represents the estimated value of the products lost in the process.

Illegal fuel siphoning as a result of the thriving black market for fuel products has increased the number of oil pipeline explosions in recent years (NNPC, 2009). In July 2000, a pipeline explosion outside the city of Warri caused the death of 250 people. An explosion in Lagos in December 2000 killed at least 60 people. The NNPC reported 800 cases of pipeline vandalism from January through October 2000. In January 2001, Nigeria lost about $4 billion in oil revenues in due to the activities of vandals on our oil installations. The government estimates that as much as 300,000 bbl/d of Nigerian crude is illegally bunkered (freighted) out of the country.

Another very serious environmental incident was a fire resulting from burst pipeline carrying petrol in Delta State in 1998. More than 1,000 persons were reported to have died in the inferno (Guardian News, 1999). The authorities attributed the incident to the activities of saboteurs and vandals (FEPA 1998). In the most recent incidents of massive oil spills and leakages, it has been difficult to differentiate cases of sabotage from accidental cases. For example, between January and June 2000, the Pipelines and Products Marketing Company (PPMC) recorded about 800 cases of pipeline rupture in different parts of the country. Out of this number, 764 were attributed to sabotage (FGN 2000, 2008, 2010), indicating that sabotage accounted for 96% of cases of pipeline ruptures in that period of six months, this claim supported the earlier claims by shell facilities alone. And yet, as noted by Nwankwos et al. (1998), many of these pipelines have been overdue for replacement for a long time. Many

oil companies did not start replacing some of these pipelines, some of which are as old as thirty years, until the mid-1990s (Ekuerhare and Orubu, 1996).

In the most recent years, the major oil companies operating in Nigeria have stepped up their corporate social responsibility development efforts, as evidenced in the implementation of several community development projects such as building of classrooms, health centres, introduction of youth empowerment schemes, and construction of access roads. Such efforts may be seen as one way of compensating the people for environmental damage resulting from oil industry activities, in addition to the desire of oil companies to improve the living conditions of their host-communities and create good will. Unfortunately, most of these efforts were rarely mentioned or even considered important by most researchers. Oil companies and host-communities continue to live in mutual suspicion, and the situation seems to have worsened since the advent of democratic administration in 1999. Oil operations require a peaceful and secure social environment, the need for oil operators and communities, as important stake holders, to foster good relationships through sustainable partnerships or memoranda of understanding cannot be over emphasised.

While these studies have provided a more or less detailed analysis of business, as well as economic and political developments, they have tended to neglect the effects of oil operations on the environment and the long-term implication of pollution and contamination. Some of these latter issues have been addressed by a small set of studies by both Nigerian and British authors. Ogbanna (1979), for instance, studied the geographic consequences of the oil industry, pointing to the combined environmental consequences resulting from the oil production on the area. A number of recent studies by non-governmental organisations have noted the environmental and social impact of oil operations, for example (Ashton-Jones 1988; HRW 1990a Robinson 1996).

1.10 The background to environmental awareness

There is some evidence that since the 1990s oil-producing communities, particularly in the Niger Delta, have been very sensitive to oil-related pollution problems. A number of communities in the Niger Delta have protested over the past on the ecological consequence caused by the oil industry (Chokar, 1993). They have tended to develop a common framework of response to the problem through a well-established system of traditional flow of information/authority in which traditional rulers and chiefs, councils of elders and

Community Development Communities (CDCs) play a significant role. Within this context of the traditional society, actions taken by the youths are to be seen as expressing views that receive the blessings and support of the whole community. Consequently the traditional organisational structure is one in which consultation is mutually reinforcing, with explicit support from all sub-systems, including the religion-cultural. It is probable that the recognition of this intricate system of authority flow is fundamental to the resolution of any future crisis arising from the exploitation of the country's petroleum resources in general, and particularly from environmental degradation, which specifically affects the people living in the oil-bearing communities.

In the past, a number of other pro-community Community Development Communities (CDCs) have also been active in Nigeria's oil-bearing communities, publicising their experiences and encouraging the people to demand their rights. Some of these NGOs, whose activities are focused primarily on the Niger Delta, include the Environmental Rights Action (ERA), Niger Delta Human and Environmental Rights Organisation (ND-HERO), the Rivers Chiefs and Peoples Conference, and Wetlands Environmental Protection Association. Some of these non-governmental efforts, working with the media, have over the years been able to sensitise the people to the negative environmental consequences of oil industry activities and the need for EIA in future oil operations in the country.

The Rivers chief and peoples conference discussed the environmental and social issues of the oil-bearing Niger Delta at the indigenous peoples conference under the auspices of the United Nations Conference on Environment and Development (UNCED) in 1992. They also prepared the first regional assessment of the major environmental and social problems of the Niger Delta (World Bank, 1995). In a relatively recent study, Orubu et al (2002) found that communities in the Niger Delta are well informed about the environmental consequences of the oil industry activities.

In 1992, MOSOP (Movement for the Survival of Ogoni People) had shown a film to the tenth session of the United Nations Working Group on Indigenous Population in Geneva on the extent of the environmental degradation of the Niger Delta as a result of oil industry activities. Between 1995 and 2000, the Niger Delta was turned into a virtual battlefield in a large-scale crisis which saw the youth of the area fighting the oil companies and the government, shutting down oil installations, destroying oil facilities and kidnapping employees (sometimes expatriates) of oil companies. In 1998, youths from the oil-producing

state of the Niger Delta had threatened to declare an independent republic, because of the inability of the federal government to resolve the environmental questions and adequately compensating the people for depriving them of their rights to land and other source of livelihood due to oil exploration activities. According to the news reports, Nigeria lost at least 23.7 billion US dollars to oil theft and sabotage in the first nine months of 2008 (Presidential Committee Reports, 2009). There are also reports that losses to crude oil theft and shut-down amounted to 19.34 billion US dollars in 2009 (Vanguard News, 14th April, 2009 pages 1-2).

It can be strongly argued that the crisis in the Niger Delta area since the 1990s has been closely associated with the environmental questions. There are also the twin issues of neglect and inadequate compensation programmes (Orubu, 1999b, 2001). As noted by the World Bank (1995) "The current compensation programs aggravate community relations, and reinforce the perception that oil activities cause most of the problems of the Delta". People feel that the oil companies do not consider themselves accountable to the local people. Resentment of their marginalization in contrast to the value of the oil reserves has resulted in clashes with oil company personnel and federal police/military forces.

During the early 1990s, the military administration created the Oil Mineral Producing Areas Development Commission (OMPADEC) to address some of the resultant environmental issues. In retrospect, it could be said that OMPADEC did not achieve much in the area of sustainable development projects in the oil producing areas. Indeed it never paid serious attention to its environmental mandate before it was closed down, and implicitly replaced by the Niger Delta Development Commission (NDDC in 2001). One of the reasons why OMPADEC failed as an interventionist body was that its policies and programmes were not based on appropriate consultation and related to the genuine impacts to the environment and problems of the Niger Delta (Ekuerhare 2002). This again underscores the need to always get the people involved in development matters that concern them. The Federal Government of Nigeria recently (January, 2009) created a Ministry for Niger-Delta in January, 2009 with sole aim of addressing the issue of environmental concerns in the region.

1.11 Background to EIA in Nigeria

EIA application in all major projects in Nigeria was initiated 1987, as result of illegal dumping of toxic waste in Koko by an Italian vessel in Bendel State, now Edo State. The toxic chemical wastes, were made up principally of polychlorobiphenyls (PCBs).

The Nigerian government promulgated the Harmful Wastes Decree. This decree provides the legal framework for the effective control of the disposal of toxic and hazardous waste into any environment within the confines of Nigeria. This was immediately, followed by the creation of what is now known as the Federal Environmental Protection Agency (FEPA) Decree 58 of 1988 as mentioned earlier in this chapter. FEPA serves as a regulatory agency with the overall responsibility of protecting and developing the Nigerian environment. It also put into action a National Policy that was developed as the main document for the preservation and protection of Nigeria's environment. Additionally, a National Policy Plan (NPE) was published in 1989, with the goal of achieving sustainable development. This development is in line with sectoral regulations including the National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes, Regulation of 1991). As a result of the regulation, EIA became mandatory only when demanded by FEPA, from then EIA became an indispensable prerequisite for the effective implementation of the national policy on the environment, and further directed that EIA be made mandatory for all development projects with effect from March 1991. The body also made environmental auditing mandatory for all existing industries all over the country.

Nigerian States and Local government Councils, which comprise the second and third tiers of government respectively, were encouraged under the Decree 59 (1992) to set up their own Environmental Agencies. However, in the oil industry the principal legislation is the Petroleum Act 1969. The Department of Petroleum Resources (DPR) is another part of government created under the Ministry of Petroleum Resources in charge of supervision, exploration, exploitation, and all the activities regarding oil production and transportation in Nigeria. The DPR in 1991 issued Environmental Guidelines and Standards (EGAS) strictly for the petroleum industry; this guideline is a comprehensive document with serious consideration for preservation and protection of Nigeria's Environment. The EIA Decree No. 86 of 1992 was also promulgated as an additional tool with the same objective of protecting the Nigerian environment. This decree is particularly directed at regulating the

industrialization process with regard to the environment. By this decree, no industrial plan, development or any activity under the FEPA mandatory list can be executed without a proposed action in the form of an EIA.

In July 2002, the Nigerian government ordered oil companies operating in the country to comply with EGAS guidelines published by the DPR, the monitoring arm of the Nigeria National Petroleum Corporation (NNPC), or risk a fine. The 300-page guidelines provide rules to reduce environmental pollution and also enforce procedures for environment monitoring. The DPR also was been tasked with conducting regular checks on health and safety, with strict environment audits on the oil company's activities.

As a result of the more stringent environmental regulations, oil companies that operate in Nigeria began to highlight their environmental performance. Chevron Texaco in June 2003 reported that it had spent $400million over the last decade on measures to protect Nigeria's environment and population. In addition, the Nigerian government has committed to ending the process of gas flaring from oil production by 2008. The continued process of gas flaring has not only meant that a potential energy source and source of revenue has been lost; but it is also a major contributor to air pollution. However, the phasing-out of gas flaring has been consistently pushed back as Nigeria has focused on boosting oil exploration and production in order to generate much needed revenue for the government.

In Nigeria, environmental awareness was nonetheless gradually building-up, largely owing to the country's participation in international environmental conferences. Nigeria was one of the 114 governments represented at the historic United Nations 1972 Stockholm Conference, which addressed problems of the human environment. As a result of this conference, an Urban Development and Environment Division was created in the Federal Ministry of Economic Development in 1975. In addition to a five-year development plan (1981–1986), there was a provision that "feasibility and viability studies for all projects, both private and public should be accompanied by environmental impact assessments" Okorodudu-Fabura (1988). This provision was not, however, accompanied by any formalized environmental legislation.

EIA in Nigeria has the tendency in the environment management strategies adopted by oil companies to view these strategies independently, without due regard to the linkage to social, economic, and environmental impacts. The existing strategies did not put the environmental

impacts of oil development activities into the maintenance of a qualitative and sustainable environment. Since the 1980s there has been a paradigm shift, originating at the international level, in favour of sustainable development, which accords man and his condition of living a central focus on development policy debates; to which Nigeria is a member and signatory. In May 1982, Nigeria participated in the 10th anniversary of the Stockholm Conference, which reaffirmed the participant's commitment to the protection and enhancement of the quality of the human environment. In April 1982, Nigeria hosted the 69th Inter-Parliamentary Union spring meetings at which the committee on education, culture and environment adopted a draft resolution on the 'State of the World environment ten years after the UN Conference on the human environment', and the steps to be taken for improvement including the fields of national and international legislation. Participation in such international conferences served to build awareness, policy and preliminary institutions.

1.12 Background to pollution control measures in Nigeria

From the onset of British Rule in the 1900s, Nigeria's environmental protection effort had been through the colonial bye-laws. The colonial economic development policies and plans contain little or no stringent rules to conserve the natural resources or to limit pollution. The major laws on water pollution include Criminal Code of 1958 with section 246 aimed at controlling burial in houses and the Public Health Act of 1958 which aims to control the spread of diseases, slaughtering of animals and disposal of night soil and refuse. The fines and penalties are liberal and the laws are quite often poorly enforced.

In 1964, a committee was formed from various arms of the Federal Ministries to study the problems of water pollution and to formulate a programme leading to the enactment of a Water Pollution Act of the Federation. Over the years there has been an increased awareness of the problems of water pollution, however with no positive steps undertaken. The Expert Committee on Environmental Health of the National Council of Health in 1970 reviewed many proposals received on this subject with the intention of recommending the establishment of a sanitary inspectorate in the Federal Ministry of Health. However the efforts yielded very little results. Thus the formative years of institutional environmental regulation in Nigeria could be said to have been characterized by the absence of clear scientific criteria and standards on toxic wastes and on pollution levels, while the enforcement of basic environmental and household hygiene depended largely on qualitative

legal rules. Oil pollution has attracted some considerable public interest since the 1970s. A number of communities in the Niger Delta of Nigeria protested the ecological problems of the oil industry and the paucity of government action (Chokor, 1993). Water pollution remains a major problem in the Nigerian environment. Both urbanization and industrialization have contributed to the scale of pollution. Presently, there are no incentives for the adoption of pollution abatement measures and very few disincentives, if any, for polluting the environment. Wastes are disposed of indiscriminately, especially for small and medium scale industries, but excluding major establishments like the refinery industry which is encouraged to adopt adequate waste disposal and good refining practices under the Petroleum Refining Regulation Act of 1974. Later, the 1979 Federal Constitution was cantered on environmental hygiene, with emphasis on refuse clearance, and the management of liquid and solid wastes in abattoirs, residential homes and streets; all of which came under the supervision of local government councils (Ola, 1984).

The Federal Government of Nigeria in 1988 established the Federal Environmental Protection Agency (FEPA) (now Federal Ministry of Environment with effect from September, 1999) to protect, restore and preserve the ecosystem of the Federal Republic of Nigeria. The major function of FEPA is the establishment of national environmental guidelines, standards and criteria most especially in the area of water quality, effluent discharge, air and atmospheric quality; including the protection of the ozone layer which in the past was absent (Federal Government of Nigeria, 1988). Others issues are noise control, hazardous substance discharge control, and the removal of wastes and ascertaining spillers' liability. The agency also has the power to initiate policy in relation to environmental research and technology and in formulating and implementing policies related to environmental management. In addition, FEPA has some enforcement powers including the right to inspect facilities and premises, search locations, seize items and arrest and prosecute people contravening any laws on environmental standards. The agency is also empowered to initiate specific programmes of environmental protection and may establish monitoring stations or networks to locate sources of, and dangers associated with, pollution. Furthermore, it has the powers to conduct public investigations or enquiries into aspects of pollution (Federal Government of Nigeria, 1988). FEPA is thus the supreme reference authority in environmental matters in Nigeria although State and Local Government Authorities and Institutions including their Environmental Departments are still expected to undertake their traditional role of monitoring and enforcing standards, as well as fixing penalties charges,

taxes and incentives to achieve certain environmental goals. Once the decision was taken to confront the problem of environmental abuse, Nigeria led the fight against hazardous waste dumping until the signing of the Basal Convention against trans boundary transportation of hazardous, toxic and radioactive wastes in 1989.

After the setting up of FEPA, the States Environmental Protection Agencies (SEPAS) were established. These were complemented by the Local Governments Environmental Protection Agencies. However, industrial pollution was regarded by FEPA as a priority environmental problem and hence the "National Guidelines and Standards for Environmental Pollution Control" was more of an industrial pollution control guidelines and standards, with notes as guidelines for surface impoundments, land treatments, waste piles, landfills, incineration and hazardous/toxic wastes. However, the available industrial pollution control guidelines and standards are not vigorous enough and presently are far from been effectively enforced in the country. The main legislation for the protection of water resources is therefore inadequate.

Nigeria's industrial pollution laws and policies are therefore largely outdated and thus very inadequate. There are no specific regulations and penalties on the level of chemical and industrial pollution in water in Nigeria. To date, only Lagos State with over 40% of Nigeria's manufacturing activities charges pollution levies. Although the measure is expected to serve as some disincentive to pollution generation and also for the alleviation of pollution problems in the state, it is better seen as a revenue generation effort on the part of the government. Since the Lagos State pollution levy is essentially revenue yielding, it is difficult to say whether that revenue is actually reinvested into pollution abatement. Furthermore, the policy provides no real incentives for industries to adopt pollution monitoring and reduction measures or clean technologies. So far, there are no clear formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environmental management and sustainable development. This is in spite of all the efforts of the Federal Environmental Protection Agency (FEPA).

In the inventory of Nigeria's environmental problems by FEPA (1999) in the context of socio-economic, cultural and ecological implications, environmental pollution of water, industrial effluent, chemical fertilizers, human waste, oil spillage, and issues of human health including water borne diseases such as cholera, typhoid, and dysentery brought about by the use of contaminated water, have been deemed critical and therefore must be included in the plan for environment and natural resource conservation. It is clear that the FEPA is handicapped by the

limited environmental information available, the range, nature and diversity of information required, as well as the scope of the work itself. At a time when environmental damage is worsening, careful quantification of that damage will help policymakers combine environmental and health decisions with sound economics. Quantification would help set priorities, mobilize public awareness, and encourage communication across different constituencies and interest groups, including environmentalists, health professionals and anti-poverty non-governmental organisations.

1.13 Thesis structure

This thesis is structured into seven chapters.

Chapter one is an introduction to the research subject. It outlines the history of the oil industry in Nigeria, and the environmental and social issues that have arisen as a result of the oil industry. The original development of Environmental Impact assessment (EIA) in the USA is outlined, EIA's up-take by other countries, and the introduction of EIA into Nigeria, and how EIA has fitted into the Nigerian governmental and legislation system.

Chapter 2 however, is structured towards a better understating of EIA in Nigeria beginning with critical assessment of EIA process and procedures to the legislative framework and evolution.

Chapter 3 provides an introduction to the legal framework and oil-related statutory law. And discusses a background of Africa's adoption of EIA and Nigeria's application and implementation of EIA, the chapter further looked at the regulatory framework and making of the Nigeria's government petroleum policy, which serves as a basic background to my subsequent methods in questionnaire survey.

Chapter 4 review the methodology of the research, it discusses the way and manner the research is conducted, from the construction and distribution of 560 questionnaires to collection of results to statistical analysis. Chapter 5 discuses the results of questionnaire survey used to determine the views of the stakeholders on EIA in oil and gas industry. It further investigated the levels of their involvement and participation in EIA processes in Nigeria's oil and gas industry. While chapter 6 further discusses the views of various respondents in the questionnaires, and highlighted whether the Nigerian state is biased in

favour of oil companies or communities or whether it can be considered neutral in the process of EIA implementation and supervision.

Finally, chapter 7 explained the results of statistical analysis used to identify key findings of the research on the EIA application and implementation in Nigeria and drew conclusions on future improvement, solutions and recommendation.

CHAPTER TWO: ENVIRONMENTAL IMPACT ASSESSMENT

2.1 Definition, purpose, and assessment of EIA

Environmental Impact Assessment (EIA) is a tool used for decision making in projects, developments and programmes. It may be defined as a formal process used to predict the environmental consequences of any development project. EIA tries to ensure that potential problems are foreseen and addressed at an early stage in the project's planning and design. EIA is also intended to identify the environmental, social and economic impacts of a proposed development prior to final decision making.

The EIA process has also been widely recognised within the international (e.g. World Commission on Environment and Development – the Brundtland report, 1987; UN Conference on Environment and Development, 1992) and European Communities (e.g. CEC, 1992) as one of the key mechanisms by which environmental protection and sustainable development may be achieved. In fact, the Brundtland Commissions report highlighted the crucial importance of sustainable development and EIA to the future well being of humanity (Gilpin, 1995). However, it was not until the UN Conference on Environment and Development (1992) that an explicit principle (17) on EIA was adopted. Among other aspects, this fundamentally relates to the ability of EIAs to avoid, minimise or offset adverse significant biophysical, social and other relevant effects of development proposals prior to their initiation (IAIA, 1996). As such, EIA is a good example of the precautionary principle, "prevention is better than cure" (Glasson, 1994) in action.

2.2 Historical background of EIA worldwide

EIA systems have been developing globally since the late 1960s when EIA was first given legal status through the 1969 United States National Environmental Policy Act (NEPA). NEPA requires EIA for federally funded or supported projects in the US that were likely to have environmental effects, and has become an important model for other EIA systems internationally. Since then many countries have also adopted formal EIA beginning with Canada (1973), Australia (1974), West Germany (1975), and France (1976). The approval of a European Directives on EIA in 1985 made mandatory the enactment of EIA legislation in

many European countries, as in the UK Town and Country Planning (Assessment of Environmental Effects) Regulations 1988. After the break-up of the Soviet Union, EIA were also enacted in most parts of the former Union in the early nineties. The early 1990s also saw a large growth in EIA systems in Africa, including Nigeria and South Africa (Sadler, 1996; Glasson et al., 1999).

In assessing EIA systems to determine what constitutes a 'good' system, Weston (1997) argues against international comparisons. He appraised the UK EIA system and declined to categorize it as inefficient relative to the US system; despite the critical review of authors such as Wood (1995). The main point of Weston's arguments is that it might not be wise to compare systems operated in Nigeria with those of the US and UK, for the reason that origins, legislation and operating environments are dissimilar. Moreover, in many countries of the developing world, EIA systems are still at the early stages of evolution. The evolution of the up-and-coming systems has not resulted in concepts and practice that show wide-ranging similarity with systems operated in the more developed countries.

The Commission of European Communities (1992), Bulleid (1997) and Alo (1999) consider that a practical examination of alternatives to the project in the assessment is central to any good EIA system. It is noted that in reality, few EIA applicants are able to offer an alternative site, let alone a different technical solution. Skeham (1993) and West et al., (1993) argue that the use of experienced EIA consultants is a fundamental requirement towards which EIA systems should evolve. They observed a correlation between EIA quality and the experience of consultants and planning authorities. Kakonge and Imevbore (1993) develop the issue of experience further by arguing that it is not just inexperience in personal terms which hinder good quality impact assessments, but the knowledge and data that is built with experience. Wetson (1997) and Bulleid (1997) state that the provision of technical guidance on the content of Environmental Statements is another fundamental feature towards which EIA systems should evolve, since it leads to standardization of contents.

Lee-Wrights (1997) emphasized the use of qualified multidisciplinary staff as another component of a good EIA system. She insisted that EIA is a team activity, and it is "almost impossible" to envisage circumstances where the range of issues could be adequately addressed by a single individual. Alo (1997) argues that for any good EIA system, EIA assessors and agencies must possess substantial analytical capabilities for fieldwork, laboratory testing, research, data processing and predictive modelling. Andrews et al. (1977),

Beanlands and Dunker (1982), the DoE Draft Guidance (1984), Westman (1985), Read (1997), consider that EIA systems should mature towards inculcating an early consideration of scoping, that is, an early decision on what are the likely significant impacts of a project and action. While there is substantial agreement that scoping is important, there is nevertheless considerable discussion as to just what is significant.

The application of EIA in countries such as the UK first occurred with the oil and gas industry in the early 1970's when the first demand for land, often in sensitive areas with little infrastructure and no industrial tradition, began to be felt (Fulton, 1992). As Clark et al. (1981) stated, in many cases planning authorities were unfamiliar with the characteristics of the developments and lacked the resources for thorough appraisal of these developments. This gave impetus to the development of thorough and positive methods of project appraisal, incorporating the ideas of NEPA that had just been implemented in the US.

The rapid expansion of the oil and gas industry during this initial period resulted in over 100 EIAs being produced between 1973 and 1989 (Turnbull, 1992). Examples of these assessments can be seen in Table 3-15. However, considerable differences in the scope, format and organisation of these assessments were apparent, which could be attributed to company policy, resources, sensitivity and legal requirements (Grogan & Blanchard, 1992). Many of these early EIAs were also seen, or appeared to fulfil the role of, public relations documents (Turnbull, 1992).

2.3 Adoption of EIA by developing countries.

EIA is now practised in more than 100 countries world-wide (Donnelly et al., 1998). Just as there are huge differences in EIA systems in the developed world, so there are between EIA systems in developing countries. Thus, there are many variations between the situations in central and eastern Europe, where some countries have implemented the European Directive on EIA in readiness for accession to the European Union (Donnelly et al., 1998); in Latin America and S.E. Asia, where many countries have developed EIA systems of varying effectiveness (Lohani et al., 1997; Donnelly et al., 1998); and in Africa, where some have no EIA system (Kakonge, 1999). Within Africa, for example, the South African EIA system has many of the attributes of a sophisticated developed country EIA system (Wood, 2002) and EIA is becoming important in Ghana (Appiah-Opoku, 2001), however, EIA is unimportant in Somalia. George (2000a) gave a number of reasons for the variation in the extent, regulatory

form and practical application of EIA in different developing countries. These included resources, political and administrative systems, social and cultural systems, and the level and nature of economic development.

In Nigeria, for instance, there is multiplicity in the amount of EIA legislation. Unlike in the UK and US, where one law governs nationally funded projects, in Nigeria three distinct national EIA systems govern nationally funded projects. Various scholars and researchers on EIA globally have pointed out additional procedural features or indicators towards which EIA systems mature. One such feature, considered as essential in the EIA process, by Wood and Frost (1997) is that a good EIA system should develop towards inculcating post decision and implementation monitoring and audit provisions, that is, follow up checks after development consent, to assess the accuracy of impact predictions and ensure improvement in environmental design of projects. Other papers on EIA such as, Abracosa and Ortolano (1987), Kakonge and Imevbore (1993) pointed out another indicator-provision of adequate powers of enforcement to EIA agencies. They made a link between the need for institutional frameworks and the powers of Agencies to fully enforce regulations and perform reviews of EIAs.

Despite these variations it remains true that, on the whole, EIA in developing countries tends to be very different from EIA in the developed world. The most conspicuous difference relates to the fact that the first EIAs to be carried out in developing countries were usually demanded by development assistance agencies on a project-by-project basis, not as a response to a widespread indigenous demand for better environmental protection. However, Lohani et al. (1997) noted that the emergence of the sustainable development agenda was also an influential factor in the development of some Asian EIA systems.

Lee and George (2000) noted that, in general, EIA has been introduced later and is less firmly embedded in the development process in low and middle income countries than in developed countries. Despite the legislative EIA requirements in, for example, Colombia (1974) and the Philippines (1977) pre-dating those in many developed countries; it is only over the past decade that many developing countries have established their own formal legislative bases for EIA (Donnelly et al., 1998). There are now many examples of EIA being undertaken in developing countries, by no means all as a result of donor agency pressure (Biswas and Agarwala, 1992; Hildebrand and Cannon, 1993; Sadler, 1996; Lohani et al., 1997; Briffett, 1999; Modak and Biswas, 1999; Glasson et al., 1999; Lee and George, 2000). These include

EIAs in Brazil (Glasson and Salvador, 2000), Chile (de la Maza, 2001), China, Columbia, Egypt (Ahmad and Wood, 2002), Ghana (Appiah-Opoku, 2001), India (Banham and Brew, 1996; Ramanathan and Geetha, 1998; Selvam et al., 1999), Indonesia (Boyle, 1998), Lebanon (el-Fadel et al., 2000), Lesotho (Mokhehle and Diab, 2001), Malaysia (Memon, 2000), Pakistan and the Philippines (Lohani et al., 1997), South Africa (Wood, 2002), Sri Lanka, Swaziland and Tanzania (Mwalyosi and Hughes, 1997), Thailand (Boyle, 1998), Turkey (Ahmad and Wood, 2002) and Zimbabwe (Adger and Chigume, 1992)

2.4 Definition and assessment

There are numerous definitions of Environmental Impact Assessment (EIA). They range from the oft-quoted and broad definition of Munn (1979), which refers to the need "to identify and predict the impact on the environment and on man's health and well-being of legislative proposals, policies, programmes, projects and operational procedures, and to interpret and communicate information about the impacts" to the narrow United Kingdom Department of Environment, (UK DoE, 1989) operational definition: " The term 'environmental assessment' describes a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgements on whether the development should go ahead". The UN Economic Commission for Europe (1991) has an altogether more succinct and pithy definition: "an assessment of the impact of a planned activity on the environment".
In essence, EIA is a *process*, a systematic process that examines the environmental consequences of development actions, in advance. The emphasis, compared with many other mechanisms for environmental protection, is on prevention. However, planners have traditionally assessed the impacts of developments on the environment, but invariably not in the systematic, holistic and multidisciplinary way required by EIA. The process involves a number of stages depending on the country or region. It should be clearly noted at this stage that, although the steps are outlined in linear fashion (Figure 2.2), EIA should be a cyclical activity, with feedback and interaction between the various steps. The order of the steps in the process may also vary, but generally it involves these stages.

- *Project screening* narrows the application of EIA to those projects that may have significant environmental impacts. Screening may be partly determined by the EIA regulations operating in a country at the time of assessment.

- *Scoping* seeks to identify at an early stage, from all of a project's possible impacts and from all the alternatives that could be addressed, those that are the key, significant issues.
- *Consideration of alternatives* seeks to ensure that the proponent has considered other feasible approaches, including alternative project locations, scales, processes, layouts, operating conditions, and the "no action" option.
- *Description of the project/development action* includes a clarification of the purpose and rationale of the project, and the understanding of its various characteristics – including stages of development, location and processes.
- *Description of the environmental baseline* includes the establishment of both the present and the future state of the environment, in the absence of the project, taking into account changes resulting from natural events and from other human activities.
- *Identification of key impacts* brings together the previous steps with the aims of ensuring that all potentially significant environmental impacts (adverse and beneficial) are identified and taken into account in the process.
- *The prediction of impacts* aims to identify the magnitude and other dimensions of identified change in the environment with a project/action, by comparison with the situation without that project/action.
- *Evaluation and assessment of significance* seeks to assess the relative significance of the predicted impacts to allow a focus on key adverse impacts.
- *Mitigation* involves the introduction of measures to avoid, reduce, remedy or compensate for any significant adverse impacts.
- *Public consultation and participation* aims to assure the quality, comprehensiveness and effectiveness of the EIA, as well as to ensure that the public's views are adequately taken into consideration in the decision-making process.
- *Environmental Impact Statement (EIS) presentation* is a vital step in the process. If done badly, much good work in the EIA may be negated.
- *Review* involves a systematic appraisal of the quality of the EIS, as a contribution to the decision-making process.
- *Decision-making* on the project involves a consideration by the relevant authority of the EIS (including consultation responses) together with other material considerations.
- *Post-decision monitoring* involves the recording of outcomes associated with development impacts, after a decision to proceed. It can contribute to effective project management.

- *Auditing* follows from monitoring. It can involve comparing actual outcomes with predicted outcomes, and can be used to assess the quality of predictions and the effectiveness of mitigation. It provides a vital step in the EIA learning process.

CHAPTER THREE: REGULATORY FRAMEWORK AND EIA PROCESS IN NIGERIA

3.1 Introduction

One of the main achievements of the United Nations Conference on Sustainable Development (UNCSD) dubbed the 'Earth Summit' in Rio de Janeiro, Brazil, in 1992 was the adoption of Agenda 21, a blueprint of environmental principles, policies and actions required to be taken by all countries into the 21st Century. A key supporting instrument of Agenda 21 was the Rio Declaration on the environment, a set of principles to guide environmental conduct.

The Federal Government of Nigeria enacted the Environmental Impact Assessment (EIA) Act No. 86 of 1992 as a demonstration of their commitment to the Rio Declaration. Prior to the enactment of the EIA Act in Nigeria, project appraisals were limited predominantly to feasibility studies and economic-cost-benefit analysis. Most of these appraisals did not take environmental costs, public opinion, and social and environmental impacts of development projects into consideration.

The EIA Act is unique in some respects. Firstly, it is the first of its kind in Nigeria. Secondly, it makes EIA mandatory where proposed projects or activities are likely to cause significant environmental effects. Thirdly, Environmental Impact Assessment, unlike other environmental laws, is proactive in nature. It is meant to prevent, reduce or mitigate the negative effects of projects or activities on the environment before the commencement of such projects/ activities.

The EIA Act gave the Federal Ministry of Environment the implementing mandate and requires that the process of EIA be mandatorily applied in all major development projects right from the planning stage. This ensures that likely environmental problems, and including appropriate mitigation measures to address the inevitable consequences of development, are anticipated prior to project implementation and addressed throughout the project life cycle.

3.2 Nigeria's application and implementation of EIA

Nigeria's adoption of EIA was initiated by the sudden discovery of toxic waste dumped by an Italian company in Koko, of the then Bendel State, now Edo State, in 1987. The nation suddenly rose together to demand a viable law that will safeguard and protect the environment from abuse and abandonment. In view of this EIA is conducted in Nigeria involving nine steps starting with EIA processes, EIA studies/ report preparation, the EIA review process, in-house reviews, public review, review panel, mediation, EIA approval, EIA mitigation. As fallows;

3.3 EIA procedures and legislative requirements

In Nigeria, the Federal Environmental Protection Agency (FEPA) was initially in charge of EIA before the Department was moved to the Ministry of Environment with the principal legislation Decree 86 of 1992 of December, 1992 (Federal Republic of Nigeria, 1992a), which made EIA mandatory for both public and private sectors for all development projects. It has three goals and thirteen principles. The goals are:

- Before any person or authority takes a decision to undertake or authorize the undertaking of any activity that may likely or significantly affect the environment, prior consideration of its environmental effects should first be taken.

- To promote the implementation of appropriate procedures to realize the above goal.

- To seek the encouragement of the development of reciprocal procedures for notification, information exchange and consultation in activities likely to have significant trans-state (boundary) environmental effects.

Before the enactment of Environment Impact Assessment (EIA) Decree 86 in Nigeria, analysis of the environmental and socioeconomic impacts of major development projects were to a large extent scanty or in some instances nonexistent. Spurred by growing environmental awareness in many parts of the world, recognition of EIA as a tool for better

environmental protection and management at the national level became evident in the early 1980s, starting with the Fourth National Development Plan (1981–1985). This plan proposed the development of environmental impact statement (EIS) on feasibility studies for all projects (private and public) and stipulated that an EIS should include plans to mitigate adverse environmental effects of a project. Also, for the first time in Nigerian development planning, a section on environmental planning and protection was included. The need for EIA was reiterated at a seminar on environmental awareness for national policy makers organized by the then Federal Ministry of Housing and Environment in 1981 (FMHE, 1982). Similarly, various national documents on environment, construction, and agriculture policy recognized the use of EIA as a strategy for achieving sustainable development. Many academicians wrote of the need for EIA, and grassroots activists agitated for restitution in Nigeria's oil-producing areas. Consequently, some form of EIA studies started around the mid-1980s in the oil industry. Related developments were observed in land use planning and development permit approval in states such as Lagos and Bendel (Olokesusi 1992a). Nonetheless, there was never a systematic, legal and institutional framework for EIA until the promulgation of Decree No. 86 of 1992. This Chapter will further assess the EIA legislation and procedure in the light of the projects that have been subjected to full EIA from 1995 to 2010 and also application in oil and gas industry. Appendix 1 (list of EIA in oil and gas industry from 1995-2011).

3.4 Legal requirements for EIA

In most countries of the World the process and procedures are similar but the implementation and or enforcement vary in accordance with how seriously a nation views environmental issues. In Nigeria, Federal Environmental Protection Agency (FEPA) Decree No. 58 of 1988 aptly can be described as the forerunner of the 1992 EIA law. This is because Section 5 of FEPA Decree No. 58 charges the Agency with the responsibilities of (1) environmental protection and management; (2) setting environmental guidelines and standards, and (3) monitoring and enforcement of compliance with environmental measures. Decree No. 86 was enacted by FEPA, after which a "Guideline for EIA Procedure" was also issued by the Agency in August 1994 (FEPA 1994). The Agency organized two seminars in October 1994 and February 1995 to review the decree and raise awareness of it. The EIA Decree requires that a proponent, whether in the public or private sectors of the economy, receive FEPA's approval before proceeding with a project. Section 63(1) of the decree defines project as "a physical work that a proponent proposes to construct, operate, modify, decommission,

abandon, or otherwise carry out or a physical activity that a proponent proposes to undertake or otherwise carry out."

The EIA Decree defines environment to mean the "components of the Earth and it includes;

(a) Land, water, and air, including all layers of the atmosphere;
(b) All organic and inorganic matter and living organisms; and
(c) The interacting natural systems that include components referred to in paragraphs (a) and (b).

This definition encompasses the socioeconomic and biophysical attributes of the environment. According to Section 4, EIA is expected to cover at least the following matters:

(a) A description of the proposed activities;
(b) A description of the potential affected environment including specific information necessary to identify and assess the environmental effect of the proposed activities;
(c) A description of the practical activities, as appropriate;
(d) An assessment of the likely or potential environmental impacts of the proposed activity and the alternatives, including the direct or indirect, cumulative, short-term and long-term effects;
(e) An identification and description of measures available to mitigate adverse environmental impacts of proposed activity and assessment of those measures;
(f) An indication of gaps in knowledge and uncertainty, which may be encountered in computing the required information;
(g) An indication of whether the environment of any other state or local government area (LGA) or areas outside Nigeria is likely to be affected by the proposed activity or its alternatives; and
(h) A brief and nontechnical summary of all the information provided.
The EIA report—which is expected to include proposed measures to be undertaken by a proponent to mitigate or ameliorate the negative environment effects—to be submitted to the Agency for approval. If approved, an environmental assessment statement and certificate of approval will be issued by the Agency. Penalty for contravention of Section 4, i.e., noncompliance, is either a fine or imprisonment, but not both. For an individual, the penalty is a fine of up to N100, 000 ($750.00) or a 5-year jail term. In the case of corporate bodies,

penalty is a fine not less than N50, 000($355.00) but not more than N1.million ($8,500.00). FEPA categorizes EIA study activities into three categories; the chart (Figure 2.1) shows the category 1-3 classification.

Category 3 activities are those with beneficial impacts on the environment or the community.

Category 2 activities (unless within the Environmentally Sensitive Area) full EIA is not mandatory.

Category 1 activities require full and mandatory EIA, either listing or an Initial Environmental Evaluation (IEE) system is used to determine projects requiring full EIA. The minimum requirement of an EIA report includes not only the description of the activity, potential affected environment, practical alternative, and assessment of likely or potential environmental impacts, but also identification and description of the mitigation measures, indication of gaps in knowledge, notification of trans-state adverse environmental effects (if any) and a brief non-technical summary of all the above information.

Impartial and written FEPA decisions indicating mitigation measures based on a detailed examination of environmental effects identified in the environmental impact assessment (after an opportunity within an appropriate period had been given to the stakeholders and the public for their comments) is made available to interested person(s) or group(s). It provides, where necessary, that potentially affected States or Local Government Areas are notified.

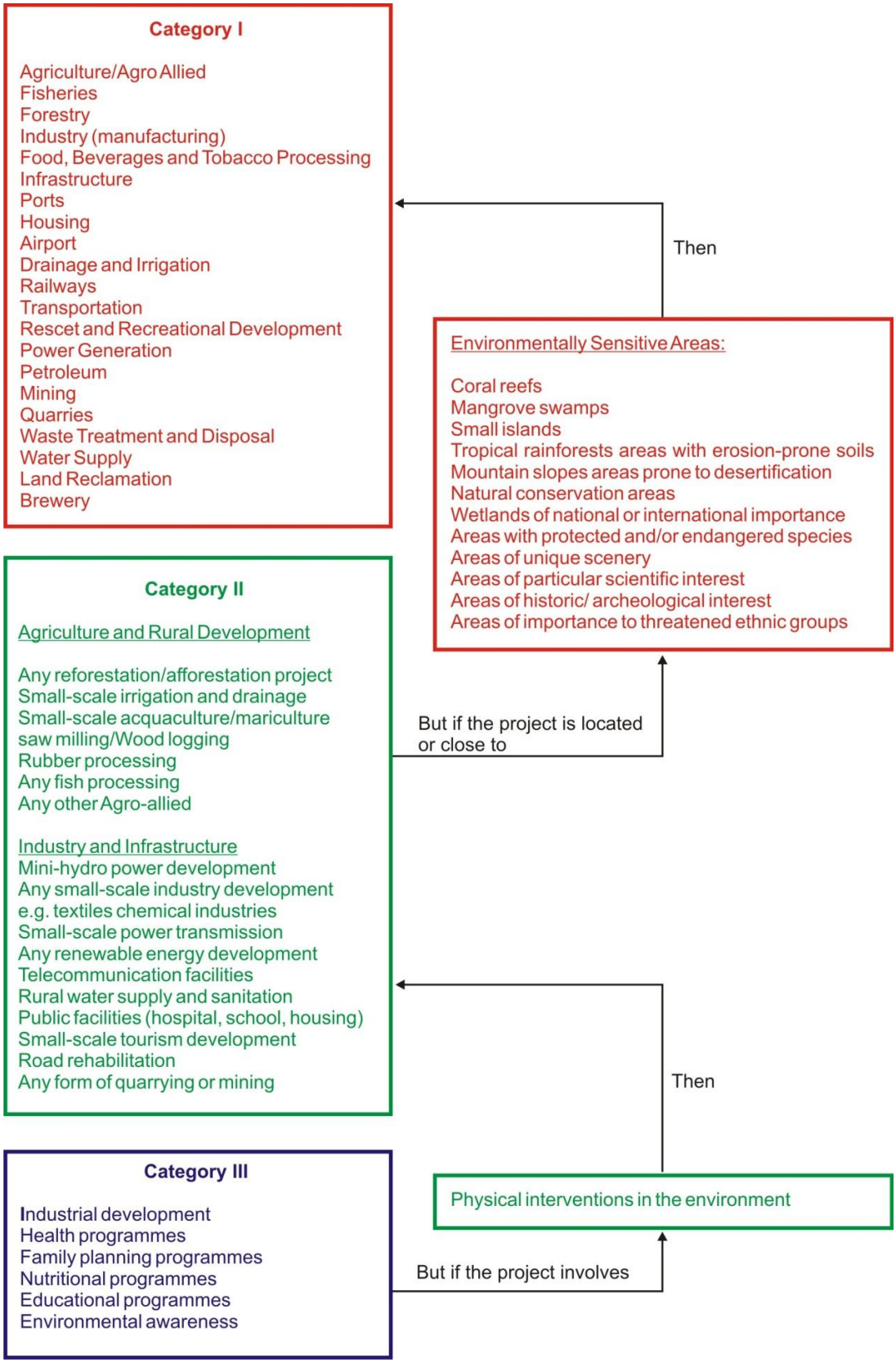

Figure 3.1: Flow-chart showing categories 1 to 3 (Olokesusi, 1998)

Table 3.1 shows mandatory study activities and the minimum size of the area or capacity (FEPA, 1992).

Type of Development	Minimum Size or Capacity
1. Agriculture	
(a) Land conversion from forest to agricultural production	500 hectares
(b) Resettlement of families	100 families
(c) Development of agricultural estates	500 hectares
2. Airport	
(a) Construction of airports	2,500 metres
(b) Airstrip in state and national parks	All
3. Drainage and Irrigation	
(a) Surface areas of dams, man-made lakes	200 hectares
(b) Virgin forest drainage	100 hectares
(c) Wet land drainage	100 hectares
(d) Irrigation schemes	5,000 hectares
4. Land Reclamation	
(a) Coastal reclamation	50 hectares
5. Fisheries	
(a) Fishing harbours	All
(b) Harbour expansion leading to 50% increase in fish landing	All
(c) Clearing of mangrove swamp forests	50 hectares
6. Forestry	
(a) Conversion of hill forest land to other land uses	50 hectares
(b) Logging of forest land in water reservoirs or catchment areas	All
(c) Conversion of mangrove swamps for industrial, housing, or agricultural use	50 hectares
(d) Clearing of mangrove swamps on islands near national parks	All
7. Housing	
(a) Housing development	50 hectares
8. Industry	
(a) Chemical plant production	100 tons/day
(b) Petrochemical	All sizes
(c) Non-ferrous primary smelting - alluminium	All sizes
- copper	All sizes
- other products	50 tons/day
(d) Nonmetallic - cement	30 tons/hour
- lime	100 tons/day
(e) Iron and Steel - iron ore	100 tons/day
(Required raw-materials) scrap iron	200 tons/day
(f) Ship yards - dead weight tonnage	5,000 tons
(g) Pulp and paper industry	50 tons/day

(*continued*)

Type of Development	Minimum Size or Capacity
9. Infrastructure	
(a) Hospital with recreational facilities	
(b) Industrial estate for medium heavy industries	50 hectares
(c) Construction of expressways	All
(d) Construction of national highways	All
(e) Construction of new townships	All
10. Ports	
(a) Construction of ports	
(b) Expansion of ports by 50% capacity	All
11. Mining	
(a) Mining of materials in new areas	
(b) Processing of ore, aluminum, copper, gold, or tantalum	250 hectares
(c) Sand dredging	50 hectares
12. Petroleum	
(a) Oil and gas field development	
(b) Construction of off-shore pipelines	
(c) Construction of oil and gas separation, processing, handling, and storage facility	50 kilometers
(d) Construction of oil refineries	
(e) Production depots for storing petrol, gas, or diesel	60,000 barrels
13. Power generation and transmission	
(a) Stream generated power stations	
(b) Dams and hydroelectric power schemes	10 megawatts
(i) dams over 15 meters high	
(ii) reservoirs with a surface area	40 hectares
(c) Construction of combined cycle power stations	400 hectares
14. Quarries	
Quarrying aggregate of limestone, silica, granite, and other solid minerals near residential, commercial, and industrial developments	
15. Railways	
(a) Construction of new routes	All
(b) Construction of branch lines	All
16. Transportation	
Construction of rapid transport projects	

(*continued*)

Type of Development	Minimum Size or Capacity
17. Resort and Recreational Development (a) Coastal report facilities of hotels (b) Hill station resort (c) Tourist of recreational facilities on islands and national parks	50 hectares or more
18. Waste Treatment and Disposal Incineration plants, sanitary landfills, and waste water treatment plants, etc.	50 hectares or more
19. Water supply (a) Construction of dams, impounding reservoirs (b) Ground water development for industrial agricultural or urban water supply	200 hectares or more

Source: FEPA (1992).

3.5 Nature and scope of EIA in Nigeria

The Niger Delta of Nigeria is the richest part of the country in terms of natural resources; however the environment is not well studied or understood as pointed out by numerous researchers such as Bourn (1992). In spite of the Delta's riches, and its immense potential for economic growth and sustainable development, the region is, and continues to remain, an unstable state. It is under increasing threat from rapidly deteriorating economic conditions and social tensions, which have remained largely unaddressed by current and past policies. General policies that ignore complex details, while often appropriate at central planning levels, should by necessity be adapted to local conditions before implementation (Ascher, 1990). The degree of disaffection which has been generated by the lack of development in the resource rich areas has reached critical levels.

The major industrial activities within the Niger Delta area are mainly oil-related. Therefore, projects requiring environmental assessments are mainly field developments, flow stations, pipelines and flow line network installations, drilling activity, etc. While the environmental assessments of these oil-related activities are a recent development, their main focus until of late was the impact on the natural environment, with little or no regard to the communities within the immediate vicinities of these projects.

The increase in environmental awareness which has swept through the Niger Delta, concentrating on oil pollution has tended to generate very high feeling with, very often, some political undertones. While environmental assessment has become a major policy issue, the social conflicts which now frame an effective assessment include, but are not limited to, the Land Use Act of 1978, which deprived or rendered communities landless in terms of economic rent, or by environmental degradation in the form of oil pollution. Perhaps in an attempt to forestall further environmental degradation in the Niger Delta in particular and in the general Nigerian environment, an Environmental Policy was enacted. Therefore, 1988 marked a watershed with the enactment of Decrees 42 and 58, regulating harmful wastes management and establishing the Federal Environmental Protection Agency (FEPA).

While the law tries to find answers to the community's social well being within the framework of EIA studies, one other law is in place which severely limits its effectiveness; the Land Use Act of 1978. The most comprehensive piece of legislation ever enacted in Nigeria on land issues, it divested individuals or communities of different forms of land ownership and tenureship that existed before its enactment. This law negates communal territorial right to land, and hence adds to the tension in the Niger Delta, The petroleum industry in particular, whose activities are concentrated in the Niger Delta, although under the same regulatory framework, is supervised directly by the Department of Petroleum Resources (DPR) of the Petroleum Ministry. The DPR 1991 Environmental Guidelines and Standards for the Petroleum Industries in Nigeria provides detailed statutory requirements to which the oil and gas industry is supposed to adhere. Part VIII, Section A (Environmental Impact Assessment Process), Articles 1.3 and 1.6 require that EIA study be conducted before exploration and operations in order to protect and prudently enhance the environmental resources for a better environment for man. Article 1.4 gives the applicable regulations and makes the preparation of an EIA report mandatory.

The DPR's environmental guidelines and standards have standardized environmental abatement procedures under which the EIA process is expressly stated. As one of two tools being used to protect and preserve the Niger Delta's and Nigeria's ecosystems – the other being an Environmental Evaluation (post-impact) Report (EER) – the Environmental Impact Assessment process and Report is being vigorously pursued and implemented in Nigeria.

The systematic process to be followed in preparing the report starts with a project proponent/operator determining the preliminary assessment of impacts through a screening process before an initial report is submitted to DPR. It is only when significant impacts are

identified for a project or activity that full EIA studies and report preparation is commissioned. Draft EIA reports are expected to be accepted by the regulators within 21 day of submission. Such studies and reports are supposed to be handled by persons or parties who possess a certificate of eligibility issued by the regulators themselves. EIA reviewers are expected to be competent individuals.

The EIA process and procedure do not however end with the DPR alone, there is a strong collaboration with Federal Ministry of Environment, and together the two national bodies have the authority to present all EIAs to the public for hearings and comments. Public presentations of EIAs are usually implemented by displaying such reports in designated centres/zonal offices for a period also of 21 days for the public to review and offer comments on any aspect of the EIA report. Comments of significance are incorporated in final EISs (Environmental Impact Statements). Figure 2.2 shows a flow chart of EIA procedures in Nigeria.

The DPR documents, Environmental Guidance Standards (EGS), have provisions for procedures to be followed in collecting and analyzing samples and regulating parameters of interest. Unfortunately there are no comparable guidelines for socioeconomic (social impact assessment) studies.

By necessity, Social impacts Assessments (SIA) are conducted simultaneously with EIAs. However, few companies have determined explicit guidelines for conducting SIAs, and as a result the majority of industry social assessments provide only a limited description of potential impacts and the range of alternative management practices available to a company. While it is widely acknowledged today that 'social analysis' must be an integral part of integrated project planning, the process of devising appropriate techniques for social analysis is still ongoing, although the SIA Guidelines/Manual of the SIEP released in 1996 tries to streamline methodologies for conducting SIAs in the oil and gas industries.

While some of the lessons of EIA are applicable, others are not, and SIA in particular represents a novel and far more complex domain. Specifically, while SIA must be concerned with the potential consequences of a project for a given human population and its way of life, it is necessarily concerned as much with the possible implications of that social environment for the success of the project itself. For unlike the natural landscape, human behaviour does not conform to simple rules (Ross, 1994).

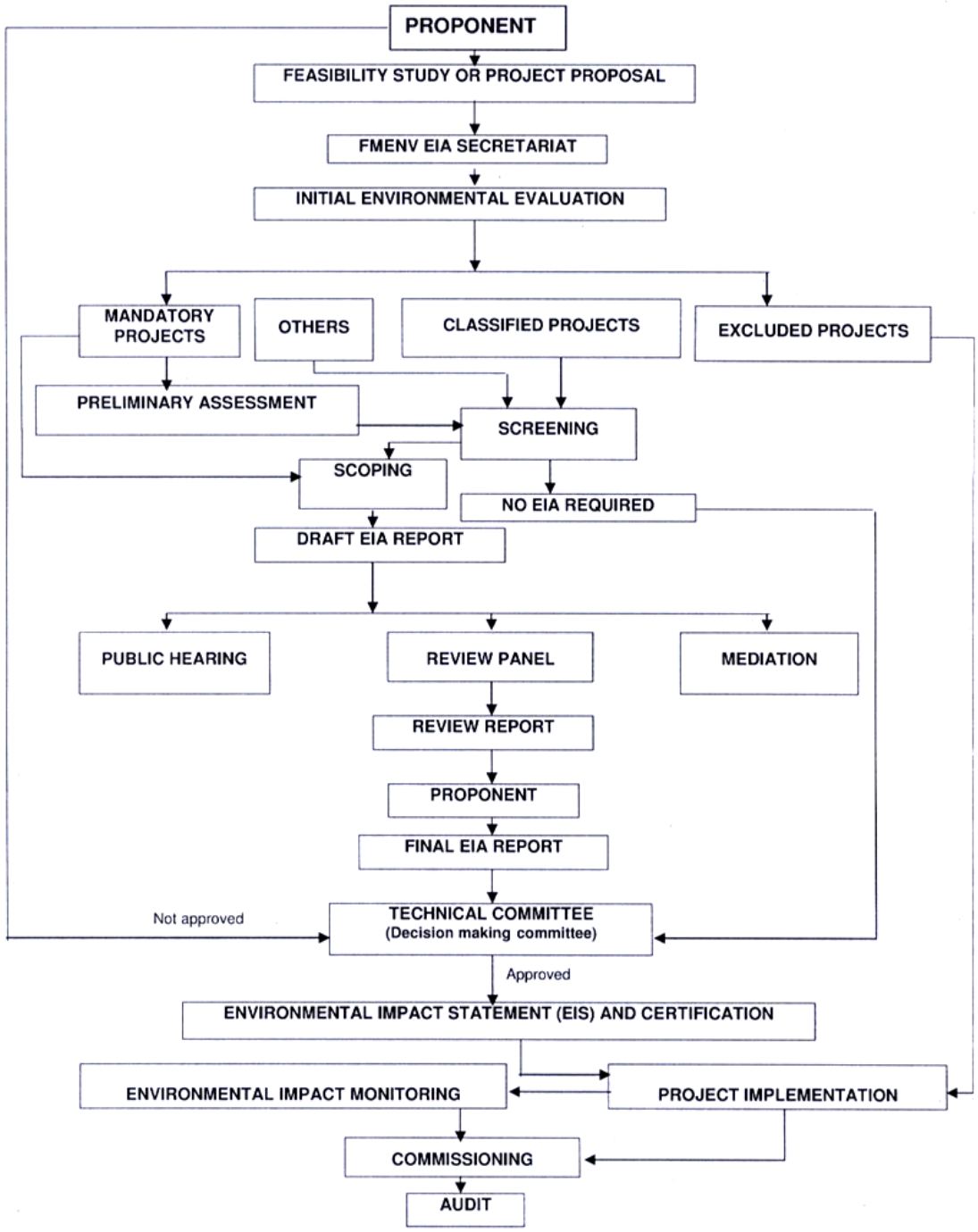

Figure 3.2: Flow-chart showing EIA procedures in Nigeria (Federal Ministry of Environment, in Olokesusi, 1998)

3.6 Assessment methods and approaches

According to the procedural guideline of FEPA and Federal Ministry of Environment some practical steps from project conception to commissioning must be adhered to. The steps are includes, project proposal, initial environmental examination (IEE), screening, scoping, EIA study, review, decision making, monitoring, and auditing. However in Nigeria, the law exempts some projects from the EIA process where;

In Nigeria, a technical committee of FEPA is headed by its Director and is the body that approves EIAs. After due consideration, the technical committee considers and approves the issuance of an EIS and certificate, within 60 days of the receipt of the final EIA report by the Agency. On receipt of these two permits, the proponent is still required by the Nigerian Urban and Regional Planning Decree 88 of 1992 to submit their applications for development/ construction permits. Once the latter is issued, development/construction can commence. In addition for public sector projects, copies of the EIS and certificate are deposited with the National Planning Commission so that the project can be admitted into the National Rolling Plan. The rolling plan is a 3-year plan of public sector investments and projects, where unfinished aspects of the plan in the first year are rolled over for completion in the succeeding year and so on.

3.7 EIA in Nigeria`s oil industry.

Despite the long period of oil and gas activities in Nigeria, which started since 1908, it was not until 1991 that environmental considerations, through the conduct of EIA, become part of the basis for decision making on acceptability and sustainability of new projects in the Petroleum Industry (Agha, Irrechukwu and Zagi, 2002). This was as a result of the issuance of Environmental Guidelines and Standards for the Petroleum Industry in Nigeria in 1991 (EGASPIN) by the DPR in which was provided for the first time, details of the process and procedure of EIA by the Government in Nigeria. Prior to 1991 less than ten environmental studies reports including two pre-project environmental impacts assessment and five post-impact assessment reports as a result of oil spill and blow out incidents were carried out. By 1991, however, awareness on the need of EIA for major exploration and production projects became gradually entrenched. Consequently over 200 pre-development and post-development environmental assessment studies were carried out in the Nigerian oil and gas industry alone between 1991 to 2011 (Appendix 1A) This is in compliance with the relevant

part of EGASPIN and the other legal/administrative framework governing EIA in Nigeria. Thus, EIA has become a standard practice in environmental and project planning on some major exploration and project development activities (Agha, Irrechukwu, and Zagi. 2002).

3.8 Regulatory regime

In Nigeria the main regulatory bodies are the Federal Ministry of Environment and the Department of Petroleum Resources (DPR) under the Federal Ministry of Petroleum Resources. However this arrangement is causing a lot of confusion and contributed to duplication of process. The Institutional set-up and legislation related to environmental management of the oil and gas industry in Nigeria have evolved over the past 50 years and are very complex. The long history of environmental problems caused by oil spills also gives the Nigerian judicial system and some government agencies a prominent role on how it deals with penalties and punishments for environmental and oil-related offences and crimes, as well as with compensation claims for victims.

3.8.1 Federal Ministry of Environment

In Nigeria the Federal Ministry of Environment is the sole Government Agency mandated by law to conduct EIA in both oil and gas sector and any other project that require EIA; but for some reasons that are not clear DPR also carried out in-house EIA studies strictly on oil and gas. Environmental Impact Assessment offers great opportunities for the achievement of sustainable development in Nigeria. However, one of the major constraints for the effective implementation of EIA as a central tool for sustainable industrial development is that the EIA is seen differently from technical feasibility studies. The approach, however, by the Ministry is more detailed and rigorous. It involves both the States and Local Council concerned and also ensures adequate participation of the communities and the general public.

3.8.2 Department of Petroleum Resources

The present day Department of Petroleum Resources started as a hydrocarbon section of the Ministry of Lagos Affairs in the early fifties. It is the first statutory Agency set up to supervise and regulate the petroleum industry in the country. At the time, it reported to the Governor-General. Later, the section was upgraded to a Petroleum Division within the then Ministry of Mines and Power. The Division, in 1970, became the Department of Petroleum

Resources (DPR). In 1971, a new body, called Nigerian National Oil Corporation (NNOC) was created to engage in commercial activities in the petroleum industry with the Department continuing to perform the statutory supervision and control duties in the oil industry.

The DPR was in 1975, constituted into the Ministry of Petroleum Resources (MPR) after energy matters were excised and transferred to another arm of government. Through the proclamation of Decree 33 of 1977, MPR and NNOC were merged to form the Nigerian National Petroleum Corporation (NNPC). This was in a bid to optimise the utilization of the then scarce local manpower resources in the public sector of the industry. The Decree also created the Petroleum Inspectorate as an integral part of the Corporation and granted it a semi-autonomous status; with its Head reporting to the Minister of Petroleum Resources, who also doubled as Chairman of NNPC. The Petroleum Inspectorate continued to regulate the industry but was barred by the Decree from engaging in any commercial transactions or being involved in the commercial decisions of the Corporations.

In 1985, a new Ministry of Petroleum Resources (MPR) was again created, while the Petroleum Inspectorate remained in the corporation and retained its regulatory functions. On the 23rd of March 1988, with the commercialization of NNPC, the Petroleum Inspectorate was excised from the corporation, due to the non-commercial nature of its functions, and merged with the new MPR to form its technical arm. The DPR continued to oversee all the activities of companies licensed to engage in any petroleum activity in the country, with the objective of ensuring that national goals and aspirations are not thwarted, and that oil companies carry out their operations according to international oil industry standards and practices. It keeps records and other data of the oil industry's operations and informs Government about all activities and occurrences in the petroleum industry.

The Department of Petroleum Resources (DPR) under the Federal Ministry of Petroleum Resources plays a key role in regulating and enforcing environmental law in Nigeria. The DPR regulation ‘Environmental Guidelines and Standards for Petroleum Industry in Nigeria’ (EGASPIN), first issued in 1992 and reissued in 2002, forms the basis for most environmental regulation of the oil industry.

In 1999, the Federal Ministry of Environment was formed, followed in 2006 by the establishment of the National Oil Spill Detection and Response Agency (NOSDRA). Both of

these Institutions base their operations on the DPR Environmental Guidelines and Standards. There are also Departments at the State Ministries of Environment and Water Resources both dealing with the management of environmental issues. Local government bodies do not have an official role in either environmental management or regulation of the oil industry in Nigeria, but have some involvement with both issues because of their physical presence 'on the ground'.

3.8.3 Legislative requirement (ACT No. 86 of 1992)

The EIA Act gave the Federal Ministry of Environment the implementing mandate and requires that the process of EIA be mandatorily applied in all major development projects right from the planning stage to ensure that likely environmental problems, including appropriate mitigation measures to address the inevitable consequences of development, are anticipated prior to project implementation and addressed throughout the project life cycle. The objectives of the EIA Act of 1992 among others include:

I. The establishment of the environmental effects of proposed activities before a decision is taken to embark upon them.

II. Promotion of the implementation of appropriate policy in all Federal land, States, and Local Government areas, consistent with all laws and decisions making processes through which these goals in (1) above may be reached.

III. It encourages the development of procedures for information exchange, notification and consultation between Agencies and persons when proposed activities are likely to have significant effects on boundary or trans-state or on the environment bordering towns and villages.

The EIA Act further prescribes that all Agencies, Institutions (whether public or private) except exempt by the Act, shall, before embarking on proposed projects, apply in writing to the Federal Ministry of Environment so that subject activities can be quickly identified and environmental assessment applied as the activities are being planned. The Act made provision for all stakeholders, including Agencies, public, experts, NGOs, communities, etc,

to be notified, consulted and/or given the opportunity to make comments on the EIA of a project prior to approval or disapproval.

3.8.4 Regulatory process and procedure

Before any project is implemented in Nigeria certain processes and or procedure must be followed, particularly if the projects requires mandatory EIA studies and should follow the following steps;

1) *EIA processes* ,involves:

- The submission of project proposal to The Federal Ministry of Environment for screening to determine the need or otherwise for EIA.

- The vetting of Terms of Reference (TOR) for the EIA studies to ensure that only significant issues (impacts) are studied in the EIA, a site verification exercise may be required to aid this process.

- Submission of draft EIA report for review.

- Review of draft EIA report.

- Submission of final EIA report, which addresses all the issues from the review exercise.

- Decision making by the Federal Ministry of Environment's technical committee and the Hon. Minister.

- Certification (issuance of Environmental Impact Statement (EIS) and certification).

- Mitigation and compliance monitoring to ensure compliance with all stipulated mitigation measures and project specifications in the projects EIA report.

2*) EIA studies / report preparation*. EIA studies and report preparation are the responsibilities of the project proponent. In the course of preparing an EIA report of a proposed project, both

the primary and secondary stakeholders should be consulted. The objective of such consultation is to identify early in the EIA process the concerns of stakeholders regarding the impacts of the proposed project in order to address such issues during the actual study and to reflect such comments in the projects.

3) *The EIA review process.* In line with the EIA guidelines, a draft EIA report submitted to the Federal Ministry of Environment by a proponent is evaluated by the Ministry to establish the type of review to be adopted. There are different forms of reviews, depending on the nature, scope, anticipated impact, risks, etc that may arise in project planning and implementation, and an EIA report may be subject to any or a combination of these reviews. The types of review are an in-house review, public review, panel review and mediation.

4) *In-house reviews.* All draft EIA reports forwarded to the Ministry are reviewed in-house to assess how far issues raised in the Terms of Reference (TOR) have been addressed and to determine if the draft EIA reports are suitable for public review (if necessary). If the in-house review finds that the issues in the report do not merit putting it on public display, the review process may be terminated at the in-house review stage. Some projects (e.g. those that fall under category III of the EIA Act) may be recommended for approval by the Ministry's in-house panel of experts.

5) *Public review (public display)*. In accordance with the provisions of section 25 of the EIA Act, interested members of the public are given the opportunity to participate in the EIA review process through comments on project reports that are put on display. Such displays are usually done for a 21 working day period at strategic locations. Notices of such venues of display are usually published in the national and relevant State daily newspapers and information about such display are complemented with further announcements on the relevant State electronic media. Often the venues of displays include the local government headquarters, where a project is located, the State Ministry of Environment or Environmental Protection Agency(s), the Federal Ministry of Environment's zonal offices, liaison office Lagos and the headquarters, Abuja. Comments received from the display venues are forwarded to the Federal Ministry of Environment headquarters for collation and evaluation preparatory to the review panel meeting for the project.

6) *Review panel.* After the conclusion of the public display exercise, the Federal Ministry of Environment may decide to set up a review panel to review the draft EIA report depending on the sensitivity or significance of the comments received. The review panel meetings are held in the public so that stakeholders can utilize this opportunity to put forward their views and concerns for consideration. The choice of members of the review panel depends on the type of project, its scope as well as the ecosystem to be affected. However, the chairman of the affected local Government(s) and the Commissioner of Environment of the project location are always included in the panel.

7) *Mediation.* When a project is likely to cause significant adverse effects that are immitigable, or public concerns about the project warrant it, such a project is referred to the Federal Ministry of Environment Ministerial Council for subsequent referral to mediation. For a mediation to be set up, Ministerial Council would have been convinced that the parties involved are willing to participate in the mediation and to abide by its decisions.

8) *EIA approval.* After the submission of a satisfactory final EIA report, the Federal Ministry of Environment may decide to set a number of conditions for the approval of the implementation of the project. Such conditions usually include a statement that mitigation measures highlighted in the projects EIA report shall be complied with.

9) *EIA impact mitigation monitoring.* The legal requirement for impact mitigation monitoring in the EIA process are stipulated in Sections 16 (c), 17 (2) (c), 37 (c), (1), 40 (1) (a) (2), 41(1) and 41 (2) of the EIA Act as well as Section 11 of the EIA procedural guideline (1995).

Environmental impact monitoring is designed to monitor the environmental management plan, and concerns during project operations. It is also designed to assess the extent to which commitments contained in EIA reports are reflected during the various phases of project development and operations.

Impact mitigation monitoring exercises are conducted to assess the degree and effectiveness of the mitigation measures proffered in an EIA report. Hence, relevant documents, in-house monitoring records as they affect the project, the project implementation schedule, as well as all other documents to support the environmental good housekeeping of the project are scrutinized and verified. The objectives of EIA impact mitigation monitoring is to:

- Check that mitigation measures are implemented as appropriate.

- Determine whether environmental changes are as a result of project developments and/or natural variation.

- Monitor emissions and discharges at all stages of project development for compliance with regulatory standards.

- Compare effluent quality/quantity with design specifications and statutory standards.

- Determine the effectiveness of Environmental Management Plans, Environmental Monitoring Plans and especially the mitigation measures to predicted impacts and to also act as a feedback mechanism towards the improvement of the EIA evaluation and approval process.

- Determine duration of identified impacts.

- Create a data bank for future development of predictive tools.

3.9 Environmental interactions.

The main oil related statute in Nigeria is the Petroleum Act 1969. The promulgation of the Act repealed the colonial Mineral Oils Ordinance, the main piece of petroleum legislation until 1969. While the Act was a creation of the post–colonial State, it largely confirmed provisions of the colonial oil legislation. As Atsegbua (1993) observed, provisions related to the assignment and revocation of oil licenses as well as the rights and powers of license holders remained much the same as under colonial rule (see chapter 1). The government or the community has little or no power in terms of environmental impact assessment or enforcement; the companies are virtually in charge of overseeing any environmental concern. Oil mining leases (OMLs) were merely granted for 20 years. In addition, the oil company was obliged to relinquish one-half of the area of the lease ten years after the grant of an OML. This new provision encouraged a faster rate of exploration because oil company managers were aware that they would have to relinquish part of the area and were likely to

speed up exploration (Atsegbua, 1993). But in the process the environment is always left to suffer any negative consequence that may arise during or after exploration activities (Table 3.1

Table 3.2: Potential Environmental Impact of oil Production Activities

Production Activity	***Potential Environmental Impact***
All activities	➢ Loss of vegetation/arable land ➢ Hydrological changes ➢ Disturbance of communities/flora/fauna ➢ Waste pits in the field ➢ Oily waste burned in the flare pit
Well operations	➢ Soil, water pollution ➢ Disturbance of communities/flora/fauna
Flow lines, pipelines	➢ Soil, water pollution ➢ Disturbance of communities/flora/fauna
Flow stations	➢ Ambient air quality ➢ Acid rain ➢ Soot/heavy metal deposition ➢ Pollution/fire affecting flora ➢ Soil/surface water pollution ➢ Disturbance of communities/flora/fauna
Terminals	➢ Soil/surface water pollution ➢ Disturbance of communities/flora/fauna ➢ Poor ambient air quality ➢ Ozone depletion (fire fighting agents) ➢ Soil, water, air pollution ➢ Waste problems ➢ Soil pollution.

Source: van Dessel (1995)

3.10 Case studies

Oil companies have been operating in Nigeria for the past decades without accurate information on how they conduct their environmental studies, it is therefore informative to look at some case studies on how they conduct EIA throughout project life cycle, and this will give an insight into whether the EIA is conducted in accordance with the regulations.

3.10.1 Case study 1

Mobil Producing Nigeria Unlimited (MPN), in a joint venture (JV) partnership with the Nigerian National Petroleum Corporation (NNPC), intends to conduct a seismic survey designated Nigeria JV Priority Ocean Bottom Cable (OBC) 3D Survey over portions of oil mining leases (OMLs) 67, 68, 69 and 70. The Priority OBC Survey areas shall cover a total of 1600 km^2 and are within portions of MPN's east area projects (EAP), Usari, Etim/Edop/Asasa and Oso oil and gas fields, offshore Akwa Ibom State, Nigeria.

The proposed survey was designed specifically to significantly improve the delineation of the existing fields and discovered undeveloped potential, and identifies new near-field wildcat and exploration opportunities. The proposed seismic campaign may potentially impact on the ecological components of the offshore environment and the socio-economic profiles of the immediate coastal communities. In line therefore with the statutory requirements of the Federal Ministry of Environment (FME) and the Department of Petroleum Resources (DPR) on environmental management in Nigeria, MPN has conducted an Environmental Impact Assessment (EIA) of the proposed project and the findings are documented in a report.

EIA Objectives

The EIA of the proposed seismic survey project is being carried out in order to:

- Characterize the environment thereby identifying the resultant hazards (Including social) associated with the Seismic Survey.

- Identify recommendations to eliminate/mitigate the magnitude and significance of the hazards and effects and thus assess control options.

- Recommend control techniques to eliminate or lessen the severity of the effects and to manage the hazards.

- Recommend plans and procedures to manage the consequences and recover from exceptional events.

- Identify existing and expected environmental regulations that will affect the seismic survey and give advice on standards and targets.

- Identify any potential environmental issues and concerns which may affect the Survey.

- Recommend an Environmental Management Plan (EMP) for the duration of the Seismic Survey including compliance, monitoring, and contingency planning.

- Provide the basis for consultation with regulatory authorities, the public and other stakeholders.

Project Alternatives

The project alternatives considered include the seismic survey options includes seismic refraction, reflection surveys, and seismic techniques options (2D or 3D). The no project option was also considered and evaluated. The considerations were based mainly on economic and technical feasibilities as well as safety, health and environmental risks. The decision to proceed with the survey project was informed by the overwhelming socio-economic benefits to the government and people of Nigeria in general and Akwa Ibom state in particular. The seismic reflection option was chosen as it is suitable for marine application and ensures unique data quality acquisition with high depth of penetration. Also, the decision to apply 3D was informed among others by its direct imaging of stratigraphic heterogeneity and geologic structures including faults, fracture networks and channels. Implementation based on environmental consideration. Other choices made (such as recording with OBC linked to buoy and swath survey geometry) were based on proper technical consideration.

Project description

Offshore seismic surveys involve the use of high energy noise sources operated in the water column to probe below the seafloor. Almost all routinely used seismic sources involve the

rapid release of compressed air to produce an impulsive signal. These signals are directed downwards through the seabed, to be reflected upwards again by density or velocity discontinuities within the underlying rock strata. This will have a direct impact on the ecology and environment. Overall, the proposed seismic survey operation will follow the sequence summarized below.

Background to Environmental Impact Assessment

The field data gathering exercise for the EIA of the proposed seismic survey project was carried out simultaneously with that for the EIAs of the East Area Project – Additional Oil Recovery (EAP-AOR) and Liquefied Natural Gas – Independent Power Plant (LNG-IPP) project. Wet and dry seasons sampling for EAP-AOR were carried out between 22 and 28 July, and 1 and 8 December, 2003, while that for LNG-IPP were carried out in September 2004 and January 2005 respectively.

Ambient air quality and noise

Results of field measurements indicated that the ambient concentrations of air pollutants CO, SO_2, NO_2, hydrocarbon gases (C_xH_y), and H_2S at all sampling stations were below their various detection limits. Also, the concentrations of suspended particulate matter 9SPM) ranged between 10 µg/m^3 and 144 µg/m^3 while the ambient noise levels as recorded from the survey vessel ranged between 41.7 and 52.7 dB(A) and 48.2-58.9 dB(A).

Fisheries

The common fisheries resources within the study area include fin fish, shrimps, crabs and periwinkles. Most residents fish within 5 km of the shore, with some ranging as far out as 20 km. Fishing is often conducted from dugout canoes. Methods employed vary with the situation and season, but include beach seining, gill-net fishing, cast-net/dragnet fishing, basket trap fishing, and hook and line fishing. Fish species caught and fishing yields vary with the season. Fin fish, shrimp, and crab fisheries yield greater harvests during the dry season, whereas the periwinkle fishery peaks in the rainy season.

Seabirds

The most commonly identified Nigerian coastal/nearshore birds include pelicans, egret, purple heron, greater flamingo, pintail duck, white-fronted plover and curlew.

Marine Mammals and Reptiles

Almost 30 species of marine mammals, mostly dolphins or whales, are commonly thought to exist in the Nigerian offshore waters. Also reported to occur in estuaries, swamps, rivers, and shallow coastal waters of Nigeria is the African manatee. Among the reptiles, only sea turtles have been found to occur in small numbers in Nigerian waters.

Socio-economic profile of the coastal communities

The proposed survey area traverses East and West Operating Areas of MPN, offshore Akwa Ibom State. The nearest shoreline from the survey area is approximately 27 kilometers south of the Akwa Ibom State and approximately 34 km southeast of MPN's Qua Iboe Terminal (QIT).

Three local government areas (Eastern Obolo, Ibeno, and Mbo) lie on the Akwa Ibom State coastline facing the Gulf of Guinea and are nearest to the proposed project area. Seven other LGAs (Iko- Abasi, Mkpat, Onna, Eket, Esit – Eket, Nsit-Ubium and Oron) lie adjacent or near to the 3 coastal LGAs, but are separated from the coast. Within these coastal and near coast LGAs are communities that surround the proposed project area. They include Itu, Uruan, Ibiono-Ibom, Nsit-Ubium, Ej=ket, Ibeno, esit-Eket, Oron, Mbo, Onna, Mkpat-Enin, Ikot Abasi, Oruk-Anam, ukanafun and Eastern Obolo.

The people of the coastal communities nearer to the operational area are predominantly farmers and fishermen, but are also involved in traditional occupations such as trading, hunting, wood carving, arts and craft, raffia works, etc. Cassava is the main food crop planted, although it is fast becoming a commercial endeavour. Other commonly grown crops include: yams, cocoyams, plantains/bananas, vegetables (especially fluted pumpkin) and some perennial tree crops such as bush mangoes (uyo), star apples (udara), pears (eben), raffia palm trees (eyop).

The most common diseases in this area, according to the community health survey, in order of frequency are; malaria, acute and bloody diarrhoea, pneumonia, measles, hepatitis, filariasis, tetanus, sexually transmitted diseases including a few suspected HIV/AIDS cases, tuberculosis, anaemia, otitis media, skin diseases (bacterial and fungal), and poor oral hygiene was common among the children population.

The most important living resources within the project area are fin fish (pelagic and demersal), and shellfishes (shrimps, crabs, lobsters, and molluscs) which presents high potentials for commercial exploitation by the industrial sub-sector while the most important non-living resources are oil and gas, which constitute an estimated 90% of Nigeria foreign exchange earnings. Activities related to exploration and exploitation of these resources includes fisheries, transportation, surveillance, military strategic activities and scientific research.

Impact assessment and mitigation

The assessment of potential and associated impacts of the proposed project has been carried out using approved guidelines and standard procedures. The significant impacts of the proposed project on the environment and the corresponding mitigation measures are summarized below:

- Provision of a clear image of the subsurface geology, reservoir characteristics to be used for oil and gas exploitation. This will increase precision to target reservoir and reduce waste generation during drilling activities.

- Economic/financial empowerment to seismic contractor by provision of contract.

- Collision with other vessels and smaller boats as well as offshore fixed structures (e.g. well head, platforms, risers etc.) during adverse weather conditions.

- Risks of pirates/militant attack along mobilization route leading to personnel injury/death.

- Possible damage to existing pipeline network within the field due to entanglement during deployment of OBC leading to oil spills and consequent degradation of aquatic environment.

- Vibration shock/scare and resultant change in behavioural patterns/death of aquatic fauna (seabirds, fishes, plankton, etc) from air gun energy (noise/vibration) etc.

Environmental management plan

An environmental management plan have been developed to ensure that the mitigation measures proffered for the significant associated and potential impacts of the proposed 3D seismic data acquisition in JV-wide acreage are effectively and systematically carried out. Consequently, the plans and guidelines developed including MPN plans and programmes are as follows:

- Guidelines for seismic operation.
- Guidelines for mitigation measures.
- Monitoring plan.
- Waste management guidelines.
- Emergency preparedness plan.
- Auditing.
- Decommissioning plan.

Conclusion

The EIA of the proposed Nigeria JV-wide seismic survey has been carried out and the findings documented. The study was carried out in line with the statutory requirements for environmental protection in respect of oil and gas industry projects in Nigeria. The is in order to ensure that potential environmental, social and health impacts of the proposed projects are fully assessed formally and thus provide necessary data/evidence that will form the environmental impact statement (EIS) of the project. The EIA report has therefore documented the existing environment of the area, potential and associated impacts of the project environmental aspects, and cost effective mitigation measures for adverse impacts. A management plan has also been put in place to assure environmental sustainability of the project.

Successful implementation of this project will beneficially and significantly impact on the national economy by improving the delineation of the existing fields and discover undeveloped potential, as well as identifying new near-field wildcat and exploration opportunities for further oil/gas reserves exploitation in the JV area. This will contribute towards meeting the nation's overall oil and gas growth target. It also will result in provision of direct or indirect job opportunities for Nigerians.

3.10.2 Case study 2

Total Exploration & Production Nigeria Limited (TEPNG) plans to develop the USAN Field (OML 138), offshore Nigeria, through the implementation of a drilling and production programme. An Environmental Impact Assessment (EIA) report is prepared in order to comply with Nigerian and international legislation addressing the offshore petroleum industry.

The preparation of the EIA has been performed following the Environmental Impact Assessment Act No. 86 of 1992 enforced by Federal Ministry of Environment, Housing and Urban Development; Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN 1991, Revised 2002) issued by the Department of Petroleum Resources (DRP) and also to comply with Total Corporate and TEPNG standards. The EIA is said to be in compliance with all the environmental laws, regulations, international conventions/agreements and policies.

Project overview

The USAN oil field lies in OML 138 in water depths ranging from 730-850m. It is located approximately 65 miles/100km South of Bonny. The distances to the main existing or future infrastructures are: 100 km South of Bonny LNG terminal; 60 km south of another field (OML 99, operated by TEPNG); 90 km to the North-East of AKPO field (OML 130, operated by TUPNI). USAN will be developed with 42 subsea wells (23 producers, 10 gas injectors and 9 water injectors) connected to the FPSO (Floating Production and Storage Operation) via 2 production loops, 2 water injection lines and 1 gas injection line. Cumulative flow line and riser will commence in QI 2009.

Scope of the environmental assessment

The Environmental Impact Assessment is the process of assessing the potentially significant impacts of the selected project options on the natural and social environment, and identifying

measures that will permit the minimization and mitigation of these impacts. The main purpose of impact assessments is to identify key issues early in the life of a project to assist Authorities and EPNL management in the decision making process so that potentially adverse or beneficial impacts can be addressed before final approval is made. The objective of this EIA is primarily to perform a detailed screening of potentially significant and adverse environmental impacts.

Environmental impact assessment

The study approach for this EIA is as follows:

- Desktop research of existing literatures and survey reports.
- Identification of sampling locations – Establish Transects
- Three site-specific Environmental Baseline Surveys (EBS) of the USN filed area carried out by accredited consultancy firms.
- Laboratory analyses and in situ measurements.
- Collation of results/impact identification and evaluation.
- EIA report preparation/production.

Biological and physical environment

Two Environmental Baseline Surveys (EBS) of the USAN field area were carried out in September 2003 (wet season) and January 2004 (dry season). A complementary EBS was conducted in May-June 2007. The baseline reports show that the area is pristine and typical of the Gulf of Guinea. The sediment at the project location is mainly clay. The benthic community comprises polychaetes, molluscs, starfish, jellyfish and crustaceans. The dominant benthos is polychaetes with good diversity. The coastline is characterised by the presence of sandy beaches, areas of mangrove swamps and estuaries. Marine life to be found in the coastal area includes shellfish and fish of local commercial importance. Some dolphins, turtles and whales, which are considered as endangered species, are known to pass through the project area.

Socio-economic environment

The USAN Field is located in the deep offshore area, which statutorily belong to the Nigerian Federation and not any coastal community or state. Nevertheless, a survey of the socio-economic settings of the coastal communities showed that they comprise of fishing settlements, characterised by a rapidly growing population with family sizes averaging 10 to 12 people. Social infrastructural facilities are generally lacking, e. g., no electricity, potable water supply, good roads, educational facilities, etc. The housing standard is generally very low.

Key environmental issues

Marine sediment and benthic communities

Marine sediments and benthic communities are expected to be principally affected by the drilling and construction activities. The sediment and benthic communities in the immediate vicinity of the discharged drilling cuttings will be impacted by the physical smothering of cuttings containing 5% oil on cuttings. The use of drilling fluids with low toxicity and high biodegradability will ensure negligible toxic effects. There may be physical disturbance of the sediments during drilling and anchoring of the surface facilities. These will be localised and short-term. Production operations are not expected to have any noticeable effect on the marine sediment.

Water quality

Drilling and production installation will be expected to a have a temporary detectable impact on water quality. The impact will affect only a localised area in the immediate vicinity of the discharges. The sources of impact comprise the wastewater discharges from the drilling and installation vessels. All discharges are expected to be in compliance with the Nigerian legislation.

Marine biological resource

The impact of the drilling and normal operational discharges on the pelagic environment will be essentially from the discharge of the treated drill cuttings and from the discharge of treated produced water. An impact from deck drainage, sewage and sanitary discharges is expected to be negligible given the low levels of discharge. Pelagic fish species and other vertebrates are highly mobile and will move away should they encounter unfavourable water conditions. Impacts on the pelagic environment from production operations are expected to be negligible.

Atmosphere

The major sources of atmospheric emissions from the normal operation of the USAN development are the processing facilities. The main atmospheric emissions are Green House Gas (GHG) emissions which are estimated at 16.57 kt CO_2 eq./Mboe average for the project life which is good performance. These emissions will result from gas flaring during the first six months following start-up of the facilities, and from the fuel gas consumption required for the power generation and for the gas compression. However, the GHG emissions of the project can be considered as negligible when compared to world-wide emissions, and will represent a moderate contribution to TEPNG's GHG emissions and a moderate contribution to the Total Group's emissions.

Hazardous and non-hazardous waste

Since chemicals and other hazardous materials are in common use in the oil industry, there is an inherent potential for spillage and consequent damage to the environment. The measures taken with in regard to oil spillage may be applied to chemicals and hazardous materials spillage. The potential for impact given proper facilities and design and good operating practice is considered minimal. There is limited potential for impact from solid wastes generated by the project as the wastes will be transported to shore to Government accredited treatment facilities.

Odour noise and light

The oil and associated gases produced from the project contain zero sulphur and consequently will not incur detectable odour. The potential for venting and fugitive releases exist; however, volumes will be small and unlikely to cause and odour problem. Noise impacts may occur during drilling and installation activities, however, these will be short term and transient. Similarly, noise levels during normal operation will be low. A key factor in considering noise impact is that the project area is remotely located offshore away from people and removed from any sensitive environmental areas.

Socio-economic impact

There will be a positive economic impact from the development project due to increased revenues and increased direct and indirect employment. As the field is located offshore there will be no direct effects on the local onshore population. The overall socio-economic impacts from EPNL's activities are reported and evaluated within the EPNL Coastal Development Plan.

Summary of significant impacts and their mitigations

Beneficial Potential Impacts

The beneficial impacts that are expected from the USAN project include:

- Increased revenues from sales of oil.
- Enhancement of the realisation of the Nigerian local content goals.

Adverse Potential Impacts

The anticipated environmental impacts that shall arise from the proposed USAN development projects include the following:

Impact on air quality

The impact on air quality are expected to arise from diesel combustion from marine engines, power generators, flaring of fluids during well testing/clean up production operations, logistic support activities, and decommissioning and abandonment. With the exception of production emissions and decommissioning activities which are expected to be moderate, all other impacts on air emission shall either be negligible or minor and short-term.

The mitigation measure to be adopted for air quality impacts includes the following:

- Regular maintenance of equipment and monitoring of diesel oil quality.

- The need for fired heaters has been avoided by adopting the use of waste heat recovery units. The units are installed in the gas turbines.

- Retro-fitting with low NO_x burners after five years of operation.

- A flaring philosophy of zero HP gas flaring during normal operation shall be adopted. Associated gas is partially used for power generation, and the rest re-injected.
- The oil storage tanks on the FPSO shall be equipped with an HC blanketing system linked to a Vent Gas recovery system which routes vent gas from the cargo tanks to the gas processing system.

- Overheads from TEG re-boiler shall be routed to the process (and not vented).

- Compliance with MARPOL 73/78 Annex VI – prevention of air pollution from ships.

Impacts on benthic communities and Seabed contaminated/disturbance

Impacts are expected during drilling operations and these may result from discharge of drill cuttings, cement slurry, and effects of chemical additives. The potential impacts of drill cuttings and chemical additives might be major, while that of cement slurry may be negligible. Seabed contamination/disturbance is expected due to impacts associated with drilling, anchoring, installation of SPS and UFR during construction and their removal during decommissioning. Such impacts range from moderate to minor and mostly short-term.

Mitigation measures to avoid impacts on seabed/benthic organisms have been put in place and they include the following:

- Cuttings shall be dumped at sea after treatment at an oil content lower than 5% oil on cuttings.

- Only Water Base Mud or Synthetic Base Mud with high biodegradability and low toxicity shall be used.

- Suction pile anchors shall be used to avoid anchor drag.

3.11 Observation from case studies

It is not surprising that most developing country EIA systems, which are generally at an early stage in their development, fail to meet the evaluation criteria specifically tailored for developing countries by the World Bank. Both case studies have some resemblance to the requirements suggested by World Bank, since they were designed to test international good practice and to safeguard countries with weak EIA systems from organizations that might take advantage of such countries. While there are many variations between developing countries (Glasson et al., 1999), these weaknesses are similar to those reported in the EIA systems in South Africa (Wood, 2002), in various Mediterranean countries (George et al.,

2001) and in Egypt, Tunisia and Turkey (Ahmad and Wood, 2002). While the importance of wealth in determining environmental awareness can hardly be exaggerated and the EIA systems in many developing countries have many shortcomings, Glasson et al. (1999) have optimistically noted that, "…emerging EIA systems are developing rapidly, learning from existing systems, and adapting EIA techniques to their own needs." Abaza (2000) felt that the development of EIA in developing countries should not be seen in isolation. Improving EIA practice was only one element of the way forward, because actions such as developing legislation, rising awareness, improving data systems and providing opportunities for public participation were also crucial. Spooner (in Donnelly et al., 1998) believed that the priority for improvement in EIA lay not in the production of further EIA guidelines but in training, institutional re-organisation and improved communication. Sankoh (1996) and Briffett (1999) felt that developing country EIA had to be simplified to become more flexible. There are therefore several urgent issues that were not addressed by both Case Studies in the EIAs by oil companies. Such as need for research on both substantive (methodological) and procedural (including effectiveness) issues of EIA:

• Training and capacity building in EIA.

• Diffusion of EIA experience.

• Appropriate EIA policy and integration of requirements.

• Increased political will.

CHAPTER FOUR: RESEARCH METHODS

4.0 Introduction

This chapter describes the research methods used to obtain and process data to allow an empirical research assessment to be made of Nigeria's EIA systems. It described the development, application and results of the questionnaire survey used to determine the views of the stakeholders on EIA in oil and gas industry. The research methods embrace both quantitative and qualitative designs. In order to achieve direct observation and communication with participants, questionnaires were administered to seven hundred and five (705) recipients, of whom 560 responded, and who were identified as a representative cross-section of the stakeholders. These questionnaire recipients included oil industry personnel, academics, government organization personnel, and representatives from local communities and Non-Governmental Organisations (NGOs). Statistical analysis of response were undertaken to achieve a quantifiable and valid claim on the EIA situation in Nigeria.

4.1The role of surveys

According to Fielding and Fielding (1986), a survey provides the third component of a research concept, thereby allowing a triangulation of accounts; from a review of documentation, to an analysis of what actually happens, to how this is viewed by those involve or associated with the process. The research role of these surveys does not address issues of legal disputes such as socio-economic and political issues (for example, the marginalization of ethnic minorities in the oil-producing areas), rather it concentrates on the role of government and the stake-holders in the conducting of EIA in the oil industry in Nigeria, by exposing the strengths and weaknesses of the systems. An emphasis is given in the questionnaire on the role played by the oil industry in the past in addressing and conducting individual EIAs in line with the government regulations.

4.2 Target stakeholders

The target stakeholders who were the recipients of the questionnaire were primarily the people directly and indirectly involve with EIA process, application, processes,

implementation, and environmental outcomes in Nigeria, and are categorized in for groups, namely:

- Government Agencies and organizations
- The oil industry
- Academics
- Non-Governmental Organisations (NGOs) and environmental groups

4.3 Survey methods and approach

In most research work of a similar nature, two principal methods can be applied in gathering of data and information on stakeholder's views, either questionnaire surveys or interviews. The decision was taken to use a questionnaire survey for the following reasons:

- According to Feitelson, (1991) mailed questionnaire surveys have no direct effects on responses given and produce more candid answers.
- Questionnaire surveys allow specifically targeting large number of individuals of various categories in both the government and the private sector within a short time.
- Questionnaire surveys, unlike interviews, avoid imposition or suggestion of ideas to respondent.
- Questionnaire surveys provide a framework that allows respondents to spontaneously answer the question in the form that is required without suggesting it (Oppenheim, 1966). In this way you will be able to conduct vigorous statistical analyses on key areas of interest.
- Questionnaire surveys reduce the cost of travelling and meeting the respondent for interviews in various locations.

- Questionnaire surveys are safer for personal safety and security compared to interviews, particularly in volatile and potentially dangerous regions like the Niger Delta.

- Questionnaire surveys are cheaper in terms of cost and financial commitment when compared with interviews, which require significant amounts of travel.

- In Nigeria the lack of reliable and efficient postal services invalidate the use of the mail service in any non-target questionnaire survey, requiring a single target respondent approach.

- Questionnaire surveys are more time efficient compared with interviews that require appointments with busy government officers or oil company personnel.

- Questionnaire surveys allow the respondent enough time and space without hindrance or interference and can be collected within a specific time frame.

4.4 Construction of questionnaire and choice of recipients

The questionnaire uses simple and straightforward questions. Questions that involve environments or habitats are grouped into tables to ensure the efficient completion of the surveys, and to facilitate subsequent analyses. Attempts to classify are inherently subjective; however they are used to clarify and expand on the responses made to the 'closed' questions and, where appropriate, elicit information on potential areas for future improvement. As Geer (1988) indicated, "by allowing the recipient to respond freely to the enquiry, the questioner is better able to measure their salient concerns". An extra page was also provided at the end of the survey to allow any additional comments to be stated.

The questionnaire consisted of 27 multiple questions. The questions were grouped into the following main categories:

- *The respondents.* The respondents were asked about their dealings with EIA processes in Nigeria, knowledge and qualifications and their primary role in EIA process, the number of years they spent, and their experiences with oil companies or government.

- *The EIA process.* This section survey focused on current capacity, knowledge and skills of people who are fully engage in EIA process in Nigeria. It further asks questions on the standards in baseline studies, consideration of alternatives and mitigations.

- *Environmental statement.* The survey sets the stage for the analysis of environmental statements and the extent of the respondents perceived assumptions, limitations and uncertainties throughout the environmental statements.

- *Follow-up action.* This part of the survey, deals with how the consistency and the actual previous outcomes accurately reflected predictions contained in environmental statements. It further considers perceptions of the current post-consents monitoring in EIA process in Nigeria.

- *Co-ordination and collection of environmental information.* The questionnaire focussed on the co-operation between government, industry, regulators and other translations/bodies assessing their needs to meet the necessary requirements and information.

- *Strategic Environmental Assessment.* This last part of survey involved assessment of the quality and consistency of project's specific environmental statements, evaluation of cumulative impacts, consideration of alternatives, integration of environment into decision making process, monitoring and feedbacks and finally quality of baseline information.

The main rationale behind the choice of respondents was to find people who had professional experience or contact with EIA issues in Nigeria, both in government and in private, in dealing with oil-related cases. It was assumed that, unless the respondents included a significant number of experienced stakeholders, the analysis of the respondents' views would provide little information on oil-related issues. Efforts were therefore made to ensure a reasonable balance of targeted recipients from all sides of the subject; practitioners and those affected by EIA-related decisions. In addition the analysis of the questionnaire results includes, from the outset, any likely bias in individual's responses (such as pro-oil industry, anti-oil industry) from their occupations, education and background.

In the process of questionnaire construction and design, what must be considered are the recognised limitations of the questionnaire methodology that are associated with this type of the research. In the literature MacRae (1996) and Potts (1990) recognise that there are generic

limitations with questionnaires, as well as the specific limitations from the Nigerian situation. Generically the limitations are:

- Questionnaires can ask questions about issues that occurred within a length of time, possibly many years and thus the memory of the recipient might be questionable.

- Standardised questionnaires can contain questions that could be open to misinterpretation. As was done in the case of this research, it is usually recommended that the questionnaires are piloted by colleagues before being distributed.

- Open-ended questions can produce extremely long answers, which can be problematic to analyse or characterise. Giving the recipients an opportunity to write large amounts of text has clear advantages and disadvantages.

- The wording of the questionnaire is critical in avoiding the recipient being led to answer in a particular way.

- Ideally a questionnaire should have a random sample of recipients; however this is not possible in a highly specialised subject such as EIA.

- The questionnaire should not be over-long as this can result in superficial answers.

- The recipients must be sure that their answers will be treated in confidence. There should be aware that a negative answer has the same value as a positive answer.

According to MacRea (1966) and Potts (1999), these limitations do not invalidate the research; however analysis needs to incorporate the sources of data and information.
A specific limitation for the Nigerian situation is the potential for bias by the respondent from a particular region or State in Nigeria, given the nature and sensitivity of ethnicity in Nigerian society. It should also be remember that a segment of the targeted recipients might be illiterate, and therefore would struggle with complex multiple questions.

4.5 Questionnaire distribution

For practical reasons, a questionnaire distribution in Nigeria can be a difficult undertaking. Considering Nigeria's problems with communications services, it would have been very difficult, if not impossible, for a researcher to distribute questionnaires to the various groups and organisations in different locations. The potential problems including delayed distribution or loss of documents. The only reliable alternative was, wherever possible, to distribute the questionnaires in person. However, survey distribution in person does not always lead to a high response rate. To counteract this and achieve as high as possible returns, the Cardiff University logo was attached on top of each questionnaire. It has been found out that 'sponsorship' by a respected University will be taken more seriously, and it has been found to increase response rates by 8.9% (Fox et al., 1987). In Nigeria, even well known and established organizations encountered problems in conducting standardized questionnaires distributed in person. Therefore, efforts concentrated on finding ways of ensuring an effective distribution and collection through contacts in all the various categories mentioned earlier, and ensuring proper and constant coordination with all the various groups.

The questionnaire distribution started in May 2009, with an initial distribution of 400. Later in September 2009, another 305 were added, making a total of 705 questionnaires, with 560 answered while 145 were either not returned or answered completely. Given the concentration of oil activities in the Port Harcourt area and government business in Abuja, a greater effort was given in distribution within those cities, along with a few more cities including Lagos, Warri and Kaduna.

4.6 Response rate

Any successful questionnaire survey requires a good and high-quality response rate (Table 4.1). A high response rate for this survey is recorded due to the pro-active and targeted methods of questionnaire distribution.

4.7 Data analysis techniques: Statistical analysis

The Statistical Package for Social Sciences (SPSS) was used to analyse and interpreted the data from the 560 questionnaires returned. The SPSS is a widely used programme for statistical analysis in scientific and social studies. There is range of different analyses

available in the programme to explore relationships in data sets, these vary according to the type of research question that needs to be addressed and the type of data available. This type of statistical analysis has previously been applied to Niger Delta studies (for example, Banks and Sokolowski, 2010; Osagie et al., 2010; Nriagu, 2011). The results were entered into data sets that conform to the SPSS programme. The data sets consist of cases and variables. The cases are the basic units of analysis such as one person replying a questionnaire survey. The variables are all the things which are measured and recorded for each survey; an example is the questionnaire replies in the survey. The statistics techniques used include;

Table 4.1 showing the number of distributed and returned questionnaires.

Stakeholders group	**Number of questionnaires distributed**	**Number of questionnaires returned**	**% of questionnaires answers**
Academicians	135	110	81.4
Oil companies	175	150	85.7
Government organisation	210	170	80.9
NGOs and communities	185	130	70.2
Total	705	560	79.4

Descriptive statistics

These statistical methods can be used for summarizing or describing a collection of data, such comparisons and frequencies. Descriptive statistics explores ratios and predictions for numeral outcome such as linear regression; it provides a means for drawing conclusions from data that are subject to random variation. To assess the propositions being investigated further, the conclusions are tested as well, as part of the scientific methods. Outputs include mean, standard error and standard deviations.

Cross tabulation (cross tabs)

Is an analysis that is undertaken made with two or more data sources (variables) by tabulating the results of one against the other. It gives a basic picture about the interrelation of two variables and helps to find out interactions between them. In this research cross tabulation was used to create frequencies distribution of statistical variables for the questionnaire survey

answers (Appendix 1). The cross tabs make it possible to identify the most significant relationships between the two selected data sources.

Chi-square test

A chi-squared test, also referred to as chi-square test or χ^2 test is a statistical hypothesis test in which the sampling distribution is a chi-squared distribution when the null hypothesis is true. It has a role in inferential statistics to determine probability distributions.

Null hypothesis testing

The null hypothesis is usually a general statement; for example there is no relationship between two sets of phenomena. The null hypothesis can never be proved; only the hypothesis can be either accepted or rejected. The analysis works by collecting data and measuring how likely the particular set of data is, assuming the null hypothesis is true. If the data-set is very unlikely, defined as being part of a class of sets of data that only rarely will be observed, the experimenter rejects the null hypothesis concluding it (probably) is false. This class of data-sets is usually specified via a test statistic which is designed to measure the extent of apparent departure from the null hypothesis. The procedure works by assessing whether the observed departure measured by the test statistic is larger than a value defined so that the probability of occurrence of a more extreme value is small under the null hypothesis (usually less than either 5% or 1% of similar data-sets in which the null hypothesis does hold). If the data do not contradict the null hypothesis, then only a weak conclusion can be made; namely that the observed data set provides no strong evidence against the null hypothesis. As the null hypothesis could be true or false, in this case, in some contexts this is interpreted as meaning that the data give insufficient evidence to make any conclusion, on others it means that there is no evidence to support changing from a currently useful regime to a different one.

Regression analysis

Regression analysis in statistics is among the many techniques for modelling and analyzing several variables, when the focus is on the relationship between a dependant variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

CHAPTER FIVE: RESULTS

5.1 Introduction

The aims of the EIA process have been widely reported in the literature and are further dis cussed in chapter 2. From the results of the questionnaire it is evident that EIA process is multifaceted tool, which has the ability to achieve, or at least support a range of environmental and decision making goals. The exact goals of a given EIA system are however, dependent on the core values of national jurisdictions in which they have been established. This chapter contains the summarised results of the questionnaire. It gives the values for the levels of involvement of the four categories of respondent described in the previous chapter, and also the levels of their participation in EIA processes in Nigeria's oil and gas industry. The raw data from the questionnaire is given in Appendix 1. This survey provides a mechanism for an understanding of the conflict and views between oil companies and government organization, as opposed to academics and stake-holder communities in Nigeria. The survey was aimed at highlighting the constraints and challenges faced by various stakeholders in conducting EIA in Nigeria's oil and gas industry. Furthermore it addresses the resulting environmental impact on the communities where oil-related activities take place in the Niger Delta region. Inevitably, the survey does not address issues of legal disputes such as socio-economic and political factors, but instead concentrated on the environmental issues.

5.2 Results of questionnaire

The questionnaire is divided into six sub-headings starting with the background of the respondent in the first section, followed by the EIA process in Nigeria to environmental statement and the follow up action, coordination and collection of environmental information. The six sub group covers the current methods and approach of EIA in Nigeria, the role of government practices and process in terms of strengths and weaknesses, the role of various stakeholders in EIA process with each carrying a number of questions reflecting environmental impact assessment. There were 27 questions in total, and these are presented in groups reflecting the background of respondents. The results are analyzed in three sections, starting with description of the results with frequency tables and percentages, and followed by the cross-tabulations of some selected questions and finally chi-square test and regression

analysis. The tables of results have been summarized so that the answers can be related to the occupations of the respondents, this sorting of the data being a critical first step before the statistical analysis of the data set. For clarity the Table and Figure numbers correspond to the questionnaire numbers.

5.2.1 The Respondent data

Question 1a "How many years have you been associated and dealing with the EIA process in Nigeria's oil and gas industry?"

Based on the answers by the respondents shown in Table 5.1a the highest levels for the grouping 'Total of respondent' is 27.5% with 3-4 year of experience. In the same group 27.3% have more than 5 years plus experience in the EIA process, while 17.1% have 4-5 years of experience, 16.1% have between 2 and 3 years of experience, and only 12% two years or less. In terms of groups, the government organisations have the most years (5+ years) of experience in conducting EIA with 30%, followed by the oil industry with 28% and the academic group with 27.3%, while the NGOs group score 23%.

Table 5.5a *Answers to Question 1a "How many years have you been associated and dealing with the EIA process in Nigeria's oil and gas industry?"*

	Academics (N=110)		**Oil companies (N=150)**		**Government organizations (N=170)**		**NGOs and communities (N=130)**		**Total of respondents (N=560)**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
< 2 years	10	9.1	20	13.3	15	8.8	22	16.9	67	12.0
2 < 3 years	16	14.5	28	18.7	30	17.6	16	12.3	90	16.1
3 < 4 years	28	25.5	29	19.3	46	27.1	51	39.2	154	27.5
4 < 5 years	26	26.6	31	20.7	28	16.5	11	8.5	96	17.1
5+ years	30	27.3	42	28.0	51	30.0	30	23.1	153	27.3

Question 1b "What is your highest level of formal education (please state your highest academic qualification)?"

Question 1b (Table 5.1b) looked at the level of education of the respondents. A large percentage (43.4%) of the respondents has a first Degree, 24.5% have a Master's Degree, and 16.1% have above a Master's Degree. However, the academic group clearly skews the data with more than half of the group having above Master's Degree, followed by the government organisation with 11.8%, and oil industry 4.7% and NGOs and communities 4.6%.

Table 5.1b *Answers to Question 1b "What is your highest level of formal education (please state your highest academic qualification)?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Junior high school	0	0.0	2	1.3	0	0.0	35	26.9	37	6.6
Senior high school	0	0.0	6	4.0	7	4.1	47	28.5	50	8.9
First degree	5	4.5	105	70.0	93	54.7	40	30.8	243	43.4
Master's degree	45	40.9	30	20.0	50	29.4	12	9.2	137	24.5
Above masters	60	54.5	7	4.7	20	11.8	6	4.6	93	16.6

Question 2a "What is the primary role of your Organisation/Department in undertaking Environmental Impact Assessment (EIA) process?"

The results of the primary role played by the four groups in undertaking the EIA process in Nigeria are given in Table 5.2a. The 'Total of respondents' group as 'consultant' scored the highest with 28%, followed by the competent authority 21.1%, with both statutory consultee and developers scoring 17.9% and 17.3% respectively. In the group categories, the academics work mainly as consultants at 65.5%. The role of the oil companies is mainly the one of developers/proponents at 54.7%, although a relatively high percentage 33.3% still works as consultants. Government organisations function as the competent authority at 67.6%, and secondly as the statutory consultee at 29.4%. NGOs and communities work mainly as other consultee at 46.2%.

Table 5.2a *Answers to Question 2a "What is the primary role of your Organisation/Department in undertaking Environmental Impact Assessment (EIA) process?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Competent authority	0	0.0	0	0.0	115	67.6	3	2.3	118	21.1
Developer/proponent	5	4.5	82	54.7	0	0.0	10	7.7	97	17.3
Statutory consultee	15	13.6	13	8.7	50	29.4	22	16.9	100	17.9
Consultant	72	65.5	50	33.3	0	0	35	26.9	157	28.0
Other consultee	18	16.4	5	3.3	5	2.9	60	46.2	88	15.7

Question 2b "Approximately how many environmental impact assessments have you personally been involved in since the introduction of EIA regulations in Nigeria?"

The results for question 2b (Table 5.2b) show that overall respondents with the highest number of EIA involvement are the academic with greater than 60 EIAs (40.9%), followed by Government organization conducting between 40-60 EIAs (52.9%), whereas the oil companies recorded about 31.3% between 0-20 EIAs. However the NGOs and the communities have little or no involvement in EIA process.

Table 5.2b *Answers to Question 2b "Approximately how many environmental impact assessments have you personally been involved in since the introduction of EIA regulations in Nigeria?"*

	Academics (N=110)		**Oil companies (N=150)**		**Government organizations (N=170)**		**NGOs and communities (N=130)**		**Total of respondents (N=560)**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
0 – 20	8	7.3	47	31.3	15	8.8	16	12.3	86	15.4
20 – 40	22	20.0	42	28.0	35	20.6	30	23.1	129	23.0
40 – 60	20	18.2	19	12.7	90	52.9	10	7.7	139	24.8
> 60	45	40.9	15	10.0	25	14.7	12	9.2	97	17.3
None	15	13.6	27	18.0	5	2.9	62	47.7	109	19.5

5.2.2 EIA Process

Question 3 "Do you feel that given your organisations/departments current capacity and knowledge (skills set) that members of staff are able to fully engage in EIA process?"

Of the 560 respondents (table 5.3), 61.1% of them thought that the knowledge and capacity of the organisation is adequately enough for the members of staff to engage in EIA process. 31.1% of the respondent does not believe that the current knowledge and capacity of the organisation is enough for their staff to engage in EIA. The remaining 7.9% are indifferent to the question. There is positive linear correlation of 0.821 between the respondent that believes that the eia process in their organisation is dependent to capacity and knowledge as indicated in figure 5.3.

Table 5 .3 *Answers to Question 3 "Do you feel that given your organisations/departments current capacity and knowledge (skills set) that members of staff are able to fully engage in EIA process?"*

			Knowledge			
			Yes	No	Don't know	Total
Capacity	Yes	Count	262	0	0	262
		% within Capacity	100.0%	.0%	.0%	100.0%
	No	Count	80	120	0	200
		% within Capacity	40.0%	60.0%	.0%	100.0%
	Don't know	Count	0	54	44	98
		% within Capacity	.0%	55.1%	44.9%	100.0%
Total		Count	342	174	44	560
		% within Capacity	61.1%	31.1%	7.9%	100.0%

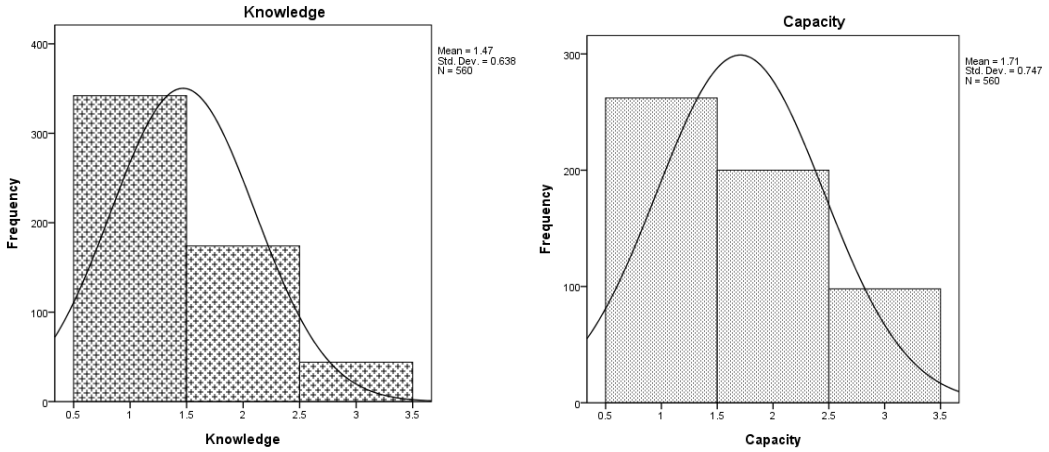

Figure 5.3 *Distribution of respondents' opinion on the influence of Knowledge and Capacity*

Question 4 "To what extent do you understand each of the below to have improved as a result of the EIA process in Nigeria.

The respondents significantly favour knowledge and understanding (Table 5.4) of the environment to improve as a result of EIA. The opinion of the respondent is normally distributed on the effect of EIA at improving the knowledge and understanding of the oil industry in decision making and planning, environmental management, protection of sensitive or designated areas and rare or unique species, and planning and control. The opinions are however divided as to how much improvement the EIA process has improved public involvement, communication between oil and external agencies, credibility and responsibility, legislative compliance and reduce conflict between host communities and oil industry.

TABLE 5.4 *Answers to question 4 "to what extent do you understand each of the below have improved as a result of the EIA process in Nigeria.*

		Significantly improved	Moderately improved	Slightly improved	No change	Don't know
A	**Public involvement in EIA processes**	230 41%	70 12%	150 27%	67 12%	43 8%
B	**Knowledge and understanding of the oil industry**	150 27%	152 27%	167 30%	68 12%	23 4%
C	**Decision-making and planning**	169 31%	197 35%	143 25%	45 8%	6 1%
D	**Protection of sensitive/designated areas and rare/unique species**	78 14%	67 12%	250 45%	157 28%	8 1%
E	**Environmental management**	67 12%	120 21%	320 57%	31 6%	22 4%
F	**Communication between oil industry and external agencies/host communities**	198 35%	218 39%	103 18%	23 4%	18 3%
G	**Improved credibility and responsibility**	89 16%	123 22%	282 50%	49 9%	17 3%
H	**Legislative compliance**	75 13%	126 23%	193 35%	153 27%	13 2%
I	**Knowledge and understanding of the environment**	267 48%	147 26%	87 16%	53 9%	6 1%
J	**Proper planning and control**	130 23%	109 20%	197 35%	103 18%	21 4%
K	**Reduce conflict between host communities and oil industry**	176 31%	307 55%	32 6%	17 3%	28 5%

Question 5 "In your opinion, do you perceive the following to be undertaken to a satisfactory standard in baseline studies?"

The opinions of the respondents are normally distributed with the peak between 'sometimes' and 'always' (Table 5.5). There is significant positive correlation between the opinion of the respondent in onshore and offshore areas (Figure 5.5).

Table 5.5 *Answers to Question 5 "In your opinion, do you perceive the following to be undertaken to a satisfactory standard in baseline studies?"*

		Region	Never	Rarely	Sometimes	Usually	Always	Don't know
A	**Identification of the primary structural/physical features of concern**	**On-shore**	67 12.0%	81 14.5%	41 7.3%	167 29.8%	139 24.8%	65 11.6%
		Off-shore	30 5.4%	90 16.1%	70 12.5%	180 32.1%	160 28.6%	30 5.4%
B	**Evaluation of the biological functioning of the marine environment**	**On-shore**	43 7.7%	34 6.1%	190 33.9%	177 31.6%	84 15.0%	32 5.7%
		Off-shore	28 5.0%	24 4.3%	122 21.8%	191 34.1%	173 30.9%	22 3.9%
C	**Assessment of current environmental quality**	**On-shore**	21 3.8%	13 2.3%	193 34.5%	125 22.3%	167 29.8%	41 7.3%
		Off-shore	13 2.3%	23 4.1%	171 30.5%	163 29.1%	145 25.9%	45 8.0%
D	**Assessment of non-impacted areas (reference/c control cities)**	**On-shore**	56 10.0%	49 8.8 %	97 17.3%	190 33.9%	145 25.9%	23 4.1%
		Off-shore	40 7.1%	45 8.0%	103 18.4%	201 35.9%	138 24.6%	33 5.9%

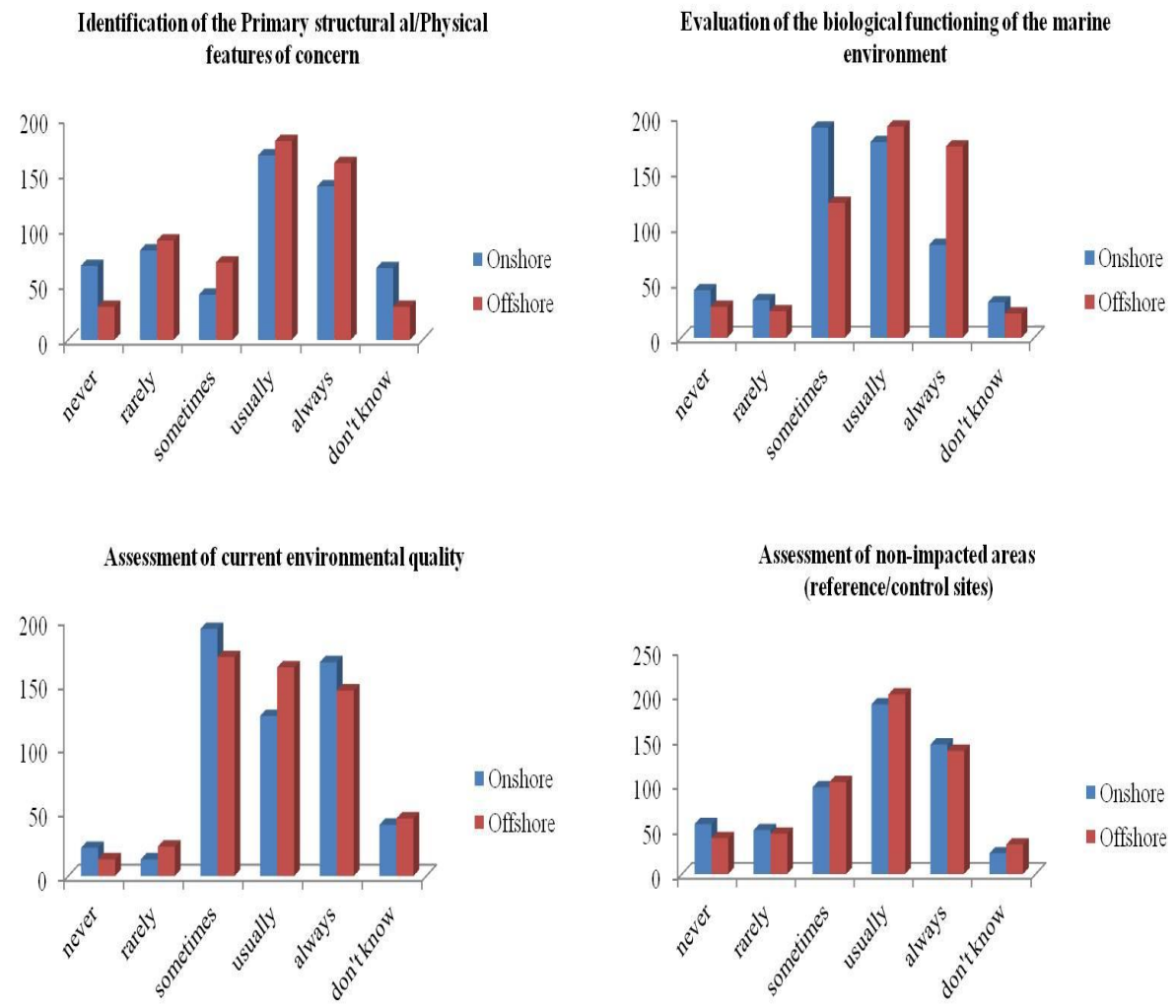

Figure 5.5: *Histograms depicting the response of respondents to assessment of baseline studies*

Question 6 "If considered necessary, please comment on how you think baseline studies could be improved.

The answers are listed in the Appendix 3, and have been incorporated into the discussion.

Question 7 "Is the option selection process (consideration of alternatives) adequately evaluated and documented for construction (e.g. location of drilling sites, timing of activities, types of rigs/structures to be used) and operational activities (e.g. methods of mud/cuttings/produced water disposal)?"

Based on the total respondent answers, 43.7% of the respondents think 'sometimes' the options for consideration of alternative does not adequately evaluated the operational activities, however 23.6%, said 'usually' it does and 15.5% agreed 'rarely' evaluated the operational activities, whereas 13.4% 'never' agreed. In terms of mitigation option 33.4% said it 'sometimes', while 26.1% of the respondent agreed to be 'usually' implemented and others 'rarely' at 17.9%.

TABLE 5.7 *Answers to question 7 "is the option selection process (consideration of alternatives) adequately evaluated and documented for construction (e.g. location of drilling sites, timing of activities, types of rigs/structures to be used) and operational activities (e.g. methods of mud/cuttings/produced water disposal)?"*

	Never	Rarely	Sometimes	Usually	Always
Alternatives	75 13.4%	87 15.5%	245 43.75%	132 23.6%	21 3.75%
Mitigation option	65 11.6%	100 17.9%	187 33.4%	146 26.1%	62 11.1%

Statement 8 "The introduction of EIA to the oil gas industry has resulted in an improved level of environmental protection"

In dealing with effectiveness of mitigation measures 33.9% of the respondents strongly agree that the introduction of EIA has improved environmental protection, while 44.6% agree with this statement (Table 5.8). A larger percentage of the respondent believed that the effectiveness of mitigation have adequately evaluated post consent.

Table 5.8 *Responses to Statement 8 "The introduction of EIA to the oil gas industry has resulted in an improved level of environmental protection"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Strongly agree	35	31.8	56	37.3	64	37.6	35	26.9	190	33.9
Agree	49	44.5	68	45.3	91	53.5	42	32.3	250	44.6
Uncertain	3	2.7	15	10.0	2	1.2	6	4.6	26	4.6
Disagree	20	18.2	5	3.3	7	4.1	25	19.2	57	10.2
Strongly disagree	3	2.7	6	4.0	6	3.5	22	16.9	37	6.6

Question 9 "Do you feel that the effectiveness of mitigation measures adopted have adequately evaluated post-consent?"

The Total respondents that agreed with the effectiveness of mitigation was adequately evaluated post-consent always are 26.6%, while a significant number also answered usually with (25%); however about 23% said it never evaluated post consent (Table 5.9).

Table 5.9 *Answers to Question 9 "Do you feel that the effectiveness of mitigation measures adopted have adequately evaluated post-consent?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Never	62	56.4	3	2.0	27	15.9	41	31.5	133	23.8
Rarely	6	5.5	13	8.7	14	8.2	39	30.0	72	12.9
Sometimes	12	10.9	12	8.0	10	5.9	32	24.6	66	11.8
Usually	5	4.5	63	42.0	62	36.5	10	7.7	140	25.0
Always	25	22.7	59	39.3	57	33.5	8	6.2	149	26.6

5.2.3 Environmental Statement

Question 10 "Do you feel that existing information is adequately incorporated into the environmental impact assessment process?"

Out of the 560 total respondents, 37.1% agreed that existing information are always incorporated into EIA, followed closely with 28.1% that answered usually, 12% rarely and sometimes, and 10.7% never. However in terms of groups, the academics answered with 'usually' 29.1%, oil companies with 40%, government organization scored the highest with 62.4%, while the NGOs scored the lowest with 7.7% (Table 5.10).

Table 5.10 *Answers to Question 10 "Do you feel that existing information is adequately incorporated into the environmental impact assessment process?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Never	10	9.1	7	4.7	2	1.2	41	31.5	60	10.7
Rarely	16	14.5	6	4.0	10	5.9	35	26.9	67	12.0
Sometimes	26	23.6	21	14.0	10	5.9	11	8.5	68	12.1
Usually	26	23.6	56	37.3	42	24.7	33	25.4	157	28.0
Always	32	29.1	6	40.0	106	62.4	10	7.7	208	37.1

Question 11 "To what extent do you perceive assumptions, limitations and uncertainties to be satisfactorily presented, addressed and resolved, where necessary, throughout the environmental studies?"

The largest percentage of respondent believed that assumptions, limitations and uncertainties in the environment studies are presented, addressed and resolved 'sometime' (Table 5.11). 35.9%, 35.7% and 34.3% of the respondent believed that assumptions, limitation of data and uncertainties in analysis/ assessment are sometimes addressed in the EIA process.

TABLE 5.11 A*nswers to question 11 "to what extent do you perceive assumptions, limitations and uncertainties to be satisfactorily presented, addressed and resolved, where necessary, throughout the environmental studies?"*

		Never	Rarely	Sometimes	Usually	Always
A	**Assumptions used**	51 9.1%	43 7.7%	201 35.9%	167 29.8%	98 17.5%
B	**Limitation of Data**	49 8.7%	53 9.5%	200 35.7%	191 34.1%	67 12.0
C	**Uncertainties analysis/assessment**	45 8.0%	73 13.0%	192 34.3	147 26.3%	103 18.4%

QUESTION 12 "Generally, how satisfactory do you perceive the following in nigeria's oil and gas environmental statements?"

In terms of presentation of EIA information (Table 5.12) in Nigerian oil and gas environmental statements, 33 % of the respondents believe that adequate information is presented while 27% of the respondent feels information is poorly presented. For the entire respondents, 32% and 9% of them thought organisation and description approach is satisfactory. 48% of respondents felt that adequate consultation is not made on EIA process. Opinion on the project overview varies from being very good (12%) to adequate (32%). On the other parameters, the responses of the respondent are generally 'very well' to 'adequate'. Information incorporated into the EIA process is thought to be dominant causative factors influencing resolution of prejudice and statements on the EIA process.

Table 5.12 Answers *to Question 12 "Generally, how satisfactory do you perceive the following in Nigeria's oil and gas environmental statements?"*

		Very Poor	Poor	Adequate	Good	Very Good
A	Presentation of information	102 18%	151 27%	182 33%	72 13%	53 9%
B	Organization of information on and description of approach	90 16%	135 24%	177 32%	109 19%	49 9%
C	Consultation	104 19%	164 29%	139 25%	85 15%	68 12%
D	1) Project overview	98 18%	132 24%	180 32%	81 14%	69 12%
	2) Physical requirements and project schedule	104 18%	121 22%	179 32%	91 16%	65 12%
	3) Processes and procedures	81 14%	158 28%	141 25%	109 20%	71 13%
	4) Residual emissions and wastes	70 13%	137 24%	169 30%	112 20%	72 13%
E	Environmental description: Geographical extent- appropriately focused-Baseline conditions	71 13%	125 22%	175 31%	108 19%	81 15%
F	Assessment of Human population	81	127	169	111	72

	effects on*:	Fauna and flora	14%	23%	30%	20%	13%
		Soil including seabed and subsoil					
		Water including the sea and any aquifers under the seabed					
		Air and climate					
		Landscape and sea scape					
		Tangible property (where necessary)					
		Architecture and archaeological heritage (where necessary)					
G	Potential risks of spills		67 12%	132 24%	170 30%	101 18%	90 16%
H	Assessment of the magnitude of environmental changes (considering; nature, location and duration of change)		82 15%	117 21%	155 28%	159 28%	47 8%
I	Evaluation of significance of potential impacts		59 11%	133 24%	168 30%	109 19%	91 16%
J	Alternatives		46 8%	137 25%	158 28%	152 27%	67 12%
K	Mitigation		51 9%	150 27%	147 26%	144 26%	68 12%
L	Description of environmental management (EMS and project specific actions)		52 9%	151 27%	162 29%	154 28%	41 7%
M	Monitoring		49 9%	140 25%	169 30%	147 26%	55 10%
N	Non-technical summary		140 25%	152 27%	132 24%	80 14%	56 10%

Question 13 "In your experience, to what extent have environmental statements produced to date been consistent in quality?"

36.8% of all respondent believed that there is moderate variation in the quality of environmental statements, 36.1% significant variation, 14.1% minor variation, 10% negligible variation, and 3.0% no variation in the quality of environmental statement in Nigeria's Oil and Gas industry (Table 5.13).

Table 5.13 *Answers to Question 13 "In your experience, to what extent have environmental statements produced to date been consistent in quality?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Significant variation	26	23.6	67	44.7	82	48.2	27	20.8	202	36.1
Moderate variation	35	31.8	51	34.0	62	36.5	58	44.6	206	36.8
Minor variation	21	19.1	22	14.7	10	5.9	26	20.0	79	14.1
Negligible variation	18	16.4	7	4.7	16	9.4	15	11.5	56	10.0
No variation	10	9.1	3	2.0	0	0.0	4	3.1	17	3.0

Question 14a "In your understanding, have environmental statements improved over time?"

The answers to question 14a shows that 33% of the respondent opined that there is moderate improvement in environmental statements over the years, 24.1% minor improvement, 18% significant improvement, 15.5% negligible improvement and 9.8% no improvement (Table 14a).

TABLE 5.14A *Answers to question 14a "in your understanding, have environmental statements improved over time?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
No improvement	12	10.9	4	2.7	21	12.4	18	13.8	55	9.8
Negligible improvement	23	20.9	12	8.0	24	14.1	28	21.5	87	15.5
Minor improvement	36	32.7	28	18.7	40	23.5	31	23.8	135	24.1
Moderate improvement	36	32.7	71	47.3	37	21.8	38	29.2	182	32.5
Significant improvement	3	2.7	35	23.3	48	28.2	15	11.5	101	18.0

Q14b. Please state your reason(s) for your answer to Q14a.

The answers are listed in the Appendix 3, and have been incorporated into the discussion.

QUESTION 15A "in your perception, has the introduction of mandatory EIA changed the way project(s) are planned and managed through their life-cycle?"

It is evident that 31.6% thought that the introduction of mandatory EIA usually change the way projects are planned through their life cycle, 27.7% sometimes, 14.6% rarely , 11.4% always, 8% never and 6.6% don't know whether it has or not. Also, 31.4% responded that the introduction of mandatory EIA usually change the way projects are managed through their life cycle, 26.8% sometimes, 13.9% rarely, 10.9% always, and 10.4% never and 7.7% do not have any opinion on it (Table 5.15a).

TABLE 5.15A ***A****nswers to question 15a "in your perception, has the introduction of mandatory EIA changed the way project(s) are planned and managed through their life-cycle?"*

		Don't know	Never	Rarely	Sometimes	Usually	Always
A	**Planned**	37 6%	45 8%	82 15%	155 28%	177 32%	64 11%
B	**Manage**	43 8%	58 10%	78 14%	150 27%	170 30%	61 11%

Question 15b "In general, how useful do you perceive current environmental statements to the reference document or working tool during both the construction and operation project?"

In Table 5.15b, it is shown that 34% of respondent thought that current environmental statements are moderately useful as reference documents during the construction of a project. 32% thought very useful, 16% slightly useful, 12% not useful and 7% were uncertain. Also, 36% felt current environmental statements are moderately useful to the working tool during the construction of a project. 31% very useful, 20% slightly useful, 7% not useful and 6% were uncertain (Table 5.15b).

In the operation of a project, 36% of respondents opined that current environmental statements are moderately useful to reference document. 31% thought they are very useful, 16% slightly useful, 9% not useful and 8% were uncertain. As working tool during a project, 34% perceived them to be moderately useful, 32% very useful, 15% slightly useful, 12% not useful and 7% were uncertain (Table 5.15b).

TABLE 15B *Answers to question 15b "in general, how useful do you perceive current environmental statements to the reference document or working tool during both the construction and operation project?"*

			Uncertain	Not useful	Slightly useful	Moderately useful	Very useful
1	Construction	Reference document	39 7%	65 12%	87 16%	191 34%	178 32%
		Working tool	35 6%	40 7%	110 20%	200 36%	175 31%
2	Operation	Reference document	42 8%	53 9%	87 16%	198 35%	180 32%
		Working tool	38 7%	68 12%	83 15%	193 34%	178 32%

5.2.4 Follow up action

Statement 16 "How confident are you that….:"

Out of the total respondents 30% are slightly confident that levels of releases are adhered to, while 20% are moderately confident, whereas 29% are not confident, on same line 32% are slightly confident with the outcomes of environmental effects, and another 31% are moderately confident and 27% not confident with the outcomes. In terms of mitigation actions and implementation 33% are not confident with the processes. However, 29% and 29.8%, are moderately to slightly confident respectively with the measures. The highest respondent felt slightly confident on effectiveness of mitigation with 35%.

TABLE 5.16 *Answers to statement 16 "how confident are you that:"*

		Very Confident	Moderately confident	Slightly confident	Not confident
A	**…predicted releases characterized and levels will be adhered to**	67 12.0%	159 28.4%	168 30.0%	166 29.6%
B	**…predicted environmental effects/actual environmental outcomes will be accurate**	50 8.9%	177 31.6%	182 32.5%	151 27.0%
C	**…stated project mitigation/management actions will be implemented**	45 8.0%	163 29.1%	167 29.8%	185 33.0%
D	**…stated mitigation/management actions will be effective**	39 7.0%	164 29.3%	201 35.9%	156 27.9

Question 17 "To your knowledge, with what consistency have actual previous outcomes accurately reflected predictions contained in environmental statements?"

The total respondents agreed that emission and actual ecological changes are sometimes consistent in es (38.8% and 34.1% and 34.8%). the next strongest category was 'usually (23.0%, 29.1% and 26.8%).

TABLE 5.17 *Answers to question 17 "to your knowledge, with what consistency has actual previous outcomes accurately reflected predictions contained in environmental statements?"*

			Never	Rarely	Sometimes	Usually	Always	Don't know
A	**Emission and discharges**		55 9.8%	70 12.5%	217 38.8%	129 23.0%	56 10.0%	33 5.9%
B	**Actual ecological changes**	**1) Acute impacts**	61 10.9%	69 12.3%	191 34.1%	163 29.1%	44 7.9%	32 5.7%
		2) Chronic impacts	55 9.8%	60 10.7%	195 34.8%	150 26.8%	45 8.0%	55 9.8%

Question 18a "In your perception, how do you consider current post-consent monitoring with regards to:"

A significant number of the respondent perceived current post consent monitoring in emission discharges, verifications and monitoring to be 'adequate' (33.2%, 35.4%, 37.7%) to 'good' (29.6% , 28.7% and 31.3%) respectively.

TABLE5.18A *Answers to question 18a "in your perception, how do you consider current post-consent monitoring with regards to…:"*

			Very poor	Poor	Adequate	Good	Very Good
A	**…emission and discharges monitoring**		56 10%	78 13.9%	186 33.2%	166 29.6%	74 13.2%
B	**…impact verification …monitoring (actual outcomes)**	**1) Acute impacts**	67 12.0%	59 10.5%	198 35.4%	161 28.7%	75 13.4%
		2) Chronic impacts	54 9.6%	45 8.0%	211 37.7%	175 31.3%	75 13.4%

Question 18b, If considered necessary, please comment on HOW you believe this could be improved.

Question 19. In your opinion is further feedback, incorporated in the above aspects needed or would be considered beneficial?

The answers are listed in the Appendix 3, and have been incorporated into the discussion.

Question 20 "How important is analysis of predicted values against actual environment outcomes?"

In this section, 36.4% of respondents perceived that analysis of predicted and actual environmental outcomes is very important. 33.4% of the respondents rated the link between stated predictions and baseline parameters within environmental statements with associated ecological change monitoring effort post-consent as good and 26.8% as very good. 27% of the respondent believed that organisations are always involved in post-consent monitoring (Table 5.20).

TABLE 5.60 *Answers to question 20 "how important is analysis of predicted values against actual environment outcomes?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Not important	8	7.3	18	12.0	12	7.1	0	0.0	38	6.8
Somewhat important	13	11.8	31	20.7	13	7.6	2	1.5	59	10.5
Reasonable important	16	14.5	41	27.3	37	21.8	13	10.0	107	19.1
Moderately important	38	34.5	21	14.0	42	24.7	51	39.2	152	27.1
Very important	35	31.8	39	26.0	66	38.8	64	49.2	204	36.4

Question 21 "In your perception, how would you rate the link between stated predictions and baseline parameters within environmental statements with associated 'ecological change' monitoring efforts post-projection consent?"

Of the total number of respondents 33.4% agreed the stated predictions and baseline parameters to be 'good' with monitoring efforts, also a significant number of the respondent 26.8% thought it's 'very good' whilst some 17.0% disagree and stated poor.

Table 5.21 *Answers to Question 21 "In your perception, how would you rate the link between stated predictions and baseline parameters within environmental statements with associated 'ecological change' monitoring efforts post-projection consent?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Very poor	8	7.3	18	12.0	3	1.8	18	13.8	47	8.4
Poor	38	34.5	12	8.0	18	10.6	27	20.8	95	17.0
Good	42	38.2	59	39.3	48	28.2	38	29.2	187	33.4
Very good	12	10.9	39	26.0	80	47.1	19	14.6	150	26.8
Don't know	10	9.1	22	14.7	21	12.4	28	21.5	81	14.5

Question 22 "Is your organisation adequately involved in post-consent monitoring?"

Based on the total number of respondents, 27% agreed that they are adequately involved in post-consent monitoring always, while 19.5% said they are usually involved. Whereas 19% are sometimes involved, but a significant number 22% said they are never involved in post consent monitoring.

Table 5.22 *Answers to Question 22 "Is your organisation adequately involved in post-consent monitoring?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Never	70	63.6	15	10.0	6	3.5	32	24.6	123	22.0
Rarely	21	19.1	8	5.3	10	5.9	31	23.8	70	12.5
Sometimes	10	9.1	27	18.0	32	18.8	38	29.2	107	19.1
Usually	9	8.2	38	25.3	42	24.7	20	15.4	109	19.5
Always	0	0.0	62	41.3	80	47.1	9	6.9	151	27.0

5.2.5 Coordination and collection of environmental information

Question 23 "Would the coordination and flow of information lead to improvements in the EA process/ES and resultant environmental protection?"

In response to questions I-V the majority of the respondents considered the coordination and flow of information in ESs improvement is not adequate.

TABLE 5.23 *Answers to question 23 "Would the coordination and flow of information lead to improvements in the ea process(es) and resultant environmental protection?"*

		No	yes	Don't know
I	**Independent environmental authority**	387 69.1%	92 16.4%	81 14.5%
II	**Co-ordinated approach towards environmental protection with Benin, Sao tome and Principe and other oil and gas producing nations in the region**	401 71.6%	109 19.5%	50 8.9%
III	**Ecosystems-based management approach**	391 69.8%	114 20.4%	55 9.8%
IV	**Consistent methodologies with regards to contaminate and ecological effects monitoring (project specifics)**	421 75.2%	101 18.0%	38 6.8%
V	**Wide area and regular long-term treads**	379 67.7%	139 24.8%	42 7.5%

Question 24. Where appropriate, please state the reason for your answers and/or any further comments you may to make:

The answers are listed in the Appendix 3, and have been incorporated into the discussion.

Question 25 "Is the current cooperation between Government, industry, regulators and other translations/bodies appropriate to meet the necessary requirements?"

30.9% out of 560 respondent agreed that current cooperation between government, industry, regulations and other bodies is appropriate to meet the needed requirements of EIA in Nigeria's oil and gas industry. 23.2% strongly agree, 7.9% are uncertain, 18.6% disagree and 19.5% strongly disagree. (Table 5.25)

Table 5.25 *Answers to Question 25 "Is the current cooperation between Government, industry, regulators and other translations/bodies appropriate to meet the necessary requirements?"*

	Academics (N=110)		Oil companies (N=150)		Government organizations (N=170)		NGOs and communities (N=130)		Total of respondents (N=560)	
	n	%	n	%	n	%	n	%	n	%
Strongly agree	25	22.7	21	14.0	71	41.8	13	10.0	130	23.2
Agree	27	24.5	81	54.0	55	32.4	10	7.7	173	30.9
Uncertain	5	4.5	18	12.0	9	5.3	12	9.2	44	7.9
Disagree	28	25.5	9	6.0	28	6.5	39	30.0	104	18.6
Strongly disagree	25	22.7	21	14.0	7	4.1	56	43.1	109	19.5

Question 26. Where necessary, with regards to question 25a, please indicate WHAT you believe is currently lacking or in need of improvement. Is there a need for a co-ordinated approach to the collection and evaluation of environmental information, taking account of current activities and monitoring research, throughout the Nigeria oil industry?

The answers are listed in the Appendix 3, and have been incorporated into the discussion.

5.2.6 Strategic Environmental Assessment (SEA)

Question 27 "In your opinion, what affect will the oil and gas SEA process have on…:"

In terms of Strategic Environment Assessment (SEA), 39.5% of respondent thought it has moderately improved the quality and consistence of project specifies ESs (Table 5.27), 21.4% believed it has minor improvement, 14.6% significant improvement, 13.6% slight improvement, 7.1% no improvement and 3.8% uncertain. 31.8% of respondent thought it has slight improved evaluation of impacts.

The SEA's has 'slightly' improved the evaluation of cumulative impacts by 26.8%, 'moderately' by 25%, 'minor improvement' in the order of 21.6%, 'significant improvement by 12.9%, 'no improvement' by 9.8% and 3.9% of the respondent were uncertain (Table 5.27). Also, it has improved consideration of alternatives, data collection, regional planning, communication between organisation and departments, integration of environmental statements into decision making, monitoring and feedback, transparency and quality of baseline information by 28.6%, 30.2%, 28%, 32.9%, 27.1%, 32.3%, 23.3% and 18% respectively.

SEA has minor improvement on transparency and quality of baseline information by 27.7 and 36.4% in the opinion of the respondents. The highest feedback on the effect of SEA is by 28.2% slight improvement on transparency.

TABLE 5.27 *Answers to question 27 "in your opinion, what affect will the oil and gas sea process have on…:"*

		Significant improvement	Moderate improvement	Minor improvement	Slight improvement	No improvement	Uncertain
A	**…quality and consistency of project specific ES's**	82 15%	221 39%	120 21%	76 14%	40 7%	21 4%
B	**…evaluation of transcustary impacts**	65 11%	111 20%	155 28%	178 32%	21 4%	30 5%
C	**…evaluation of cumulative impacts**	72 13%	140 25%	121 21%	150 27%	55 10%	22 4%
D	**…consideration of alternatives**	46 8%	160 29%	111 20%	144 26%	79 14%	20 3%
E	**…data collection**	67 12%	169 30%	102 18%	130 23%	60 11%	32 6%
F	**…regional planning**	51 9%	157 28%	131 24%	130 23%	50 9%	41 7%
G	**…communication between organizations and departments**	71 13%	184 33%	123 22%	133 24%	31 5%	18 3%
H	**…integration of environmental into decision-making**	61 11%	152 27%	110 20%	133 24%	73 13%	31 5%
I	**…monitoring and feedback**	84 15%	181 32%	160 29%	77 14%	41 7%	17 3%
J	**…transparency**	49 9%	130 23%	155 28%	158 28%	37 7%	31 5%
K	**…quality of baseline information**	62 11%	101 18%	204 37%	130 23%	40 7%	23 4%

5.3 Statistical analysis results

A descriptive statistics (frequencies and percentages) for the total 560 respondents (not by group) were conducted, by evaluating the three research questions against some selected questionnaires responses. Further statistics is conducted using the cross tabulation procedure**,** T test, and regression analysis.

5.3.1 Cross tabulations between questions

The 'Crosstabs' procedure forms two-way and multi-way tables and provides a variety of tests and measures of association for two-way data sets. The procedure determines whether categories can be used for comparisons and analysis, and which tests or measures to use. Given the large amount of data from the questionnaire specific questions for cross correlations were selected to address questions of interest and related to the research questions and these are presented in this results section.

The statistical analysis test is conducted between the questionnaire 1a with 3, 10, 12, 13, and 14. The second segment of the cross tabulation is between question 1b with questions 3, 8, 9, 10, 12, 13, and 14. Finally questions 2a and question 22.

Question 1a "How many years have you been associated and dealing with the EIA process in Nigeria's oil and gas industry?"
Question 3 "Do you feel that given your organisations/departments current capacity and knowledge (skills set) that members of staff are able to fully engage in EIA process?"

60% of respondents in the 4<5years category thought that their company has the capacity to implement EIA. The largest response to the contrary was from respondents in the <2years bracket (Table 5.1a-3 I) with a percentage of 52.2%. However, virtually all the respondent had positive opinion on the knowledge base of their company and the ability to engage in EIA. The highest response in favour of Question 3 (knowledge) was recorded in the 2<3 years category with approximately 82.2% (Table 5.1a-3 II).

Table 5.1a-3 I *Cross-correlation between Question 1a and Question 3-capacity*

Number of years associated and dealing with EIA Process	Capacity			Total
	Yes	No	Don't know	
< 2 years	32	35	0	67
	47.8%	52.2%	0.0%	100.0%
2 < 3 years	44	40	6	90
	48.9%	44.4%	6.7%	100.0%
3 < 4 years	57	46	51	154
	37.0%	29.9%	33.1%	100.0%
4 < 5 years	57	28	11	96
	59.4%	29.2%	11.5%	100.0%
5+ years	72	51	30	153
	47.1%	33.3%	19.6%	100.0%
Total	262	200	98	560
	46.8%	35.7%	17.5%	100.0%

Table 5.1a-3 II *Cross-correlation between Question 1a and Question 3-knowledge*

Number of years associated and dealing with EIA Process	Knowledge			Total
	Yes	No	Don't know	
< 2 years	45	22	0	67
	67.2%	32.8%	0.0%	100.0%
2 < 3 years	74	16	0	90
	82.2%	17.8%	0.0%	100.0%
3 < 4 years	94	57	3	154
	61.0%	37.0%	1.9%	100.0%
4 < 5 years	57	28	11	96
	59.4%	29.2%	11.5%	100.0%
5+ years	72	51	30	153
	47.1%	33.3%	19.6%	100.0%
Total	342	174	44	560
	61.1%	31.1%	7.9%	100.0%

Question 1a "How many years have you been associated and dealing with the EIA process in Nigeria's oil and gas industry?"

Question 9 "Do you feel that the effectiveness of mitigation measures adopted have adequately been evaluated post-consent?"

75% of the respondents in the <2years category believed that EIA process has never effectively mitigated environmental problems (Table 5.1a-9). The highest response in favour of effective mitigation of the environmental problems was recorded in the 5+ year's bracket. The 2< years and 2<3 years thought the EIA processes has never or rarely mitigated environmental problems. The highest positive response was received from respondent in the 3<4 years category (Table 5.1a-9).

Table 5.1a-9 *Cross-correlation between Question 1a and Question 9*

Number of years associated and dealing with EIA Process	Effectiveness of mitigation					Total
	Never	Rarely	Sometimes	Usually	Always	
< 2 years	50	13	4	0	0	67
	74.6%	19.4%	6.0%	0.0%	0.0%	100.0%
2 < 3 years	44	14	12	20	0	90
	48.9%	15.6%	13.3%	22.2%	0.0%	100.0%
3 < 4 years	31	39	15	69	0	154
	20.1%	25.3%	9.7%	44.8%	0.0%	100.0%
4 < 5 years	8	6	23	36	23	96
	8.3%	6.2%	24.0%	37.5%	24.0%	100.0%
5+ years	0	0	12	15	126	153
	0.0%	0.0%	7.8%	9.8%	82.4%	100.0%
Total	133	72	66	140	149	560
	23.8%	12.9%	11.8%	25.0%	26.6%	100.0%

Question 1a "How many years have you been associated and dealing with the EIA process in Nigeria's oil and gas industry?"

Questions (Q10) Existing information is adequately incorporated into EIA, (Q13) Extent of environment statement produced has been consistent in quality and (Q14) has environmental statement improved over time"

61% of respondents in the <2years thought existing information has never been incorporated into EIA. 22.7% (Table 5.1a-10) of respondents in the 3<4years category felt the existing information are rarely used in EIA in Nigeria's oil and gas industry. The highest response was from bracket 5+ years. In addition, 67% (Table 5.1a-13) of respondent with < 2years experience opined that there is significant variation in the quality of environmental statements. Only respondents in the 5+ years thought otherwise. Furthermore, some respondent in this category felt that there has never been any significant variation in the quality of the environmental statements. 23.9 % (Table 5.1a-14) to 70.1% of respondent in the <2 years thought environmental statement has not improved with time. In contrast, the highest opinion poll in favour of moderate to significant improvement in environmental statements with times was recorded in the 5+ year's bracket with 34% and 66% respectively (Table 5.1a-14)

Table 5.1a-10 *Cross-correlation between Question 1a and Question 10*

Number of years associated and dealing with EIA Process	Existing information is adequately incorporated into EIA					Total
	Never	Rarely	Sometimes	Usually	Always	
< 2 years	41	16	10	0	0	67
	61.2%	23.9%	14.9%	0.0%	0.0%	100.0%
2 < 3 years	16	16	21	37	0	90
	17.8%	17.8%	23.3%	41.1%	0.0%	100.0%
3 < 4 years	3	35	37	52	27	154
	1.9%	22.7%	24.0%	33.8%	17.5%	100.0%
4 < 5 years	0	0	0	48	48	96
	0.0%	0.0%	0.0%	50.0%	50.0%	100.0%
5+ years	0	0	0	20	133	153
	0.0%	0.0%	0.0%	13.1%	86.9%	100.0%
Total	60	67	68	157	208	560
	10.7%	12.0%	12.1%	28.0%	37.1%	100.0%

Table 5.1a-13 *Cross-correlation between Question 1a and Question 13*

Number of years associated and dealing with EIA Process	Extent of environment statements produced has been consistent in quality					Total
	Never	Rarely	Sometimes	Usually	Always	
< 2 years	67	0	0	0	0	67
	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
2 < 3 years	79	11	0	0	0	90
	87.8%	12.2%	0.0%	0.0%	0.0%	100.0%
3 < 4 years	56	94	4	0	0	154
	0	66	30	0	0	96
4 < 5 years	0.0%	68.8%	31.2%	0.0%	0.0%	100.0%
	0	35	45	56	17	153
5+ years	0.0%	22.9%	29.4%	36.6%	11.1%	100.0%
	202	206	79	56	17	560
Total	36.1%	36.8%	14.1%	10.0%	3.0%	100.0%
	67	0	0	0	0	67

Table 5.1a-14 *Cross-correlation between Question 1a and Question 14*

Number of years associated and dealing with EIA Process	have environmental statements improved over time					Total
	No improvement	Negligible improvement	Minor improvement	Moderate Improvement	Significant improvement	
< 2 years	47	16	4	0	0	67
	70.1%	23.9%	6.0%	0.0%	0.0%	100.0%
2 < 3 years	8	54	24	4	0	90
	8.9%	60.0%	26.7%	4.4%	0.0%	100.0%
3 < 4 years	0	17	90	47	0	154
	0.0%	11.0%	58.4%	30.5%	0.0%	100.0%
4 < 5 years	0	0	17	79	0	96
	0.0%	0.0%	17.7%	82.3%	0.0%	100.0%
5+ years	0	0	0	52	101	153
	0.0%	0.0%	0.0%	34.0%	66.0%	100.0%
Total	55	87	135	182	101	560
	9.8%	15.5%	24.1%	32.5%	18.0%	67

Question 1. How many years have you been associated and dealing with EIA process in Nigeria's oil and Gas industry?

QUESTION 12. "GENERALLY, HOW SATISFACTORY DO YOU PERCEIVE THE FOLLOWING IN NIGERIA'S OIL AND GAS ENVIRONMENTAL STATEMENTS?" ***(A) Awareness on presentation of information, (B) Organisation of information on and description approach (C) Consultation (D1) Project overview (D2) Physical requirement and project schedule (D3) Processes and procedures (D4) Residual emissions and wastes (E) Environmental description (F) Assessment of effects on the environment and human population (G) Potential risks of spills (H) Assessment of the magnitude of environmental changes (I) Evaluation of the significance of potential impacts (J) Alternatives (K) Mitigation (L) Description of EMS (M) Monitoring (N) Non-technical summary***

In terms of presentation of information (Table 5.1-12A), 44.8% of the respondent in the <2 years category opined that information are poorly presented in Nigeria's environmental statements. There are clear trends in the results. For example <2 years scored 0 for 'very good', going up to 19.6% for 5+. Curiously the opposite trend is seen for the 'good' category. The results for 'organisation of information' are very similar to 'presentation of information' (Table 5.1-12B.).

Table 5.1a-12A *Cross-correlation between Question 1a and Question 12(A)*

Number of years associated and dealing with EIA Process	Presentation of information					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	20	17	0	67
	44.8%	0.0%	29.9%	25.4%	0.0%	100.0%
2 < 3 years	37	7	30	16	0	90
	41.1%	7.8%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	39	12	154
	18.2%	18.8%	29.9%	25.3%	7.8%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	35	58	0	30	153
	19.6%	22.9%	37.9%	0.0%	19.6%	100.0%
Total	151	102	182	72	53	560
	27.0%	18.2%	32.5%	12.9%	9.5%	100.0%

Table 5.1a-12B *Cross-correlation between Question 1a and Question 12(B)*

Number of years associated and dealing with EIA Process	Organization of information on and description of approach					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	21	23	30	16	0	90
	23.3%	25.6%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	43	8	154
	18.2%	18.8%	29.9%	27.9%	5.2%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	7	58	28	30	153
	19.6%	4.6%	37.9%	18.3%	19.6%	100.0%
Total	135	90	177	109	49	560
	24.1%	16.1%	31.6%	19.5%	8.8%	100.0%

A very similar percentage of response was recorded for consultation (Table 5.1a-12C). 44.8% of <2years however thought that there is poor project overview in the industry with 19.6% of the respondent in the 5+ years category believing that the project overview for EIA in Nigeria's oil and gas industry is very good (Table 5.1a-12D1).

Table 5.1a-12C *Cross-correlation between Question 1a and Question 12(C)*

Number of years associated and dealing with EIA Process	Consultation					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	8	7	22	0	67
	44.8%	11.9%	10.4%	32.8%	0.0%	100.0%
2 < 3 years	44	0	30	16	0	90
	48.9%	0.0%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	34	23	46	24	27	154
	22.1%	14.9%	29.9%	15.6%	17.5%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	42	28	23	30	153
	19.6%	27.5%	18.3%	15.0%	19.6%	100.0%
Total	164	104	139	85	68	560
	29.3%	18.6%	24.8%	15.2%	12.1%	100.0%

Table 5.1a-12D1 *Cross-correlation between Question 1a and Question 12(D1)*

Number of years associated and dealing with EIA Process	Project overview					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	18	26	30	16	0	90
	20.0%	28.9%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	23	28	154
	18.2%	18.8%	29.9%	14.9%	18.2%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	12	61	20	30	153
	19.6%	7.8%	39.9%	13.1%	19.6%	100.0%
Total	132	98	180	81	69	560
	30	0	15	22	0	67

31.3% of < 2 years felt that there is poor physical requirement and project schedule for EIA. A significant number of respondent favoured adequate physical requirement and project schedule with 19.6% of 5+ years going for very good (Table 5.1a-12D2). 44.8% and 48.9% of <2yrs and 2<3years respectively thought the processes and procedures for EIA in Nigeria's oil and gas companies are poor (Table 5.1a-12D3). 20.1% of 3<4years and 19.6% of 5+ years thought the treatment of residual emissions and wastes are excellent (Table 5.1a-12D4).

Table 5.1a-12D2 *Cross-correlation between Question 1a and Question 12(D2)*

Number of years associated and dealing with EIA Process	Physical requirements and project schedule					Total
	poor	very poor	adequate	good	very good	
< 2 years	21	9	15	22	0	67
	31.3%	13.4%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	16	28	30	16	0	90
	17.8%	31.1%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	27	24	154
	18.2%	18.8%	29.9%	17.5%	15.6%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	7	60	26	30	153
	19.6%	4.6%	39.2%	17.0%	19.6%	100.0%
Total	121	104	179	91	65	560
	21.6%	18.6%	32.0%	16.2%	11.6%	100.0%

Table 5.1a-12D3 *Cross-correlation between Question 1a and Question 12(D3)*

Number of years associated and dealing with EIA Process	Processes and procedures					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	44	0	30	16	0	90
	48.9%	0.0%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	21	30	154
	18.2%	18.8%	29.9%	13.6%	19.5%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	21	22	50	30	153
	19.6%	13.7%	14.4%	32.7%	19.6%	100.0%
Total	158	81	141	109	71	560
	28.2%	14.5%	25.2%	19.5%	12.7%	100.0%

Table 5.1a-12D4 *Cross-correlation between Question 1a and Question 12(D4)*

Number of years associated and dealing with EIA Process	Residuals emissions and wastes					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	23	21	30	16	0	90
	25.6%	23.3%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	20	31	154
	18.2%	18.8%	29.9%	13.0%	20.1%	100.0%
4 < 5 years	26	20	36	3	11	96
	27.1%	20.8%	37.5%	3.1%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	137	70	169	112	72	560
	24.5%	12.5%	30.2%	20.0%	12.9%	100.0%

37.3% of respondent believed environmental description is poorly addressed in environmental statements. Of the 5+ year's category, 33.3% and 19.6% are of opinion that they are well executed in EIA (Table 5.1a-12E). Only respondents in the 5+ years thought otherwise. Furthermore, some respondent in this category felt that there has never been any significant variation in the quality of the environmental statements. 33.3% and 19.6% of this category agreed that the process is good and very good (Table 5.1a-12.E).

44.8% of <2 years felt potential risks of spills are poorly addressed, while the majority of the respondents thought it is adequately attended to (Table 5.1a-12G). Furthermore, 25.4% and 19.4% of <2 years are of the opinion that assessment of the magnitude of environmental changes is poor to very-poorly represented in the environmental statements (Table 5.1a-12H). However, 44.8% of <2years agreed that the significance of potential impacts are poorly evaluated in Nigeria's environmental statements (Table 5.1a-12I).

Table 5.1a-12E *Cross-correlation between Question 1a and Question 12(E)*

Number of years associated and dealing with EIA Process	Environmental description: geographical extent - appropriately focus - Baseline conditions					Total
	poor	very poor	adequate	good	very good	
< 2 years	25	5	15	22	0	67
	37.3%	7.5%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	16	28	30	16	0	90
	17.8%	31.1%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	11	40	154
	18.2%	18.8%	29.9%	7.1%	26.0%	100.0%
4 < 5 years	26	9	42	8	11	96
	27.1%	9.4%	43.8%	8.3%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	125	71	175	108	81	560
	22.3%	12.7%	31.2%	19.3%	14.5%	100.0%

Table 5.1a-12F *Cross-correlation between Question 1a and Question 12(F)*

Number of years associated and dealing with EIA Process	Assessment effects on: human population, fauna and flora, soil including seabed and subsoil, water including the sea and aquifers under the seabed, air and climate, landscape and seascape, tangible property (where necessary), architecture and archaeological					Total
	poor	very poor	adequate	good	very good	
< 2 years	27	3	15	22	0	67
	40.3%	4.5%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	16	28	30	16	0	90
	17.8%	31.1%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	20	31	154
	18.2%	18.8%	29.9%	13.0%	20.1%	100.0%
4 < 5 years	26	21	36	2	11	96
	27.1%	21.9%	37.5%	2.1%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	127	81	169	111	72	560
	22.7%	14.5%	30.2%	19.8%	12.9%	100.0%

Table 5.1a-12G *Cross-correlation between Question 1a and Question 12(G)*

Number of years associated and dealing with EIA Process	Potential risks of spills					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	18	26	30	16	0	90
	20.0%	28.9%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	2	49	154
	18.2%	18.8%	29.9%	1.3%	31.8%	100.0%
4 < 5 years	26	12	37	10	11	96
	27.1%	12.5%	38.5%	10.4%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	132	67	170	101	90	560
	23.6%	12.0%	30.4%	18.0%	16.1%	100.0%

Table 5.1a-12H *Cross-correlation between Question 1a and Question 12(H)*

Number of years associated and dealing with EIA Process	Assessment of the magnitude of environmental changes considering: nature, locations, and duration of change					Total
	poor	very poor	adequate	good	very good	
< 2 years	17	13	15	22	0	67
	25.4%	19.4%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	16	28	30	16	0	90
	17.8%	31.1%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	45	6	154
	18.2%	18.8%	29.9%	29.2%	3.9%	100.0%
4 < 5 years	26	12	22	25	11	96
	27.1%	12.5%	22.9%	26.0%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	117	82	155	159	47	560
	20.9%	14.6%	27.7%	28.4%	8.4%	100.0%

Table 5.1a-12I *Cross-correlation between Question 1a and Question 12(I)*

Number of years associated and dealing with EIA Process	Evaluation of the significance of potential impacts					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	19	25	30	16	0	90
	21.1%	27.8%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	1	50	154
	18.2%	18.8%	29.9%	0.6%	32.5%	100.0%
4 < 5 years	26	5	35	19	11	96
	27.1%	5.2%	36.5%	19.8%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	133	59	168	109	91	560
	23.8%	10.5%	30.0%	19.5%	16.2%	100.0%

The response of the 3<4 years range from poor (18.2%) to very good (16.9%) in terms of alternatives proffered in the environmental statements and EIA policies in Nigeria's oil and gas industry (Table 5.1a-12J). 33.3 % and 19.6% of 5+ years thought alternatives are provided in environmental statements. The larger percentage of respondents in the 5+ year's category felt mitigation is well defined in the environment statements: 33.3% went for good and 19.6% chose very good (Table 5.1a-12K).

Table 5.1a-12J *Cross-correlation between Question 1a and Question 12(J)*

Number of years associated and dealing with EIA Process	Alternatives					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	23	21	30	16	0	90
	25.6%	23.3%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	25	40	35	26	154
	18.2%	16.2%	26.0%	22.7%	16.9%	100.0%
4 < 5 years	26	0	31	28	11	96
	27.1%	0.0%	32.3%	29.2%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	137	46	158	152	67	560
	24.5%	8.2%	28.2%	27.1%	12.0%	100.0%

Table 5.1a-12K *Cross-correlation between Question 1a and Question 12(K)*

Number of years associated and dealing with EIA Process	Mitigation					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	36	8	30	16	0	90
	40.0%	8.9%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	43	27	27	154
	18.2%	18.8%	27.9%	17.5%	17.5%	100.0%
4 < 5 years	26	14	17	28	11	96
	27.1%	14.6%	17.7%	29.2%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	150	51	147	144	68	560
	26.8%	9.1%	26.2%	25.7%	12.1%	100.0%

In terms of description of environmental management (EMS), similar response to the previous questions was received from the respondents except that 41.1% and 7.8% (Table 5.1a-12L) of 2<3years thought that EMS are poor to very poorly described relative to 40% and 8.9% in Table 5.1a-12.14. The opinions of the respondents do not differ significantly on

the provision for monitoring in the environmental statements Table 5.1a-12M from those of Table 5.1a-12.15. In addition 28.9% and 20% of respondent thought the provision for monitoring is poor to very poorly done in EIA. Similar response was received for presentation of non-technical summary in the environmental statements except that 42.2% and 25.6% (Table 5.1a-12N) of 2<3 years opined those non-technical summaries are poor to very poorly done in environmental statements.

Table 5.1a-12L *Cross-correlation between Question 1a and Question 12(L)*

Number of years associated and dealing with EIA Process	**Description of environmental management (EMS and project specific actions)**					**Total**
	poor	**very poor**	**adequate**	**good**	**very good**	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	37	7	30	16	0	90
	41.1%	7.8%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	51	0	154
	18.2%	18.8%	29.9%	33.1%	0.0%	100.0%
4 < 5 years	26	16	29	14	11	96
	27.1%	16.7%	30.2%	14.6%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	151	52	162	154	41	560
	27.0%	9.3%	28.9%	27.5%	7.3%	100.0%

Table 5.1a-12M *Cross-correlation between Question 1a and Question 12(M)*

Number of years associated and dealing with EIA Process	Monitoring					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	0	15	22	0	67
	44.8%	0.0%	22.4%	32.8%	0.0%	100.0%
2 < 3 years	26	18	30	16	0	90
	28.9%	20.0%	33.3%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	37	14	154
	18.2%	18.8%	29.9%	24.0%	9.1%	100.0%
4 < 5 years	26	2	36	21	11	96
	27.1%	2.1%	37.5%	21.9%	11.5%	100.0%
5+ years	30	0	42	51	30	153
	19.6%	0.0%	27.5%	33.3%	19.6%	100.0%
Total	140	49	169	147	55	560
	25.0%	8.8%	30.2%	26.2%	9.8%	100.0%

Table 5.1a-12N *Cross-correlation between Question 1a and Question 12(N)*

Number of years associated and dealing with EIA Process	Non-technical summary					Total
	poor	very poor	adequate	good	very good	
< 2 years	30	15	0	22	0	67
	44.8%	22.4%	0.0%	32.8%	0.0%	100.0%
2 < 3 years	38	23	13	16	0	90
	42.2%	25.6%	14.4%	17.8%	0.0%	100.0%
3 < 4 years	28	29	46	36	15	154
	18.2%	18.8%	29.9%	23.4%	9.7%	100.0%
4 < 5 years	26	31	28	0	11	96
	27.1%	32.3%	29.2%	0.0%	11.5%	100.0%
5+ years	30	42	45	6	30	153
	19.6%	27.5%	29.4%	3.9%	19.6%	100.0%
Total	152	140	132	80	56	560
	27.1%	25.0%	23.6%	14.3%	10.0%	100.0%

Question 1b "What is your highest level of formal education (please state your highest academic qualification)?"
Question 3 "Do you feel that given your organisations/departments current capacity and knowledge (skills set) that members of staff are able to fully engage in EIA process?"

86.5% of respondent with Junior high school education believed that their company lack the capacity to implement EIA (Table 5.1b-3 I). Those in favour of a strong capacity base are the respondents in the Master and above category. 72% of the respondent in the latter category thought that their company possess the capacity for EIA. Similarly, 94.6% of Junior high school (Table 5.1b-3 II) thought the companies do not have the required knowledge to engage in EIA. However, 76.1% of first degree holder, 54.7% of Masters, and 72% with higher degrees felt the knowledge base of their organization will suffice for a successful EIA.

Table 5.1b-3 I *Cross-correlation between Question 1b and Question 3-capacity*

Highest level of Formal Education	Capacity			Total
	Yes	No	Don't know	
Junior High School	2	32	3	37
	5.4%	86.5%	8.1%	100.0%
Senior High School	8	5	37	50
	16.0%	10.0%	74.0%	100.0%
First Degree	110	93	40	243
	45.3%	38.3%	16.5%	100.0%
Masters Degree	75	50	12	137
	54.7%	36.5%	8.8%	100.0%
Above Masters	67	20	6	93
	72.0%	21.5%	6.5%	100.0%
Total	262	200	98	560
	46.8%	35.7%	17.5%	100.0%

Table 5.1b-3 II *Cross-correlation between Question 1b and Question 3-knowledge*

Highest level of Formal Education	Knowledge			Total
	Yes	No	Don't know	
Junior High School	2	35	0	37
	5.4%	94.6%	0.0%	100.0%
Senior High School	13	37	0	50
	26.0%	74.0%	0.0%	100.0%
First Degree	185	32	26	243
	76.1%	13.2%	10.7%	100.0%
Masters Degree	75	50	12	137
	54.7%	36.5%	8.8%	100.0%
Above Masters	67	20	6	93
	72.0%	21.5%	6.5%	100.0%
Total	342	174	44	560
	61.1%	31.1%	7.9%	100.0%

Question 1b "What is your highest level of formal education (please state your highest academic qualification)?"
Statement 8 "The introduction of EIA to the oil gas industry has resulted in an improved level of environmental protection"

The entire respondents in the Junior high school category thought EIA introduced into the Nigeria's oil and gas industry has improved environmental protection. Those with an education above Master were almost equally divided between agree and disagree (Table 5.1b-8).

Table 5.1b-8 *Cross-correlation between Question 1b and Question 8*

Highest level of Formal Education:	EIA introduction has improved environmental protection					Total
	Strongly agree	Strongly disagree	agree	uncertain	disagree	
Junior High School	37	0	0	0	0	37
	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Senior High School	13	22	15	0	0	50
	26.0%	44.0%	30.0%	0.0%	0.0%	100.0%
First Degree	110	12	108	6	7	243
	45.3%	4.9%	44.4%	2.5%	2.9%	100.0%
Masters Degree	30	3	79	13	12	137
	21.9%	2.2%	57.7%	9.5%	8.8%	100.0%
Above Masters	0	0	48	7	38	93
	0.0%	0.0%	51.6%	7.5%	40.9%	100.0%
Total	190	37	250	26	57	560
	33.9%	6.6%	44.6%	4.6%	10.2%	100.0%

Question 1b "What is your highest level of formal education (please state your highest academic qualification)?"

(Q9) Effectiveness of Mitigation, (Q10) Existing information is adequately incorporated into EIA, (Q13) Extent of environment statement produced has been consistent in quality and (Q14) has environmental statement improved over time.

The highest response in favour of effectiveness of mitigation was recorded with staff with higher degree than first degree. 50.4% and 62.4% (Table 5.1b-9) of Masters Degree and above thought mitigation in the EIA process is always effective. All respondent in Junior high school category believed that existing information has never been incorporated into EIA (Table 5.1b-10). Respondent with higher degrees thought they are usually or always used in EIA. 69.9% (Table 5.1b-10). Similarily, 78.4% and 22% (Table 5.1b-13) of Junior high school felt significant and moderate variation has been produced in the quality of Environment Statements. Only respondents in the above Master bracket considered that there is no variation in the quality. 18.3% (Table 5.1b-13) in this category believed that there is no variation while none of them believe that there is significant variation in the quality of Environmental Statements in Nigeria. Respondents in the Junior high school category thought there is no or negligible improvement in Environmental Statement with time. 54.9% (Table 5.1b-14) of this category went for no improvement, and 45.9% negligible improvement. However, only the category of Masters and above thought there is minor to significant improvement in the quality of environmental statement with time in Nigeria's oil and gas industry.

Table 5.1b-9 *Cross-correlation between Question 1b and Question 9*

Highest level of Formal Education	Effectiveness of mitigation					Total
	Never	Rarely	Sometimes	Usually	Always	
Junior High School	37	0	0	0	0	37
	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Senior High School	14	36	0	0	0	50
	28.0%	72.0%	0.0%	0.0%	0.0%	100.0%
First Degree	25	30	54	112	22	243
	10.3%	12.3%	22.2%	46.1%	9.1%	100.0%
Masters Degree	45	0	0	23	69	137
	32.8%	0.0%	0.0%	16.8%	50.4%	100.0%
Above Masters	12	6	12	5	58	93
	12.9%	6.5%	12.9%	5.4%	62.4%	100.0%
Total	133	72	66	140	149	560
	23.8%	12.9%	11.8%	25.0%	26.6%	100.0%

Table 5.1b-10 *Cross-correlation between Question 1b and Question 10*

Highest level of Formal Education	Existing information is adequately incorporated into EIA					Total
	Never	Rarely	Sometimes	Usually	Always	
Junior High School	37	0	0	0	0	37
	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Senior High School	13	37	0	0	0	50
	26.0%	74.0%	0.0%	0.0%	0.0%	100.0%
First Degree	5	14	42	123	59	243
	2.1%	5.8%	17.3%	50.6%	24.3%	100.0%
Masters Degree	5	16	24	8	84	137
	3.6%	11.7%	17.5%	5.8%	61.3%	100.0%
Above Masters	0	0	2	26	65	93
	0.0%	0.0%	2.2%	28.0%	69.9%	100.0%
Total	60	67	68	157	208	560
	10.7%	12.0%	12.1%	28.0%	37.1%	100.0%

Table 5.1b-13 *Cross-correlation between Question 1b and Question 13*

Highest level of Formal Education	Extent of environment statements produced has been consistent in quality					Total
	Never	Rarely	Sometimes	Usually	Always	
Junior High School	29	8	0	0	0	37
	78.4%	21.6%	0.0%	0.0%	0.0%	100.0%
Senior High School	13	37	0	0	0	50
	26.0%	74.0%	0.0%	0.0%	0.0%	100.0%
First Degree	139	77	26	1	0	243
	57.2%	31.7%	10.7%	0.4%	0.0%	100.0%
Masters Degree	21	73	28	15	0	137
	15.3%	53.3%	20.4%	10.9%	0.0%	100.0%
Above Masters	0	11	25	40	17	93
	0.0%	11.8%	26.9%	43.0%	18.3%	100.0%
Total	202	206	79	56	17	560
	36.1%	36.8%	14.1%	10.0%	3.0%	100.0%

Table 5.1b-14 *Cross-correlation between Question 1b and Question 14*

Highest level of Formal Education	have environmental statements improved over time					Total
	No improvement	Negligible improvement	Minor improvement	Moderate Improvement	Significant improvement	
Junior High School	20	17	0	0	20	17
	54.1%	45.9%	0.0%	0.0%	54.1%	45.9%
Senior High School	9	15	26	0	9	15
	18.0%	30.0%	52.0%	0.0%	18.0%	30.0%
First Degree	19	32	73	119	19	32
	7.8%	13.2%	30.0%	49.0%	7.8%	13.2%
Masters Degree	7	23	15	27	7	23
	5.1%	16.8%	10.9%	19.7%	5.1%	16.8%
Above Masters	0	0	21	36	0	0
	0.0%	0.0%	22.6%	38.7%	0.0%	0.0%
Total	55	87	135	182	55	87
	9.8%	15.5%	24.1%	32.5%	9.8%	15.5%

Question 1b "What is your highest level of formal education (please state your highest academic qualification)?"

QUESTION 12. "GENERALLY, HOW SATISFACTORY DO YOU PERCEIVE THE FOLLOWING IN NIGERIA'S OIL AND GAS ENVIRONMENTAL STATEMENTS?"

(A) Awareness on presentation of information, (B) Organisation of information on and description approach (C) Consultation (D1) Project overview (D2) Physical requirement and project schedule (D3) Processes and procedures (D4) Residual emissions and wastes (E) Environmental description (F) Assessment of effects on the environment and human population (G) Potential risks of spills (H) Assessment of the magnitude of environmental changes (I) Evaluation of the significance of potential impacts (J) Alternatives (K) Mitigation (L) Description of EMS (M) Monitoring (N) Non-technical summary

In terms of presentation of EIA information, 81.1% of Junior high school felt information are well presented in Nigeria's oil and gas industry (Table 5.1b–12A) while 64.5% of above Masters thought they are poorly presented in the environmental statements. Similarly, 94.6% of Junior high school considered that information is well organised and described with 64.5% of above Masters believing otherwise. However, 7.5% to 51.1% (Table 5.1b–12B) of respondent above the Junior high school category thought information are adequately organised or described in the Environmental Statements. In addition, 94.6% of Junior high school felt consultations are done in the EIA, with 64.5% believing otherwise (Table 5.1b–12C). The Master degree holder considered that the degree at which consultation is done varies from poor to very good. Similar response was recorded from the respondents on how satisfactorily project overview are presented or expressed in the industry (Table 5.1b–12D1). However, 5.4% of Junior high school considered that there is poor physical requirement and project schedule. In contrast 94.6% in this category thought they are well scheduled. Also, Master degree holders felt the schedule varies from poor (32.8%) to very good (8.8%) (Table 5.1b–12D2).

The above Master degree holders favoured poor EIA processes and procedures. In addition 94.6% of Junior high school said the processes and procedures are good (Table 5.1b–12D3). Similar response was received on the treatment of residual emissions and wastes except that first degree holders thought that the treatment done varies from poor 9.9% to very good 16.5% (Table 5.1b–12D4).

Table 5.1b-12A *Cross-correlation between Question 1b and Question 12(A)*

Highest level of Formal Education	Presentation of information					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	5	30	0	37
	5.4%	0.0%	13.5%	81.1%	0.0%	100.0%
Senior High School	6	0	7	37	0	50
	12.0%	0.0%	14.0%	74.0%	0.0%	100.0%
First Degree	38	72	93	5	35	243
	15.6%	29.6%	38.3%	2.1%	14.4%	100.0%
Masters Degree	45	30	50	0	12	137
	32.8%	21.9%	36.5%	0.0%	8.8%	100.0%
Above Masters	60	0	27	0	6	93
	64.5%	0.0%	29.0%	0.0%	6.5%	100.0%
Total	151	102	182	72	53	560
	27.0%	18.2%	32.5%	12.9%	9.5%	100.0%

Table 5.1b-12B *Cross-correlation between Question 1b and Question 12(B)*

Highest level of Formal Education:	Organization of information on and description of approach					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	37	0	50
	12.0%	0.0%	14.0%	74.0%	0.0%	100.0%
First Degree	22	88	93	9	31	243
	9.1%	36.2%	38.3%	3.7%	12.8%	100.0%
Masters Degree	45	2	70	8	12	137
	32.8%	1.5%	51.1%	5.8%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	135	90	177	109	49	560
	24.1%	16.1%	31.6%	19.5%	8.8%	100.0%

Table 5.1b-12C *Cross-correlation between Question 1b and Question 12(C)*

Highest level of Formal Education	Consultation					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	7	0	27	10	50
	12.0%	14.0%	0.0%	54.0%	20.0%	100.0%
First Degree	51	60	92	0	40	243
	21.0%	24.7%	37.9%	0.0%	16.5%	100.0%
Masters Degree	45	30	47	3	12	137
	32.8%	21.9%	34.3%	2.2%	8.8%	100.0%
Above Masters	60	7	0	20	6	93
	64.5%	7.5%	0.0%	21.5%	6.5%	100.0%
Total	164	104	139	85	68	560
	29.3%	18.6%	24.8%	15.2%	12.1%	100.0%

Table 5.1b-12D1 *Cross-correlation between Question 1b and Question 12(D1)*

Highest level of Formal Education	Project overview					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	26	11	50
	12.0%	0.0%	14.0%	52.0%	22.0%	100.0%
First Degree	19	91	93	0	40	243
	7.8%	37.4%	38.3%	0.0%	16.5%	100.0%
Masters Degree	45	7	73	0	12	137
	32.8%	5.1%	53.3%	0.0%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	132	98	180	81	69	560
	23.6%	17.5%	32.1%	14.5%	12.3%	100.0%

Table 5.1b-12D2 *Cross-correlation between Question 1b and Question 12(D2)*

Highest level of Formal Education	Physical requirements and project schedule					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	30	7	50
	12.0%	0.0%	14.0%	60.0%	14.0%	100.0%
First Degree	8	102	93	0	40	243
	3.3%	42.0%	38.3%	0.0%	16.5%	100.0%
Masters Degree	45	2	72	6	12	137
	32.8%	1.5%	52.6%	4.4%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	121	104	179	91	65	560
	21.6%	18.6%	32.0%	16.2%	11.6%	100.0%

Table 5.1b-12D3 *Cross-correlation between Question 1b and Question 12(D3)*

Highest level of Formal Education	Processes and procedures					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	24	13	50
	12.0%	0.0%	14.0%	48.0%	26.0%	100.0%
First Degree	45	65	93	0	40	243
	18.5%	26.7%	38.3%	0.0%	16.5%	100.0%
Masters Degree	45	16	34	30	12	137
	32.8%	11.7%	24.8%	21.9%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	158	81	141	109	71	560
	28.2%	14.5%	25.2%	19.5%	12.7%	100.0%

Table 5.1b-12D4 *Cross-correlation between Question 1b and Question 12(D4)*

Highest level of Formal Education	Residuals emissions and wastes					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	23	14	50
	12.0%	0.0%	14.0%	46.0%	28.0%	100.0%
First Degree	24	70	109	0	40	243
	9.9%	28.8%	44.9%	0.0%	16.5%	100.0%
Masters Degree	45	0	46	34	12	137
	32.8%	0.0%	33.6%	24.8%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	137	70	169	112	72	560
	24.5%	12.5%	30.2%	20.0%	12.9%	100.0%

First degree holders thought environment description in EIA is poor (4.9%) to very good (16.5%) in Nigeria's oil and gas industry (Table 5.1b–12E). Approximately 65% of the above Master category considered that EIA has not improved the effect of environmental degradation on human population, fauna and flora, soil, water, air and climate, landscape and seascape, tangible property and architecture or archaeological structures in Nigeria. In contrast, 94.6% (Table 5.1b–12F) of Junior high school thought otherwise. Respondent with degree less than the first degree however thought EIA has positively improved the effect of environmental degradation of species and structures (Table 5.1b–12F).

Table 5.1b-12E *Cross-correlation between Question 1b and Question 12(E)*

Highest level of Formal Education	Environmental description: geographical extent - appropriately focus - Baseline conditions					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	14	23	50
	12.0%	0.0%	14.0%	28.0%	46.0%	100.0%
First Degree	12	71	120	0	40	243
	4.9%	29.2%	49.4%	0.0%	16.5%	100.0%
Masters Degree	45	0	41	39	12	137
	32.8%	0.0%	29.9%	28.5%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	125	71	175	108	81	560
	22.3%	12.7%	31.2%	19.3%	14.5%	100.0%

Table 5.1b-12F *Cross-correlation between Question 1b and Question 12(F)*

Highest level of Formal Education	Assessment effects on: human population, fauna and flora, soil including seabed and subsoil, water including the sea and aquifers under the seabed, air and climate, landscape and seascape, tangible property (where necessary), architecture and archaeological					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	2
	5.4%	0.0%	0.0%	94.6%	0.0%	5.4%
Senior High School	6	0	7	23	14	6
	12.0%	0.0%	14.0%	46.0%	28.0%	12.0%
First Degree	14	81	108	0	40	14
	5.8%	33.3%	44.4%	0.0%	16.5%	5.8%
Masters Degree	45	0	47	33	12	45
	32.8%	0.0%	34.3%	24.1%	8.8%	32.8%
Above Masters	60	0	7	20	6	60
	64.5%	0.0%	7.5%	21.5%	6.5%	64.5%
Total	127	81	169	111	72	127
	22.7%	14.5%	30.2%	19.8%	12.9%	22.7%

Opinion as to how well the potential risks of spills are addressed in the environmental statement in Table 5.1b–12.10 is similar to those of Table 5.1b–12G. First degree holder thought it is poorly addressed (2.1%) to very-well addressed (11.9%), the percentage response of the other categories is the same with those of Table 5.1b-12.10. The Senior high school and first degree differ in opinion as to how Q12H has been presented in Nigeria. Respondents in the Senior high school category felt the priority given to assessment of the magnitude of environmental changes is poor 10% to good 74% (Table 5.1b-12H).

Table 5.1b-12G *Cross-correlation between Question 1b and Question 12(G)*

Highest level of Formal Education	Potential risks of spills					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	5	32	50
	12.0%	0.0%	14.0%	10.0%	64.0%	100.0%
First Degree	19	67	117	0	40	243
	7.8%	27.6%	48.1%	0.0%	16.5%	100.0%
Masters Degree	45	0	39	41	12	137
	32.8%	0.0%	28.5%	29.9%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	132	67	170	101	90	560
	23.6%	12.0%	30.4%	18.0%	16.1%	100.0%

Table 5.1b-12H *Cross-correlation between Question 1b and Question 12(H)*

Highest level of Formal Education	Assessment of the magnitude of environmental changes considering: nature, locations, and duration of change					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	5	1	7	37	0	50
	10.0%	2.0%	14.0%	74.0%	0.0%	100.0%
First Degree	5	81	111	17	29	243
	2.1%	33.3%	45.7%	7.0%	11.9%	100.0%
Masters Degree	45	0	30	50	12	137
	32.8%	0.0%	21.9%	36.5%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	117	82	155	159	47	560
	20.9%	14.6%	27.7%	28.4%	8.4%	100.0%

About 95% of Junior high school considereded that the significance of potential impacts on environmental degradation is well presented in environmental statements in Nigeria's oil and gas industry. 66% of Senior high school is of the same opinion while 64.5% of the above Masters category felt they are poorly evaluated (Table 5.1b-12I). The response of first degree holders ranges from poor 9.9% to very good, 16.5% (Table 5.1b-12J) on whether alternatives are provided in environmental statements. The respondent in this category are also of the opinion that mitigations are poorly (15.2%) to well evaluate in the environmental statement (5.1b-12K).

Table 5.1b-12I *Cross-correlation between Question 1b and Question 12(I)*

Highest level of Formal Education	Evaluation of the significance of potential impacts					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	4	33	50
	12.0%	0.0%	14.0%	8.0%	66.0%	100.0%
First Degree	20	59	124	0	40	243
	8.2%	24.3%	51.0%	0.0%	16.5%	100.0%
Masters Degree	45	0	30	50	12	137
	32.8%	0.0%	21.9%	36.5%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	133	59	168	109	91	560
	23.8%	10.5%	30.0%	19.5%	16.2%	100.0%

Table 5.1b-12J *Cross-correlation between Question 1b and Question 12(J)*

Highest level of Formal Education	Alternatives					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	28	9	50
	12.0%	0.0%	14.0%	56.0%	18.0%	100.0%
First Degree	24	46	114	19	40	243
	9.9%	18.9%	46.9%	7.8%	16.5%	100.0%
Masters Degree	45	0	30	50	12	137
	32.8%	0.0%	21.9%	36.5%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	137	46	158	152	67	560
	24.5%	8.2%	28.2%	27.1%	12.0%	100.0%

Table 5.1b-12K *Cross-correlation between Question 1b and Question 12(K)*

Highest level of Formal Education	Mitigation					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	27	10	50
	12.0%	0.0%	14.0%	54.0%	20.0%	100.0%
First Degree	37	51	103	12	40	243
	15.2%	21.0%	42.4%	4.9%	16.5%	100.0%
Masters Degree	45	0	30	50	12	137
	32.8%	0.0%	21.9%	36.5%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	150	51	147	144	68	560
	26.8%	9.1%	26.2%	25.7%	12.1%	100.0%

First degree holders considered that environmental management is poorly 15.6% to very well described 9.5% Table 5.1b-12L in Nigerian environmental statements. The percentage response of the other category is not different from those of described above in Table 5.1b-12.14. First degree holders thought provision for monitoring and non-technical summary is poor (11.1% and 16%) to very good (15.2% and 15.5%) in Nigeria's environmental statements (5.1b-12M and 5.1b-12N).

Table 5.1b-12L *Cross-correlation between Question 1b and Question 12(L)*

Highest level of Formal Education	Description of environmental management (EMS and project specific actions)					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	37	0	50
	12.0%	0.0%	14.0%	74.0%	0.0%	100.0%
First Degree	38	52	113	17	23	243
	15.6%	21.4%	46.5%	7.0%	9.5%	100.0%
Masters Degree	45	0	35	45	12	137
	32.8%	0.0%	25.5%	32.8%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	151	52	162	154	41	560
	27.0%	9.3%	28.9%	27.5%	7.3%	100.0%

Table 51.b-12M *Cross-correlation between Question 1b and Question 12(M)*

Highest level of Formal Education	Monitoring					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	0	7	37	0	50
	12.0%	0.0%	14.0%	74.0%	0.0%	100.0%
First Degree	27	49	125	5	37	243
	11.1%	20.2%	51.4%	2.1%	15.2%	100.0%
Masters Degree	45	0	30	50	12	137
	32.8%	0.0%	21.9%	36.5%	8.8%	100.0%
Above Masters	60	0	7	20	6	93
	64.5%	0.0%	7.5%	21.5%	6.5%	100.0%
Total	140	49	169	147	55	560
	25.0%	8.8%	30.2%	26.2%	9.8%	100.0%

Table 5.1b-12N *Cross-correlation between Question 1b and Question 12(N)*

Highest level of Formal Education	Non-technical summary					Total
	poor	very poor	adequate	good	very good	
Junior High School	2	0	0	35	0	37
	5.4%	0.0%	0.0%	94.6%	0.0%	100.0%
Senior High School	6	7	0	37	0	50
	12.0%	14.0%	0.0%	74.0%	0.0%	100.0%
First Degree	39	96	68	2	38	243
	16.0%	39.5%	28.0%	0.8%	15.6%	100.0%
Masters Degree	45	30	50	0	12	137
	32.8%	21.9%	36.5%	0.0%	8.8%	100.0%
Above Masters	60	7	14	6	6	93
	64.5%	7.5%	15.1%	6.5%	6.5%	100.0%
Total	152	140	132	80	56	560
	27.1%	25.0%	23.6%	14.3%	10.0%	100.0%

Question 2a "What is the primary role of your Organisation/Department in undertaking Environmental Impact Assessment (EIA) process?"
Question 22 "Is your organisation adequately involved in post-consent monitoring?"

Statutory controlled organisation or department are always involved in post consent monitoring by approximately 57%, consultant 31.8%, competent authority 21.2%, other consulted 21.6%, and developer/ proponent are not always involved. 34% and 3% of respondent in statutory consulted department are never or rarely involved in post consent monitoring while 7.6% and 8.5% competent authority, 30.9% and 8.2% developer/proponent and 31.8% & 31.3% of consultant (Table 5.2a-22).

Table 5.2a-22 *Cross-correlation between Question 2a and Question 22*

Primary role of your Organisation/Dept in EIA process	Is organization adequately involved in post-consent monitoring					Total
	Never	Rarely	Sometimes	Usually	Always	
Competent Authority	9	10	32	42	25	118
	7.6%	8.5%	27.1%	35.6%	21.2%	100.0%
Developer/Proponent	30	8	27	32	0	97
	30.9%	8.2%	27.8%	33.0%	0.0%	100.0%
Statutory Consultee	34	3	0	6	57	100
	34.0%	3.0%	0.0%	6.0%	57.0%	100.0%
Consultant	50	49	8	0	50	157
	31.8%	31.2%	5.1%	0.0%	31.8%	100.0%
Other Consultee	0	0	40	29	19	88
	0.0%	0.0%	45.5%	33.0%	21.6%	100.0%
Total	123	70	107	109	151	560
	22.0%	12.5%	19.1%	19.5%	27.0%	100.0%

CHAPTER SIX: DISCUSSION

6.1 Introduction

This chapter discusses the actual views of the respondents with regards to EIA in oil and gas industry. It further serves as a window to an understanding of conflicts and divergent views of the various stakeholders. The results of the questionnaire were based on the stakeholder's response to the questions; it furthers supports the aims and objectives of the research. The survey was aimed at evaluating the strengths and weaknesses of the various stakeholders responds, and in this context, the survey results can verify or falsify the two hypotheses as to whether the EIA system or government is biased to oil companies or communities. The (secondary) data generated from the statistical analysis of those (primary) results. A statistical analysis was conducted on the entire questionnaire; however a vetting process was undertaken to identify those statistical relationships that are most relevant to the main research questions. This section will discuss the results of the questionnaire by following the original format of the questionnaire structure, from the respondent details, EIA process, environmental studies and the follow-up action through environmental information and assessment. This discussion chapter thus discussed those results and the broader environmental, socio-economic and political implications.

As described in chapter 1, a lot of research has been conducted on the oil industry in Nigeria, ranging from issues of oil spills and gas flaring (Orubo, 1999) to the legislative framework by Femi Olokesusi (1998) who critically assesses the legal and institutional framework of EIA in Nigeria. In his studies he assessed the legislations and guidelines produced by the Federal Environmental Protection Agency (FEPA) and identified some problems, such as deliberate restrictions of public involvement and participation by government or consultants. His work however, did not look at environmental implications as a result of failure or non-performance of EIA. Other studies by (for example, Adeyemi, 2004) on oil exploration and environmental degradation failed to highlight the importance of mitigation and views of various stakeholders on EIA in the oil industry.

Early studies conducted by Schatzl (1969) focused on the evolution of the industry's operations in the light of the importance of oil for the country's future energy needs. Another study by Pearson (1970) concentrated on the impact of the oil industry on the Nigeria

economy and investment. Frynas (1990) looked at oil in Nigeria, conflict and litigation between oil companies and communities, and used statistical methods in the analysis of his questionnaire results. An observation of his results indicated is that, there are always variable views between government organization/oil companies and academics/NGOs. This is reflected in most of the responses from the questionnaires results.

6.2 Respondent data and EIA process (*Is the Government of Nigeria biased against or incapable of addressing environmental issues?)*

It has generally been argued that one of the fundamental determinants of quality and effectiveness in EIA is the competency and quality of the professionals (Petts, 1997). This view has been further supported by several research studies, including those by Lee and Brown (1992), Kobus and Lee (1993), Lee and Dancey (1993), McGrath and Bond (1997) and Glasson et al. (1997), which all supports and shown an increase in ES quality with increasing experience. The research question is therefore "what is the genuine importance of experience in producing effective high-quality EIAs?", and can this be determined by comparisons between the respondent's number of years of experience against their views on the success or failure of various outcomes?

To address this Question 1a was statistically tested against Questions 9, 10, 13 & 14, with the null hypothesis: (Q1a) The number of years of experience associated in dealing with EIA process in Nigeria's oil and gas industry is independent of (Q9) their views on whether the effectiveness of mitigation measures adopted have adequately evaluated post-consent; (Q10) their views on whether the existing information is adequately incorporated into the environmental impact assessment process; (Q13) their views to what extent have environmental statements produced to date been consistent in quality; (Q14) their views on whether Environmental Statements have improved over time.

The significance of <0.05 suggests that the hypothesis that the respondents' years of experience with EIA are independent of - the effective of the mitigation; how adequately information is incorporated into the EIA process; the quality of Environmental Statement: and improvement in Environmental Statement with time - is rejected. Experience is clearly of

importance, since without some appropriate length of time the respondent is unable to see any trends in outcomes, such as an improvement in quality over time. Likewise you need to have seen a number of EIAs before you are able to make judgements on the relative quality of those EIAs. There is strong coefficient of correlation (0.753-0.888) between the years of experiences of respondents and their opinion of the effectiveness of the Environmental Statements. This implies that the respondents are well suited to give opinion on the EIA process in Nigeria.

The importance of scoping has been recognised in EIA theory (Lawrence, 2000) and is generally considered one of the mechanisms by which quality assurance and control can be built on EIA process (Sadler and Fuller, 1997), but currently, the effectiveness seems less than optimal. In Nigeria, no formal documentation is produced on the specific requirements or decision-making criteria to be used. This is further compounded by the fact that the documentation of the stakeholder's comments within the Environmental Statements are generally inadequate and provide insufficient information to evaluate whether their concerns have been adequately considered or resolved. However in Nigeria and in most developing countries the organisations responsible for implementing EIA provisions are frequently new, lacking status and political clout, and working in societies where information sharing is virtually non-existing, thereby reducing their influence and understanding of EIA processes. This lack of organisational capacity explains why EIA largely remains a 'top-down' requirement imposed by external agencies (Rayner, 1993). As in the developed world, it is clearly desirable to put in place not only the legal requirements for EIA but sufficient institutional and personnel capacity and resources to implement them effectively. As discussed in the two Case Studies in chapter 3.

In Nigeria, the level of education that people achieve is viewed as very important; possibly more so than in the UK for example. This prompts the question of whether the level of education has a significant influence on the production of effective high-quality EIAs, and can this be determined by correlating education levels against views on an EIA outcome? To try and elucidate this Question 1b was tested against Question 9. The null hypothesis was proposed that (Q1b) the level of formal education is independent of (Q9) their views on whether the effectiveness of mitigation measures adopted have adequately evaluated post-consent.

The significance of <0.05 implies that the level of education of respondents is not independent of their knowledge of the effectiveness of mitigation measures. There is a moderate coefficient of correlation (0.463 to 0.662) between the level of formal education of respondent and their response on the EIA procedures and processes. This finding emphasises the need to have well-educated people in the EIA process and decision-making, as well as experienced people. The results are not unexpected as the higher educated people will have had significantly more experience in systematic thinking and working, and critical assessment of results and literature.

There is however another factor that needs to be considered. The higher educated people are typically more likely to be working in the oil companies or as academic consultants, and therefore might have a bias towards thinking that mitigation measures are adequate or good, whereas the lesser educated local population who are actually impacted by the oil industry already have the view that their environment has not received any meaningful mitigation. This view is supported by the data in Table 5.1b which shows that 54.5% of academics have qualifications above Masters Degrees, whereas only 4.6% of NGOs or local communities possess an education above Masters.

Undertaking an EIA on a project can be a major undertaking, especially for large projects. It can involve major expenses and time demands. In addition there could be significant shortages of experienced professionals to do the work; both Nigerian nationals and overseas consultants. This raises the question of whether the oil companies and government organisations have the capacity to undertake meaningful EIAs. This is not an easy question to answer since the companies are required by law to undertake EIAs they cannot answer that they do not possess the capacity. An attempt was therefore made to determine whether the capacity exists by analysing the views of respondents with different lengths of EIA experience? The null Hypothesis was proposed that (Q1a) The number of years the respondent has been dealing with EIA process in Nigeria's oil and gas industry is independent of (Q3) their views on whether organisations/departments current capacity and knowledge (skills set) allows the members of staff to fully engage in EIA process?

The significance level is <0.05 therefore the hypothesis is rejected. In addition the correlation between the two is very low. The coefficient of correlation is < 0.10, the correlation between experience and opinion on the knowledge base of the respondents is also poor, with a coefficient of 0.269. If the full capacity does not exist, and an EIA must be produced, then the final product is likely to be inadequate and have shortcomings. The shortcomings of impact assessments can very often be attributed to a lack of communication and coordination among internal experts and decision makers (Nobel, 2000); a situation that could be created by the use of short-term consultants without experience of dealing with the Nigerian government and Agencies. Hickie (1998) argued that EIA needs to move away from a purely 'technocratic' approach, towards the adoption of a communication paradigm that focuses on

the importance of the stakeholders and their relationship with decision making process; in effect this supports the need for capacity building within Nigeria.

Elaborating on the discussion of the importance of experience in capacity building, to what extent is the level of education as a meaningful determinant on whether judgements can be made on an organisation's capacity to undertake EIAs? An attempt was made to elucidate this by analysing the views of respondents with different levels of education? The null Hypothesis was proposed that the level of formal education is independent the awareness of the respondent to the capacity of the company to undertake EIA.

The significance level for this test is less than 0.05, therefore the hypothesis is rejected. However, there is a moderate negative or inverse correlation between the level of formal education and awareness of the respondents about the capacity of companies to engage in EIA. The coefficient of correlation was -0.364. The same observation was made between the level of formation education and opinion on available knowledge in the companies. The coefficient of correlation was -0.163. It therefore implies those respondents are not suited to provide information on the capacity or knowledge base of the organizations as to their involvement in EIA process. There is clearly ambiguity in these results, and it probably reflects the expectations of people with higher levels of education and their ability to make quality judgements. Overall this could be optimistically viewed as positive as the higher-level educated people have expectations of good quality EIAs, they have misgivings whether these can be currently achieved, so hopefully will strive to improve those shortfall so high-quality EIAs become the normal out-puts, as opposed to exceptional out-puts. The active engagement of stakeholders, who are likely to have lower levels of education, has also been widely advocated in the use of risk assessment, which are also incorporated within EIA, on the basis that greater participation will make the decision making process more democratic, and increase the legitimacy and public/stakeholder acceptance of resulting decisions (e.g. Stern and Fineberg, 1996; Slovic, and Fischoff, 1998). In fact, participation in not only a normative goal of democracy, it is also a requirement for rational decision-making (Slovic, 1990 and Lawrence, 2000)

6.3 Environmental statement *(Is the oil industry following the right environmental practices as stated by the current law?)*

One of the fundamental principles of EIA process is that of mitigation; that is avoiding, reducing or ameliorating significant adverse effects. In fact, it has been argued by certain authors that 'the most important result of EIA, unless it leads to the cancellation of project, is the design and implementation of measures to mitigate adverse environmental effects of project' (Munro et al., 1986) and that 'if interpreted in these terms the perceived objective of any major development should be the absence or reduction of all significant adverse effects (Marshall, 2000). This raises the question of what is the importance of experience in producing effective high-quality Environmental Statements, and can this be determined by comparisons between the respondent's numbers of years of experience against their views on the quality of Environmental Statement components?

to address this question a null hypothesis was proposed which stated that **t**he number of years the respondent has been dealing with EIA process in Nigeria's oil and gas industry is independent of question 12a-12n. the latter question breaks down the environmental statement into a number of component parts, and asks how satisfactory do you perceive the following in Nigeria's oil and gas environmental statements?"(a) awareness on presentation of information, (b) organisation of information on and description approach (c) consultation (d1) project overview (d2) physical requirement and project schedule (d3) processes and procedures (d4) residual emissions and wastes (e) environmental description (f) assessment of effects on the environment and human population (g) potential risks of spills (h) assessment of the magnitude of environmental changes (i) evaluation of the significance of potential impacts (j) alternatives (k) mitigation (l) description of EMS (m) monitoring (n) non-technical summary).

At a significance level of < 0.05, the hypothesis that the two are independent is rejected**.** In addition, there is poor to low correlation between the years of experience of respondent and opinion on how satisfactorily questions 12A-N have been undertaken. The coefficient of correlation is 0.096, 0.163, 0.129, 0.125, 0.124, 0.184, 0.209, 0.196, 0.194, 0.202, 0.21, 0.212, 0.235, 0.241, 0.254, 0.247, and 0.140. The coefficient of correlation in all instance never exceeded 0.300.

These results empirically support the findings of the first research question on experience and quality of EIAs. However the breakdown of the Environmental Statement into component parts is revealing in the way that the respondents feel some parts are adequately deal with, and others less so. For example, baseline and monitoring surveys are fundamental to the EIA process, not only to predict potential impacts to inform project decisions, but also to verify subsequent impacts (Hirst, 2005). It is evident from the results that a high quality baseline survey and subsequent monitoring activities are considered to be very rare in Nigeria. This is not unique to the oil industry and is a recognised problem in many EIAs conducted elsewhere (Morrisey, 1993; Thompson et al. 1997; Warnken and Buckey, 1998).

A consultative group approach has been advocated by, among others, Saarikoski (2000), Glasson (1990), Smith (1997) and Bond et al. (2003) and it is recognised that this goes much further than current legal requirements. However, the usefulness of this approach lies in the fact that controversies often go back to basic disagreements between the different parties involved (Bohnenblust and Slovic, 1998; Kontic, 2000) and that without proactive engagement of stakeholders, a meaningful synthesis of expertise and public/ stakeholder concerns cannot be accomplished (Renn, 1999; Noble, 2000). As Alton and Underwood (2003) argue, 'reliance on science alone will usually not provide a clear and undisputed solution to most problems' and that 'reaching effective decisions was not about getting agreement at all cost, but rather about achieving understanding among the diverse groups.' Therefore, by focusing on the problem rather than the solution (Hickie, 1998), the probability that the ES and assessment process will satisfy the respective stakeholders is increased (Mulvihill and Jacobs, 1998). The importance of the consultation process has also been demonstrated by Wood and Jones (1997) and Kobus and Lee (1993) where it was found that the results of the consultation process have more of a significant impact on the consent decision than does the content of the ES.

The question of whether the introduction of EIA has improved Nigeria's environment is of great interest and importance. EIA is after all just a process, and it is the implementation of actual environmental improvements that is critical. Again the question is not easily resolved as the various groups of respondents have their own agendas and preconceived ideas. An attempt was made to get an answer by comparing the level of formal education of the respondents and their opinions on how the introduction of EIA has improved environmental protection. As previously discussed, the oil company and government employees overall

have higher levels of education than the local communities, therefore a bias must be recognised when assessing the results. Unsurprisingly the hypothesis of independence of the level of formal education and opinion on how the introduction of EIA has improved environmental protection in Nigeria's oil and gas industry is rejected. The environmental protection largely depends on the quality of the EIA process and ES. The significance level is <0.05. However, there is moderate correlation between the two. It thus means that the level of education of respondents suffice for them to provide information how environmental protection has improved consequent to introduction of EIA. The coefficient of correlation is 0.570. Furthermore, strong positive correlations of 0.812 suggest that the more experience respondents are, the more EIA activities they have been engaged in.

In Nigeria and most developing countries where the government organisation responsible for implementing EIA provisions are lacking in status and political clout, and working in societies where the culture of information sharing is virtually absent, this reduces the influence and understanding of EIA. The lack of organisational capacity explains why EIA largely remains a 'top-down' requirement imposed by external agencies (Rayner, 1993). As in the developed world it is clearly desirable to put in place not only the legal requirements for EIA but sufficient institutional and personnel capacity and resources to implement them effectively (Biswas, 1992).

6.2.3 Participation in EIA (*Are the Government Agencies capable of conducting meaningful EIAs*)?

The degree of public participation in EIA decision-making varies between the stages. Public participation is enshrined in the legislated EIA procedure of the federal ministry of environment and DPR. Even under the supervisory government agencies, actual practice of EIA has not yet evolved into substantial public participation, particularly in rural areas, where most of the populace are not educated (and are therefore unaware of their rights of objection to environmentally unfriendly prospective projects in the 21-day public displays of draft EIAS. This is probably due to the way EIA legislations were jump-started in 1992, without a concurrent educative build-up of the populace as was probably the case with most developing countries. Presently, it appears that much needs to be done to empower the public through educating them on their rights and stimulating their participation.

To elucidate the relationship between EIA organisation and participation a null hypothesis was devised where the primary role of organisation in EIA is independent of opinion on participation in post-consent monitoring. This employed questions 2a (What is the primary role of your Organisation/Department in undertaking Environmental Impact Assessment (EIA) process?") and 22 ("Is your organisation adequately involved in post-consent monitoring?"). It should be noted that the 'organisations' in the two questions could be quite different. In question 2a it must be either oil companies or governmental, whereas the 'participating organisations' could be community-based and directly impacted by environmental pollution. There was a negative coefficient of correlation (-0.006) between primary role of organisation/department in EIA process and opinion on participation in post-consent monitoring imply the variable are inversely related and significance of <0.05 means the hypothesis is rejected. If we make the assumption that any oil company or governmental organisation involved in EIA must be undertaking post-consent monitoring, then the negative correlation must mean that the other organisations are not involved in the post-consent, and are thus not participating in the process.

CHAPTER SEVEN: CONCLUSION

There are no doubts that oil spill incidents create serious environmental problems and challenges in Nigeria. Available records indicate that approximately 6%, 25%, and 69%, of total oil spilled in the Niger Delta area, were on land, swamp and offshore environments respectively. Vandalisation of oil pipes and storage facilities by organised criminal gangs is the major factor responsible for on-shore oil spill incidents in the region. Oil spillage has led to pollution of drinkable water, destruction of the ecosystem, and death of marine fishes and animals in the Niger Delta. Lack of strict compliance to existing environmental protection rules and regulations, with the inability of governmental and non-governmental agencies to enforce these laws, have contributed to the pollution of the ecosystem of the Niger Delta. Numerous laws and guidelines exist in Nigeria for controlling oil pollution in the country.

This study has investigated and analyzed the role of EIA in the management of the Nigerian oil and gas industry. The purpose of the research has been to evaluate the role of the Nigerian government Institutions on EIA regulations and implementation, evaluate the present EIA successes and failures, performance or non-performance of the regulatory Agencies, and the role of various stakeholders in EIA processes, application, and implementation.

This research includes an in-depth literature review of the nature and composition of Nigeria's EIA system from the early 1950s to the present day. The study progressively constructed an understanding of the complex and overlapping legislation by reviewing the regulatory framework on EIA application and implementation. It traced why inadequate legislative provisions and lack of legal enforcement may thus lead to social tension in the region where oil is produced, with resulting attacks against the oil companies. The analysis of the responses to the survey by the stakeholders elucidated the constraints and opportunities that are faced by both the government and the oil industry in Nigeria on environmental issues. The findings, supported by a significant part of the data, indicated that the problems of EIA process and implementation are attributed mainly to the lack experience, education and funding, and the ingrained perceptions of those involved.

An important insight that has resulted from the research is an awareness of the existence of more than one EIA system in Nigeria as a result of an uncoordinated attempt of Nigerian policy makers to imitate the EIA evolutions of the US and the UK. As indicated the EIA decree (1992) is fashioned after the US NEPA Act, covering all sectors of the economy, while the Town and Country Planning Decree (1992) is patterned after the UK Town and Country Planning Regulations 1988, which covers planning development activities and specifies town planners as the principal environment assessors. The third EIA system, operated under the Petroleum Act, is an evolution from the 1969 Petroleum Regulations under the DPR; apparently the petroleum sector is unwilling to relinquish its sector's environmental regulatory duties to the Federal Ministry of Environment (FME), and this has resulted in an unnecessary duplication of the duties of the Ministry. The necessity of operating three dissimilar EIA systems in Nigeria is certainly very questionable, since the three systems are not mutually compatible.

Based on the evidence from this research, the two organizations that are in charge of EIA (FME and the DPR) have specified scoping as a mandatory stage in their respective procedural guidelines. Under the guidelines of these systems, it is specified that a team comprising of personnel in the proponent organisation, other stakeholders and regulators, should usually carry out scoping. In practice, however, stakeholders are not always present as stated in the discussion chapter.

Respondents indicated that both the FME and DPR contain post-decision and implementation monitoring and audit provisions in their respective procedural guidelines (FEPA, 1995; EGAS, 1999); through these are non-binding regulations. On the other hand, the EIA process of the town planners does not currently include any provisions for a post-approval implementation monitoring and audit; this loophole in the system allows certain organization to escape some part of the audit. This observation is supported by the Case Studies described in Chapter 3, where there is no post-approval audit in both cases.

It is evident from the survey that the procedural guidelines of the FME and the DPR require examination of alternatives to the project in the EIA process and report. In practice, consultants rarely identify any alternatives. Examination of alternatives if identified is considered desirable, but is hardly ever included by consultants in EIAs. It is relevant to consider that the stakeholders' continuous engagement in undertaking of post-consent audits

offer the greatest opportunity in solving some environmental issues. Inclusion of all stakeholders will significantly improve the quality and acceptability of the EIA process.

The FME and DPR have provided technical guidance on the content of ESs in the form of procedural guides, but no comprehensive best practice technical guides similar to the UK DoE (1994) have yet been provided. On the other hand, no procedural manuals regulate EIAs conducted by the town planners/estate surveyors; although each State Environment Ministry provides its individual format for the drafting of EIAs. The format is almost invariably different from that operated by the Local Government Councils. Public sector EIA enforcement is low because Government Agencies do not acknowledge the EIA controlling Agencies; regarding them as non-governmental Agencies that should not be allowed to exercise powers over them. They have consequently continued to refuse the carrying out of EIAs for their projects, even when significant environmental impacts are apparent.

From the discussion chapter it is clear that knowledge and experience within the government organizations is lacking, requiring EIA training not just for government officials (including senior officials who require an understanding of the EIA process), but also for environmental consultancies, universities and research institutes. Courses, as in the developed world, need to be multidisciplinary and focused on the practical and operational aspects of EIA rather than on the theoretical aspects of EIA (Biswas, 1992).

Development aid Agencies and financial institutions have great potential for bringing about effective EIA in developing countries, particularly those without national EIA requirements. However, this potential has not yet been fully realised because aid Agencies and some financial institutions have been slow to impose EIA requirements on recipients, and even slower to enforce consistent compliance with their own requirements.

The research methodology used in the survey has allowed the investigation to quantify the hierarchy of information from all stakeholders. This allows the quantitative assessment of the extent of the practical impediments in the routine operations of the EIA process, application, and implementation in Nigeria. It is evident in the survey that the Department of Petroleum Resources (DPR) and the National Oil Spill Detection and Response Agency (NOSDRA) have differing interpretations of EGASPIN. This is enabling the oil industry to close down the remediation of pollution well before the contamination has been cleaned-up.

It is clear that the Nigerian Government Agencies concerned with EIA lack qualified technical experts and resources. In the seven years since NOSDRA was established, so few resources have been allocated to that Agency it has no proactive capacity for oil-spill detection. In planning their inspection visits to some oil spill sites, the regulatory authority is wholly reliant on the oil industry for logistical support.

The lack of accountability was a feature of the views of the respondents. In order to ensure effective EIA in Nigeria's oil industry and the management of oil pollution the Federal Ministry of Environment should ensure that those responsible are held to account under the law whenever a major oil spill incident pollutes the ecosystem. For example this was the case with the British Petroleum spill in the Gulf of Mexico, in the United States. Many respondents felt that the Federal Government should step up its campaign against pipeline vandals by prosecuting all people caught in this criminal act. The activities of the newly set up Niger-Delta Development Commission (NDDC) and NOSDRA should be closely monitored and supervised by the Federal Government, as this will ensure transparency, honesty and fairness to all the communities.

The Federal Government should enforce strict rules for the quality and operation of local oil tankers that can be found in the Nigerian coastal and inland waters; it is noted that a new sabotage law has just being passed. The responses in the questionnaires clearly indicated that some respondents, particularly NGOs, lack a proper understanding of the coastal ecology, and are therefore unable to fully understand the significance of the impacts generated by oil spill incidents.

The questionnaires included useful and considered comments and suggestions on improving the environmental monitoring and management systems in Nigeria. For example, the Federal Government in conjunction with other Government Agencies and other non-governmental Agencies should work with the newly launched Nigeria Sat-1 Agency. Images from the satellite and other satellites in orbit could be used for managing oil spill incidents in the country. Establishment of regional spill response centres along the coastlines, and the use of data collected with an airborne system will help in managing oil spill problems in Nigeria, and also check any claims by oil companies performing their environmental responsibility according to the laws.

Another issue the government has to seriously deal with is a campaign to bring to an end the illegal oil-related activities of tapping into oil wells and pipelines, and transporting crude oil for illegal refining. This illegal extraction of oil locally referred to as 'bunkering' is also a cause of major spills and subsequent environmental damage.

One of the alternative approaches in solving issues of environmental degradation in the Nigerian oil-producing regions would be a comprehensive environmental and social survey. More detailed research into the effect of oil operations and impacts on the community should be considered, since this virtually absent in the current EIA process. Most importantly a field study could examine the motivations of villagers when engaging in conflict with oil companies. Issues discussed could include the villagers' perception of economic inequality in Nigerian society and their lack of political opportunities. In the context of oil-related contamination, a field study could highlight barriers to justice as perceived by community members.

The role of EIA on the Nigerian oil industry can never be separated from the conflicts in the oil communities and has significance beyond academic interest. The challenge is undoubtedly very complex and there is the possibility that the cycle of violence in the Niger Delta cannot be broken. If judged by past experience, it is unlikely that a mere increase in the financial contributions to the oil-producing areas will lessen or eradicate discontent. Given the demands of the anti-oil protesters, any policy measures will have greater financial control over oil resources for the local people, a significant reduction of the adverse impact of oil operations, and a meaningful development programmed for the oil-producing areas. Therefore any administration will have to engage in a meaningful dialogue with all of the major stakeholders and interest groups in the region by;

- Allocating a percentage of all project costs for environmental and sustainable development initiatives in the region.

- Regular public consultation and reporting on environmental and social performance of industry activities.

- Proper EIA training of the entire government organisation involved in EIA, and constant engagement with stakeholders in the field.

- Creating a single government body that will be solely responsible for conducting EIA process, procedure and implementation.

- Involving honest and dedicated staff for greater transparency.

Finally, unless the government and oil companies change their basic attitude towards Environmental Impact Assessment the conflict and mistrust will continue, thereby slowing the development of both the Niger Delta and the country. Proactive approaches will therefore need to be considered, including active intervention by government Agencies in charge of enforcing the regulations, operations and monitoring of the oil industry. It is clear that the environmental impacts of projects and policies are no longer considered as inconsequential or secondary to decision-making for development, EIA is now recognized as an integral part of the project cycle, and projects will invariably require that environmental issues are properly addressed using EIA or a similar methodology. The identification at an early stage of environmental impacts contributes not only to project appraisal, but also project design that incorporates the necessary mitigation, and counter measures. Equally important, as part of the EIA, is the development of an Environmental Management Plan (incorporating monitoring) In this context, not only must the planning for environmental impacts be robust, but the proposed countermeasures must be soundly conceived and properly affected. As with any such development, this requires the identification and commitment of resources for the project life-span. In developing economies, these resources may be difficult to sustain, given that they are not obviously 'productively' used (in the sense of providing a clear and measurable return on investment). However, the evidence of environmental damage caused by the short-sighted approach of both oil companies and the government is now too overwhelming to be ignored.

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Appendix A -1. List of approved EIAs in Nigeria (1995-2012)

S/No	PROJECT TITLE	LOCATION	PROPONENT	YEAR OF APPROVAL
1	Liquefied Natural Gas (LNG)	Bonny Land, River State	NLNG	1995
2	Natural Gas Liquid (NGL)	Bonny Land, River State	Mobil Producing Nigerian Limited	1996
3	Soku Gas Plant	River State	Shell Petroleum Dev. Co.	1997
4	Ukpokiti is / Field Development	offshore Ondo state	Express Petroleum & Gas Ltd.	1998
5	Usari Production Facilities	offshore Akwa-Ibom state	Mobil Producing Nig. Limited	1998
6	Nigeria Gas Company Limited	Lagos and Ogun state	Nigeria Co. Ltd.	1999
7	Obite LNG Project	River State	Elf Produce Nig. Ltd.	1999
8	Dibi and Gbokoda FDP	Delta State	Chevron Nig. Ltd.	1999
9	Yoho Field Dev. Project	offshore Akwa-Ibom state	Mobil Producing Nig. Unlimited	1999
10	Odidi Associated Gas Gathering Project	Delta State	Shell Petroleum Dev. Company	1999
11	Ewar FDP	Delta State	Chevron Nig. Ltd.	1999
12	Escravos Gas Protect Phase II	Delta State	Chairman Nig. Ltd	1999
13	Erha FDP	offshore	Esso Exploration and production Nig. Ltd.	1999
14	Agbada I & II FDP	Rivers State	Shell Petroleum Dev. Co.	1999
15	Belema Gas Injection and field Dev.	Rivers and Bayelsa State	Shell Petroleum Dev. Co	1999
16	Santa Barbara Initial FDP	Bayelsa State	SPDC	2000
17	Nembe Barbara Credy Ekulama AGG	Bayelsa State	SPDC	2000
18	Exploratory Drilling of Owanare	offshore	SPDC	2000
19	Obiafu/Obrikom Gas Plaut Upgrad	River State	Nigerian Agip in/Co. Ltd.	2000
20	Akpo-3 Expliratory willin GRL 246	offshore	Total upstream Nig. Ltd.	2000
21	Opolo/Ruta FDP	offshore Delta state	Chevron Nig. Ltd.	2000
22	Bonga FDP	offshore	Shell Nig. Exploration Production Company	2000
23	Exploratory/Appraisal Drilling in DML 77	offshore, River state	SPDC	2000

(*continues in the next page)*

S/No	PROJECT TITLE	LOCATION	PROPONENT	YEAR OF APPROVAL
24	Abigborodo Exploratory well Drilling	Delta state	Chevron	2001
25	Agbara/Otta Gas Distribution Project	Ogun state	Shell Nig. Gas	2001
26	EA Offshare FDP	offshore	SPDC	2001
27	Euweni FDP	Delta state	SPDC	2001
28	Forcados Yokri Integrated Project	Delta state	SPDC	2001
29	Bonny Terminal Integrated Project	Rivers state	SPDC	2001
30	Escravos Gas To Liquid Project	Delta state	Chevron Nig. Ltd.	2001
31	OPC 230 FDP	Bakarri Cross River state	Moni Palo Nig. Ltd.	2001
32	Verbe Creek FDP	Bayelsa state	SPDC	2001
33	Keonokpo 'A' Location FDP	Delta state	Nigerian Agip Oil Company	2001
34	Nicarika 'C' Exploratory Drilling one 102	offshore	Elf Petroleum Nig. Ltd.	2001
35	Amenam/Kpono FDP	Akwa-Ibom / Cross-River state	Elf Petroleum Nig. Ltd	2002
36	Nien-River Rich Gas Product	River state	SPDC	2002
37	Greater Lagos Gas Distribution	Lagos state	Nigerian Gas Company Ltd.	2002
38	ElA of the Proposed Ogbainbiri flow station upgrade	Bayelsa state	Nigeria Agip Oil company	2002
39	Preoweri Explinary Drilling in OPL 246	Rivers state	EIF Petroleum Nig. Ltd.	2002
40	Eastern Gas Gathering Project	Rivers state	SPDC	2002
41	Abo FDP	Offshore	Nigerian Agip Oil Company	2003
42	Ebocha FDP	Rivers state	Nigerian Agip Oil Company	2003
43	4^{th} and 5^{th} Train Expansion	Rivers state	NCNG	2003
44	Bony FDP	Rivers state	SPDC	2003
45	Southern Swamp AGG	Delta state	SPDC	2003
46	Odidi-Forcados North Bank Expal Gas Link	Delta state	SPDC	2003
47	Tabu FDP	Delta state	Chairman Nig. Ltd.	2003
48	Ossissioma Drilling Project	Edo state	Pan Ocean Oil/Corporation Ltd.	2003
49	Utorogu NAG Well Project	Delta state	SPDC	2004
50	Ebegoro FDP	Rivers state	Nigerian Agip Oil/Company	2004
51	Egbaran/Ubic integrated Oil & Gas Project	Bayelsa state	SPDC	2004

(*continues in the next page)*

S/No	PROJECT TITLE	LOCATION	PROPONENT	YEAR OF APPROVAL
52	Tebibidaba FDP	Bayelsa state	Nigeria Agip Oil/Comapany	2004
53	Azuzuma FDP	Bayelsa state	Nigerian Agip Oil/Company	2004
54	Obrikom 9 cluster location drilling	Rivers state	Nigerian Agip Oil/Company	2004
55	OPL 244 Exploratory Drilling	offshore	Nigerian Agip Oil/Company	2005
56	Agbami FDP	offshore	Nigerian Agip Oil/Company	2005
57	Beneside Attachment Area FDP	Bayelsa state	SPDC	2005
58	Idu Fidd Dev. Plan	Rivers state	Nigerian Agip Oil/Company	2005
59	Nan River 3D Seismic Data Acquisition	Bayelsa state	SPDC	2005
60	Satellite FDP	offshore Akwa Ibom state	Mobil Producing Nigeria Limited	2005
61	Samabivi Biseni FDP	Bayelsa state	Nigerian Agip Oil/Company	2005
62	Uteri-East FDP	Edo state	Pan Ocean Oil/Corporation Ltd	2005
63	Swanp Area AGG	Rivers state	Nigerian Agip Oil/Company	2005
64	Uteri-West FDP	Edo state	Pan Ocean Oil/Corporation Ltd	2005
65	3D Seismic Data Acquisition in Ekedec Field	Bayelsa state	Nigerian Agip Oil/Company	2006
66	Oza Marginal Field Dev. Project	Abia state	Millenium oil and Gas Company Ltd	2006
67	Idu Field FDP	Edo state	Pan Ocean Oil/Corporation Ltd	2006
68	Saibou Appraisal Well Drilling	Bayelsa state	SPDC	2006
69	Evboeka FDP	Delta state	Pan Ocean Oil/Corporation Ltd	2006
70	Development of Umusadege Marginal Field in OML 56	Delta state	Mid Western Oil and Gas Limited	2006
71	Tunu/Kanbo FDP	Bayelsa state	SPDC	2006
72	OML 58 Complementary Well Drilling	Rivers state	EIF Petroleum Dev. Co.	2006
73	Ahia Oguali 3D Seismic Data Acquisition	Abia and Rivers state	SPDC	2006
74	Eremor FDP	Bayelsa state	Excel Exploration and Production Ltd	2006
75	Ekosa FDP	Edo state	Pan Ocean oil/Corporation Ltd	2006
76	Okpai FDP	Delta state	Nigerian Agip oil company	2007

(*continues in the next page)*

S/No	PROJECT TITLE	LOCATION	PROPONENT	YEAR OF APPROVAL
78	Qua Iboe Margina FDP in OML 13	Akwa Ibom state	Network E and P Nig Ltd.	2007
79	Amoji/Matsogo/Igboto FDP	Delta state	Choras Energy	2007
80	Asokpu-Umutu FDP	Delta state	Platform Petroleum Ltd.	2007
81	Ofa Marginal Field Dev. Project	Delta state	Independent Energy Nig Ltd.	2007
82	Obodugwa-Obodeti FDP	Delta state	Energia Ltd	2007
83	Olakola LNG Project	Delta, Ogun and Ondo state	OK LNG	2007
84	OML 58 Obite-Ubeta-Rumuji Gas Pipeline	Rivers state	EIF Petroleum Nig. Ltd.	2007
85	Manuso FDP	Rivers state	Nigerian Agip oil company	2007
86	Drilling of Well at OML 66	Delta state	Nigerian Petroleum Dev. Company	2007
87	Alinso FDP	Rives state	Nigerian Agip oil/Company	2007
88	Ajatiton Development Wells	Bayelsa state	SPDC	2007
89	Afiesere FDP	Delta state	SPDC	2007
90	NNPC-OPL 209 Bosi-P4 Appraisal Well	offshore	Esso Exploration and production Nig. Ltd.	2007
91	Zaba-Zaba AX Exploratory Drilling OPL 245	Deep offshore	Shell Nigeria Explanation and production copy	2008
92	Assa North Integrated oil/and Gas project	Imo, Rivers and Bayelsa States	SPDC	2008
93	Oredo FDP	Edo state	Nigerian Petroleum Dev. Company	2008
94	Bosi Central Appraisal Well	Deep offshore	Esso Explanation and production Company	2008
95	Seismic Data Acquisition, a/x Gas Explanation in OPL 283	Edo and Delta states	Centrica Energy works	2008
96	NNPC OPL-242 Explanation and production	offshore	Ocean Energy Ltd.	2008
97	Olomoro side-trade Well 33	Delta state	SPDC	2008
98	OPL 277 Explanation Well drilling/field Dev. Plan	Imo state	Starling Global Oil Resources Ltd	2008
99	Drilling of one Well in OML 119	offshore	Nigerian petroleum Dev. Company	2008
100	KC Marginal Oil filed Dev. Project	Rivers state	Del-Sigma petroleum Nig. Ltd.	2008
101	Setu/Okoro FDP	offshore	Amni International Dev. Co. Limited	2010
102	OPL 332 Explanatory Well Drilling	offshore	BG Explanation and production Nig. Ltd.	2010

(*continues in the next page)*

S/No	PROJECT TITLE	LOCATION	PROPONENT	YEAR OF APPROVAL
104	Post Drilling in Oyo-2 and Oyo-3 Wells in OML 120	offshore	Nigerian Agip oil company	2010
105	Post Drilling in Udoro-IX and Oberan-7 Wells in OML 134	offshore	Nigerian Agip Energy Limited	2011
106	Explanatory well Drilling in OPL 286	offshore	BG Explanatory and production Nig. Ltd.	2011
107	Post Drilling in Odu-1 well	offshore	Nigerian Agip Energy Limited	2011
108	Post Drilling in Emeia-1 Well	offshore	Nigerian Agip Energy Limited	2012
109	Post Drilling in Abo-10 and Okato Wells in OML 125	offshore	Nigerian Agip Energy Limited	2012
110	Replacement of Kwale-Akir Oil pipeline crossing at River Niger	Delta and Rivers States	Nigerian Agip oil Company	2012

Appendix A -2. Questionnaire

Dear Sir/Madam

I am a research student engaged in PhD study under the direction and supervision of Dr Tim Jones at the Cardiff School of Earth and Ocean Sciences in the UK. My research is exploring the role of Environmental Impact Assessments (EIA) in the management on Nigeria's oil and gas industry.

Because of the rapidly deteriorating condition of the environment, due to oil exploration and exploitation in Nigeria, there is now an urgent need to protect and preserve this environment. Our country need to align itself with the global movement on the preservation of our home environments, and this can only be achieve by means such as Environmental Impact Assessments and strict adherence to regulations. My field of study is to review the existing regulations and legislation, and their efficiency in managing the Nigeria's oil and gas industry. My findings will be targeted towards a solution to the constant problems in the region.

Therefore, I invite you to participate in this essential research. There is no right or wrong answer. Your replies and comments are the most important factors for this research's success. The survey frame adopts an anonymous style. Any information provided is in the strictest confidence and will be compiled into overall trends. No specific details about the respondents' position in Government or in industry or companies will be revealed or reported. The results of this survey will only be used for the purpose of my PhD thesis or academic publications.

Thank you for your kind assistance

Yours sincerely

Mohammed N. Isah
Doctoral Candidate.
Feb. 2009

Role of Environmental Impact Assessment (EIA) in the management of oil and gas in Nigeria.

Questionnaire

Your contributions towards completing this questionnaire would be most appreciated. It will only take 10 Minutes of your time. There are a total of 27 questions in all including additional space for your further comments.

The information you give will be treated as **Confidential.**

Section 1: The Respondent

Q1a How many years have you been associated and dealing with the EIA process in Nigeria's oil and gas industry?

a) < 2 year		d) 4 < 5 years	
b) 2 < 3 years		e) 5+ years	
c) 3 < 4 years			

Q1b What is your highest level of formal education (please state your highest academic qualifications)

a) Junior high school		d) Masters degree	
b) Senior high school		e) Above Masters	
c) First degree			

Q2a. What is the primary role of your Organization/Department in undertaking Environmental Impact Assessment (EIA) process?

a) Competent Authority		d) Consultant	
b) Developer /proponent		e) Other Consultee	
c) Statutory Consultee			

Other please state: ……..

Q2b. Approximately how many environmental impact assessments have you personally been involved in since the introduction of EIA regulations in Nigeria?

a) 0-20		d) >60
b) 20 – 40		e) None
c) 40 – 60		

Section 2: EIA Process

Q3. Do you feel that given your organizations/departments current capacity and knowledge (skills set) that members of staff are able to fully engage in EIA process?

Please mark with (√)		Yes	No	Don't know
A	Capacity			
B	Knowledge (skills set)			

Q4. **To what extent** do you understand each of the below to have improved as a result of the EIA process and rank, in the column provided, the top 5 in terms of perceived importance to your organization (1 most important)

Please mark with a (√)		Significantly improved	Moderately improved	Slightly improved	No change	Don't know	Rank (Top5)
A	Public involvement in EIA processes						
B	Knowledge and understanding of the oil industry						
C	Decision-making and planning						
D	Protection of sensitive/designated areas and rare/unique species						
E	Environmental management						
F	Communication between oil industry and external agencies/ host communities						
G	Improved credibility and responsibility						
H	Legislative compliance						
I	Knowledge and understanding of the environment						
J	Proffer planning and control						
K	Reduce conflict between host communities and oil industry						

Baseline studies

Q5. In your opinion, do you perceive the following to be undertaken to a satisfactory standard in baseline studies?

Please mark with a (√)		Region	Never	Rarely	Some times	Usually	Always	Don't know
A	Identification of the primary structural/physical features of concern	On-shore						
		Off-shore						
B	Evaluation of the biological functioning of the marine environment	On-shore						
		Off-shore						
C	Assessment of current environmental quality	On-shore						
		Off-shore						
D	Assessment of non-impacted areas (reference/c control sites)	On-shore						
		Off-shore						

Q6 If considered necessary, please comment on how you think baseline studies could be improved

Alternative and Mitigation.

Q7. Is the option selection process (consideration of alternatives) adequately evaluated and documented for construction (e.g. Location of drilling sites, timing of activities, types of rigs/structures to be used) and operational activities (e.g. Methods of mud/cuttings/produced water disposal)?

Please indicate with (√)	Never	Rarely	Sometimes	Usually	Always
Alternatives					
Mitigation option					

Q8. The introduction of EIA to the oil gas industry has resulted in an improved level of environmental protection.

a) Strongly agree		d) Uncertain	
b) Strongly disagree		e) Disagree	
c) Agree			

Q9. Do you feel that the effectiveness of mitigation measures adopted have adequately evaluated post-consent?

a) Never		d) usually	
b) Rarely		e) Always	
c) Sometimes			

Sections 3: Environmental Statement

Information

Q10 Do you feel that existing information is adequately in-corporate into the environmental impact assessment process?

a) Never		d) usually	
b) Rarely		e) Always	
c) Sometimes			

Q11. To what extent do you perceive assumptions, limitations and uncertainties to be satisfactorily presented, addressed and resolved, where necessary, throughout the environmental studies?

Please indicate with (√)		Always	Usually	Sometimes	Rarely	Never
A	Assumptions used					
B	Limitation of data					
C	Uncertainties in analysis/assessment					

12Q. Generally, how satisfactory do you perceive the following in Nigeria's oil and gas environmental statements?

Please mark with a (√)		Very poor	Poor	Adequate	Good	Very good
A	Presentation of information					
B	Organization of information on and description of approach					
C	Consultation					
D	1)Project overview:					
	2)Physical requirements and project schedule					
	3)Processes and procedures					
	4)residuals emissions and wastes					
E	Environmental description: Geographical extent – appropriately focused - Baseline conditions					
F	Assessment of effects on:					
	Human population					
	Fauna and flora					
	Soil including seabed and subsoil					
	Water including the sea and any aquifers under the seabed					
	Air and climate					
	Landscape and sea sc ape					
	Tangible property (where necessary					
	Architecture and archaeological heritage (where necessary					
G	Potential risks of spills					
H	Assessment of the magnitude of environmental changes (considering; nature, location and duration of change)					
I	Evaluation of the significance of potential impacts					
J	Alternatives					
K	Mitigation					
L	Description of environmental management (EMS and project specific actions)					
M	Monitoring					
N	Non-technical summary					

Q13. In your experience, to what extent have environmental statements produced to date been consistent in quality?

a) Significant Variation		d) Negligible Variation	
b) Moderate Variation		e) No Variation	
c) Minor Variation			

Q14a. In your understanding, have environmental statements improved over time?

a) No Improvement		d) Moderate Improvement	
b) Negligible Improvement		e) Significant Improvement	
c) Minor Improvement			

Q14b. Please state you reason(s) for your answer to Q14a.

Q15a. In you perception, has the introduction of mandatory EIA changed the way project(s) are planned and managed through their life-cycle?

Please mark with a (√)		Never	Rarely	Sometimes	Usually	Always	Don't Know
A	Planned						
B	Managed						

Q15b. In general, how useful do you perceive current environmental statements to the a reference document or working tool during both the construction and operation of a project?

Please mark with a (√)			Not Useful	Slightly useful	Moderately Useful	Very Useful	Uncertain
1	Construction	Reference document					
		Working tool					
2	Operation	Reference document					
		Working tool					

Q15c. If this could be improved, please state HOW

Section 4: Follow-up Action

Q16. How confident are you that:

Please mark with a (√)		Very Confident	Moderately confident	Slightly Confident	Not confident
A	Predicted releases characterize and levels will be adhered to				
B	Predicted environmental effects/actual environmental outcomes will be accurate				
C	Stated project mitigation/management actions will be implemented				
D	Stated mitigation/management actions will be effective				

Q17. To your knowledge, with what consistency have actual previous outcomes accurately reflected predictions contained in environmental statements?

Please mark with a (√)		Never	Rarely	Sometimes	Usually	Always	Don't Know
A	Emission and discharges						
B	Actual ecological change(s) 1 Acute impacts 2 Chronic impacts						

Q18a. In your perception, how do you consider current post-consent monitoring with regards to:

Please mark with a (√)		Very poor	Poor	Adequate	Good	Very Good
A	Emission and discharges monitoring					
B	Impact verification monitoring (actual outcomes)					
	1 Acute impacts					
	2 Chronic impacts					

Q18b. If considered necessary, please comment on HOW you believe this could be improved

A:

B1:

Q19. In your opinion is further feedback, incorporated in the above aspects needed or would be considered beneficial?

Please indicate with a (√) where appropriate		Yes	No	Don't Know
	Needed			
	Beneficial			

Q20. How important is analysis of predicted Vs actual environmental outcomes (please tick appropriate box)

a) No Important		d) Moderately Important	
b) Somewhat Important		e) Very Important	
c) Reasonably Important			

Q21. In your perception, how would you rate the link between stated predictions and baseline parameters within environmental statements with associated 'ecological change' monitoring efforts post-project consent?

a) V. Poor		d) V. Good	
b) Poor		e) Don't Know	
c) Good			

Q22. Is your organization adequately involved in post-consent monitoring?

a) Never		d) usually	
b) Rarely		e) always	
c) Sometimes			

Section 5: Co-ordination & Collection of Environmental Information

Q23. Would the coordination and flow of information lead to improvements in the EA process/ES and resultant environmental protection?

Please mark with a (√)		Yes	No	Don't Know
I	Independent environmental authority.			
II	Co-coordinated approach towards environmental protection with Benin, Sao tome and Principe and other oil and gas producing nations in the region			
III	Ecosystems-based management approach			
IV	Consistent methodologies with regards to contaminate and ecological effects monitoring (project specifics)			
V	Wide area and regular to long-term treads			

Other(s) please state ……

Q24. Where appropriate, please state the reason for your answers and/or any further comments you may to make:

Q25a. Current co-operation between Government, industry, regulators and other translations/bodies is a appropriate to meet the necessary requirements?

a) Strongly agree		d) Disagree	
b) Agree		e) Strongly disagree	
c) Uncertain			

Q25b. Where necessary, with regards to question 26a, please indicate WHAT you believe is currently lacking or in need of improvement.

Q26. There is a need for a co-ordinated approach to the collection and evaluation of environmental information, taking account of current activities and monitoring research, throughout the Nigeria oil industry.

Section 6: Strategic Environmental Assessment (SEA)

Q27a. In your opinion, what affect will the oil and gas SEA process have on:

Please mark with a (√)		Significant improvement	Moderate improvement	Minor improvement	Slight improvement	No improvement	Uncertain
A	Quality and consistency of project specific ES's						
B	Evaluation of transcustary impacts						
C	Evaluation of cumulative impacts						
D	Consideration of alternatives						
E	Daa collection						
F	Regional planning						
G	Communication between organizations and departments						
H	Integration of environmental into decision-making						
I	Monitoring and feedback						
J	Transparency						
K	Quality of baseline information						

Thank you for your time and collective efforts

Appendix B Frequency distribution of statistical variables

Table 1: Public involvement in EIA processes---Rank 5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	67	12.0	12.0	12.0
	Don't know	43	7.7	7.7	19.6
	Slightly improved	150	26.8	26.8	46.4
	Moderately	70	12.5	12.5	58.9
	Significantly	230	41.1	41.1	100.0
	Total	560	100.0	100.0	

Table 2: Knowledge and understanding of the oil industry---Rank 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	68	12.1	12.1	12.1
	Don't know	23	4.1	4.1	16.3
	Slightly improved	167	29.8	29.8	46.1
	Moderately	152	27.1	27.1	73.2
	Significantly	150	26.8	26.8	100.0
	Total	560	100.0	100.0	

Table 3:Decision making and planning--- Rank 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	45	8.0	8.0	8.0
	Don't know	6	1.1	1.1	9.1
	Slightly improved	143	25.5	25.5	34.6
	Moderately	194	34.6	34.6	69.3
	Significantly	172	30.7	30.7	100.0
	Total	560	100.0	100.0	

Table 4:Protection of sensitive/designated areas and rare/unique species---Rank

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	157	28.0	28.0	28.0
	Don't know	8	1.4	1.4	29.5
	Slightly improved	250	44.6	44.6	74.1
	Moderately	67	12.0	12.0	86.1
	Significantly	78	13.9	13.9	100.0

Table 4:Protection of sensitive/designated areas and rare/unique species---Rank

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	157	28.0	28.0	28.0
	Don't know	8	1.4	1.4	29.5
	Slightly improved	250	44.6	44.6	74.1
	Moderately	67	12.0	12.0	86.1
	Significantly	78	13.9	13.9	100.0
	Total	560	100.0	100.0	

Table 5: Environmental management----Rank 1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	31	5.5	5.5	5.5
	Don't know	22	3.9	3.9	9.5
	Slightly improved	320	57.1	57.1	66.6
	Moderately	120	21.4	21.4	88.0
	Significantly	67	12.0	12.0	100.0
	Total	560	100.0	100.0	

Table 6: Communication between oil industry and external agencies/host communities---Rank 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	23	4.1	4.1	4.1
	Don't know	18	3.2	3.2	7.3
	Slightly improved	103	18.4	18.4	25.7
	Moderately	218	38.9	38.9	64.6
	Significantly	198	35.4	35.4	100.0
	Total	560	100.0	100.0	

Table 7: Improved credibility and responsibility--- Rank 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	49	8.8	8.8	8.8
	Don't know	17	3.0	3.0	11.8
	Slightly improved	282	50.4	50.4	62.1
	Moderately	123	22.0	22.0	84.1
	Significantly	89	15.9	15.9	100.0
	Total	560	100.0	100.0	

Table 8: legislative compliance---Rank 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	153	27.3	27.3	27.3
	Don't know	13	2.3	2.3	29.6
	Slightly improved	193	34.5	34.5	64.1
	Moderately	126	22.5	22.5	86.6
	Significantly	75	13.4	13.4	100.0
	Total	560	100.0	100.0	

Table 9: knowledge and understanding of the environment---Rank 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	53	9.5	9.5	9.5
	Don't know	6	1.1	1.1	10.5
	Slightly improved	87	15.5	15.5	26.1
	Moderately	147	26.3	26.3	52.3
	Significantly	267	47.7	47.7	100.0
	Total	560	100.0	100.0	

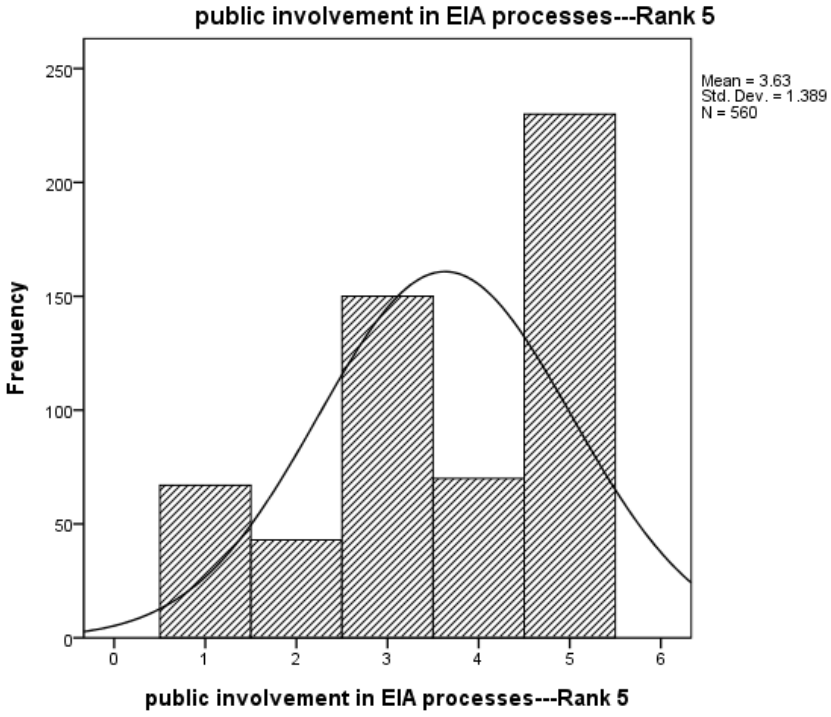
Table 10: Proffer planning and control---Rank 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No change	103	18.4	18.4	18.4
	Don't know	21	3.8	3.8	22.1
	Slightly improved	197	35.2	35.2	57.3
	Moderately	109	19.5	19.5	76.8
	Significantly	130	23.2	23.2	100.0
	Total	560	100.0	100.0	

Table 11: Reduce conflict b/w host communities and oil industry---- Rank 4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	3.0	3.0	3.0
	2	28	5.0	5.0	8.0
	3	32	5.7	5.7	13.8
	4	307	54.8	54.8	68.6
	5	176	31.4	31.4	100.0
	Total	560	100.0	100.0	

Histogram


public involvement in EIA processes---Rank 5
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Std. Dev. = 1.389
N = 560
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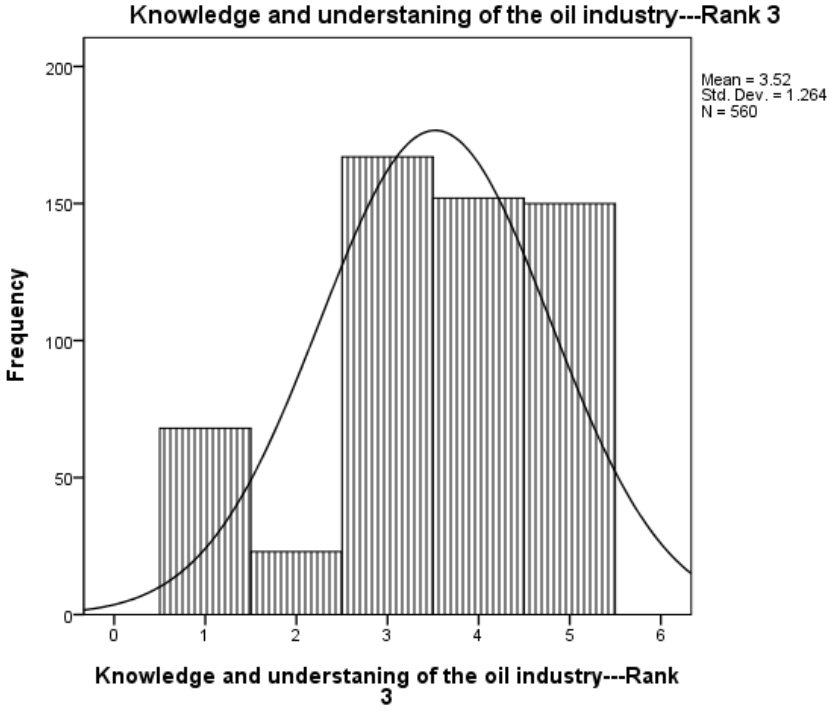
3
4
5
6
public involvement in EIA processes---Rank 5


Knowledge and understaning of the oil industry---Rank 3
Mean = 3.52
Std. Dev. = 1.264
N = 560
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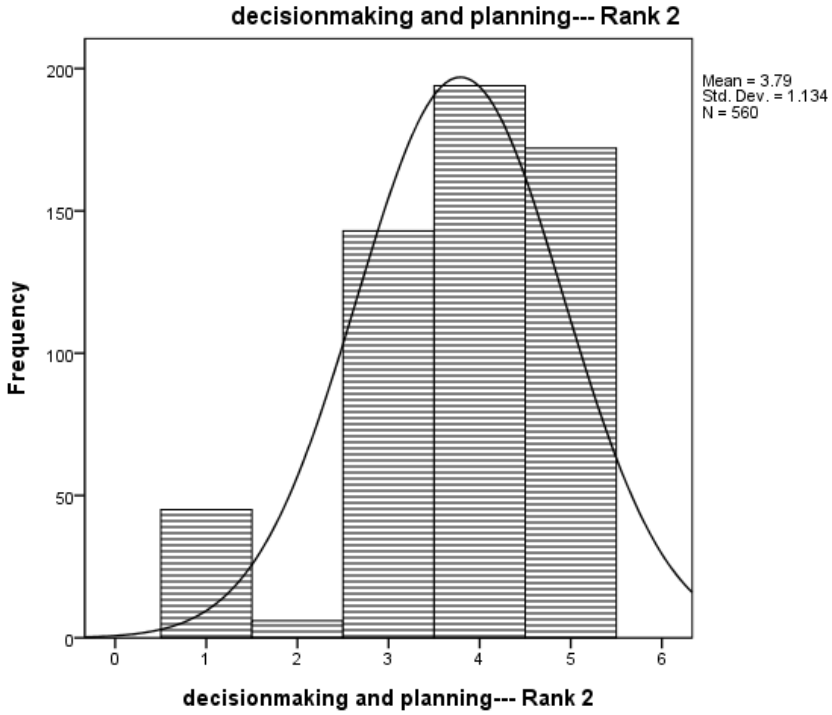
3
4
5
6
Knowledge and understaning of the oil industry---Rank 3


decisionmaking and planning--- Rank 2
Mean = 3.79
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Frequency
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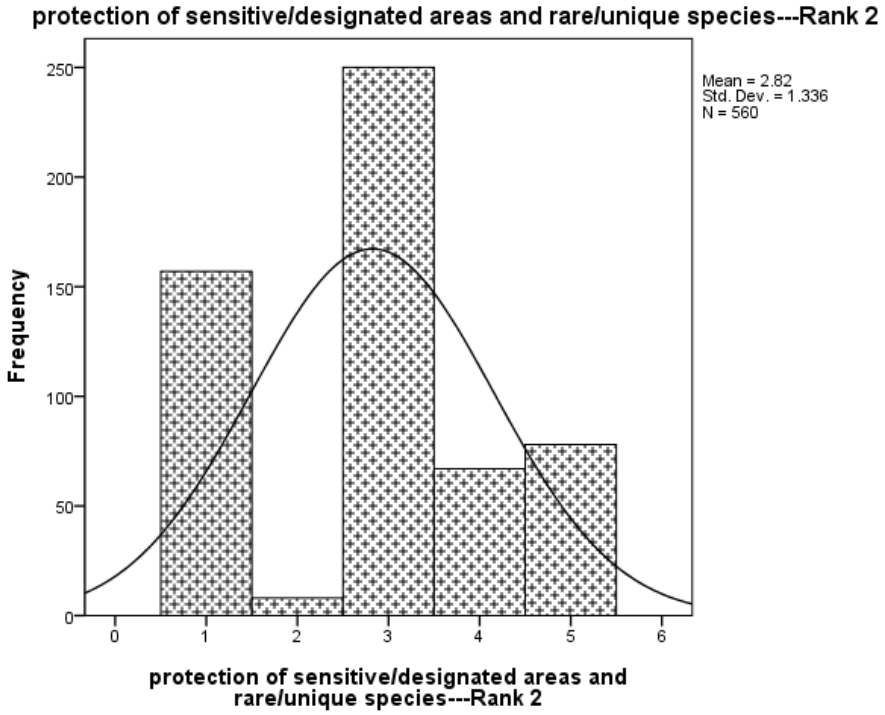
4
5
6
decisionmaking and planning--- Rank 2


protection of sensitive/designated areas and rare/unique species---Rank 2
Mean = 2.82
Std. Dev. = 1.336
N = 560
Frequency
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3
4
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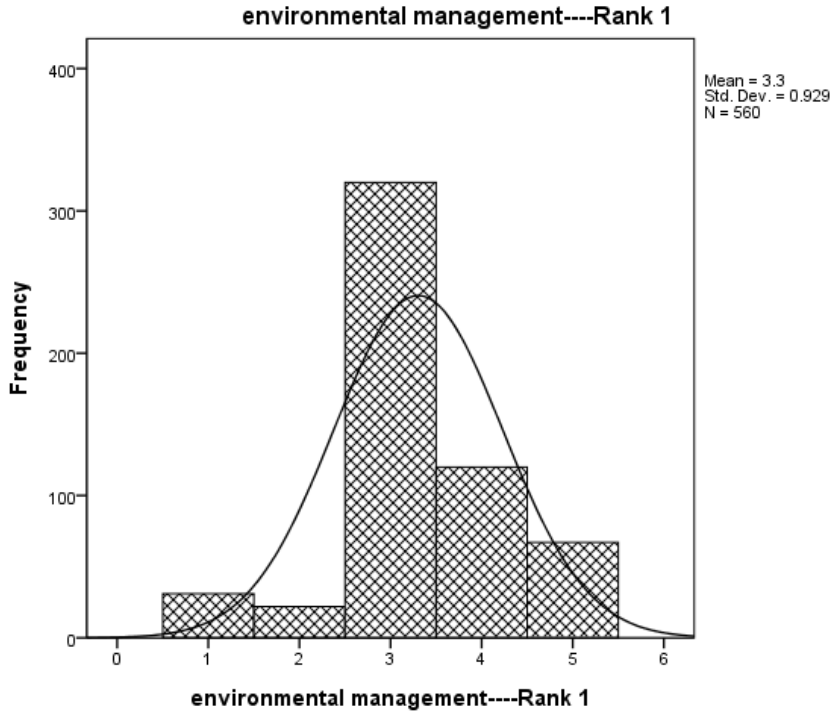
6
protection of sensitive/designated areas and rare/unique species---Rank 2


environmental management----Rank 1
Mean = 3.3
Std. Dev. = 0.929
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Frequency
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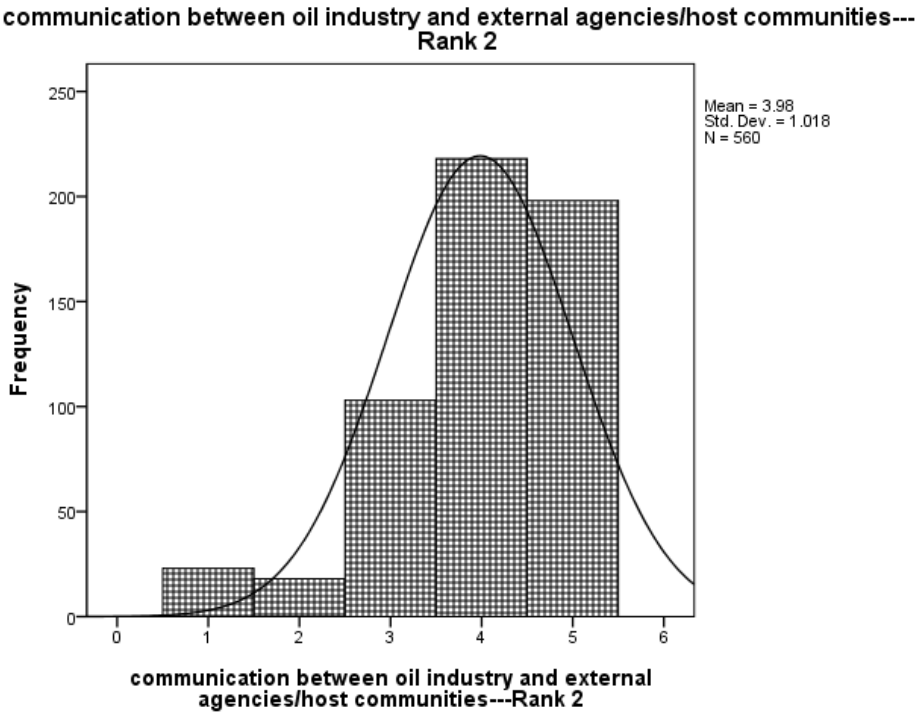
200
100
0
0
1
2
3
4
5
6
environmental management----Rank 1


communication between oil industry and external agencies/host communities---Rank 2
Mean = 3.98
Std. Dev. = 1.018
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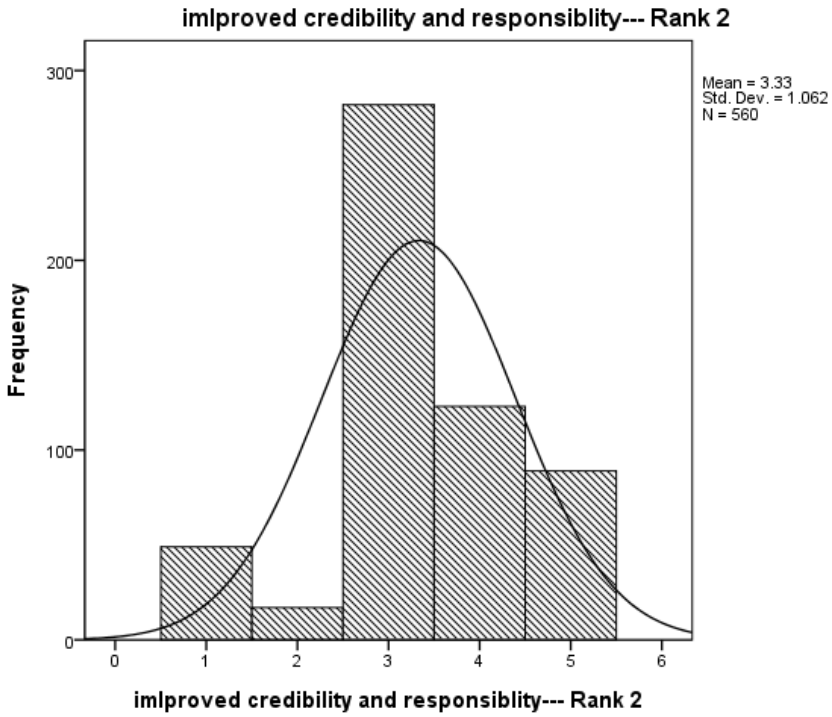
3
4
5
6
communication between oil industry and external agencies/host communities---Rank 2


imlproved credibility and responsiblity--- Rank 2
Mean = 3.33
Std. Dev. = 1.062
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Frequency
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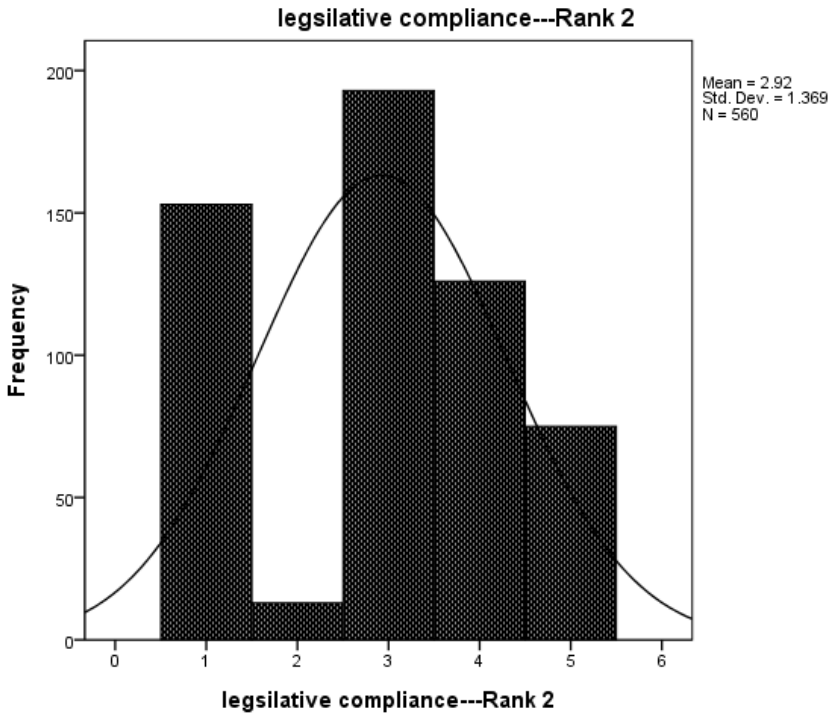
4
5
6
imlproved credibility and responsiblity--- Rank 2


legsilative compliance---Rank 2
Mean = 2.92
Std. Dev. = 1.369
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Frequency
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2
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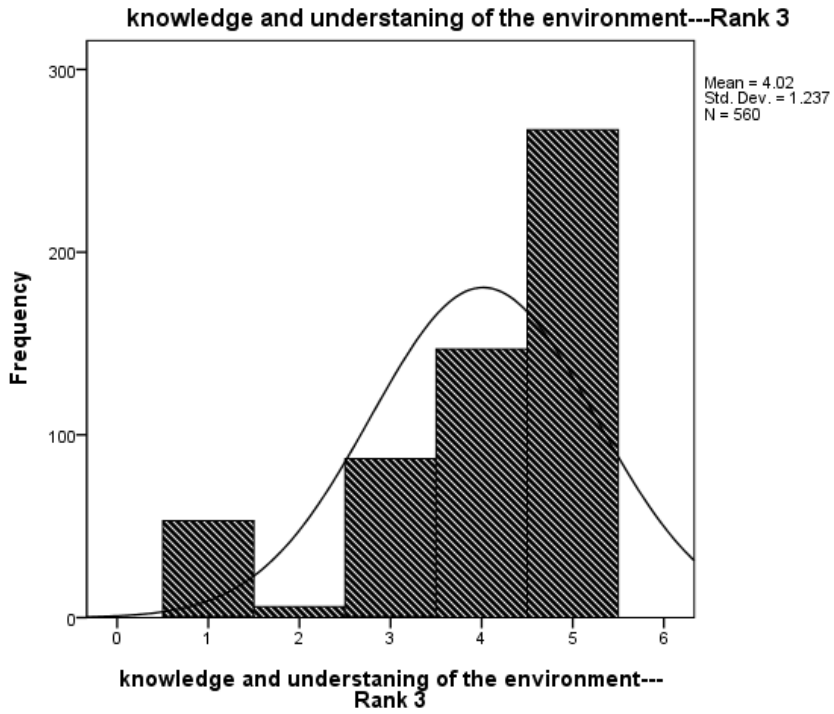
4
5
6
legsilative compliance---Rank 2


knowledge and understaning of the environment---Rank 3
Mean = 4.02
Std. Dev. = 1.237
N = 560
Frequency
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100
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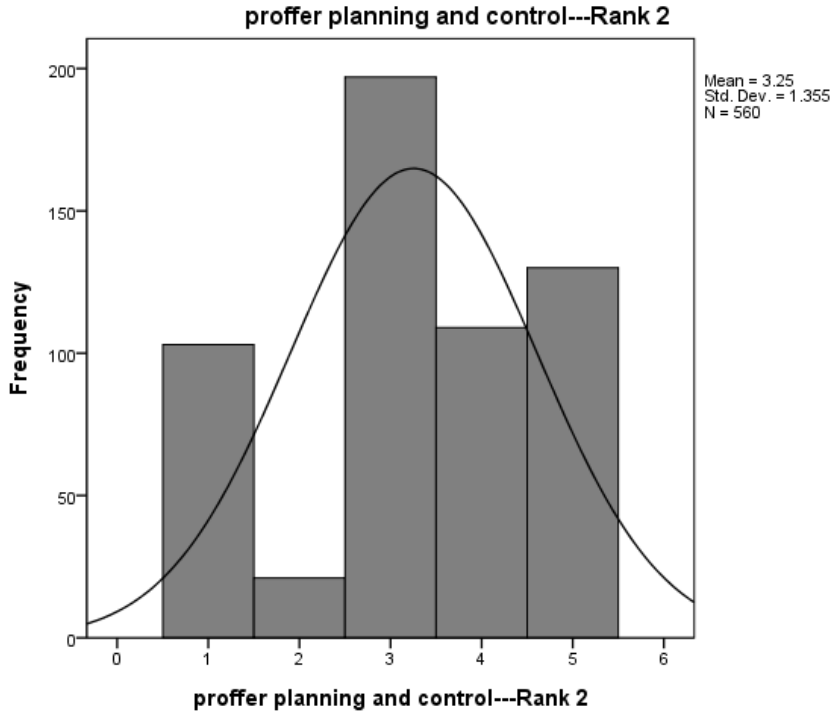
3
4
5
6
knowledge and understaning of the environment---Rank 3


proffer planning and control---Rank 2
Mean = 3.25
Std. Dev. = 1.355
N = 560
Frequency
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100
50
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0
1
2
3
4
5
6
proffer planning and control---Rank 2

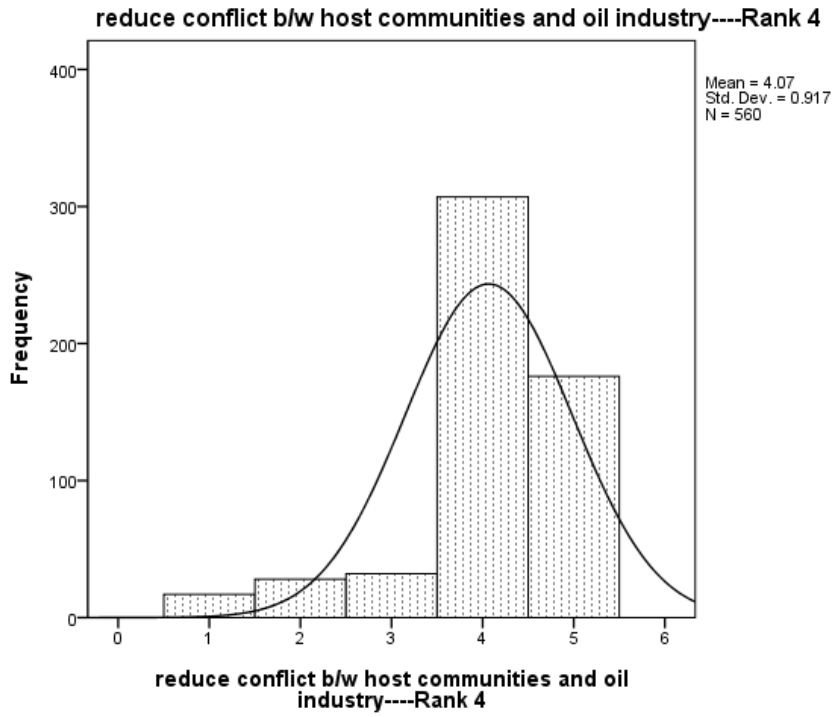


Table 12: Identification of the primary structural/physical feature of concern Onshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	67	12.0	12.0	12.0
	Rarely	81	14.5	14.5	26.4
	sometimes	41	7.3	7.3	33.8
	usually	167	29.8	29.8	63.6
	always	139	24.8	24.8	88.4
	don't know	65	11.6	11.6	100.0
	Total	560	100.0	100.0	

Table 13: Identification of the primary structural/physical feature of concern Offshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	30	5.4	5.4	5.4
	rarely	90	16.1	16.1	21.4
	sometimes	70	12.5	12.5	33.9
	usually	180	32.1	32.1	66.1
	always	160	28.6	28.6	94.6
	don't know	30	5.4	5.4	100.0
	Total	560	100.0	100.0	

Table 14: Evaluation of the biological functioning of the marine environment Onshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	43	7.7	7.7	7.7
	rarely	34	6.1	6.1	13.8
	sometimes	190	33.9	33.9	47.7
	usually	177	31.6	31.6	79.3
	always	84	15.0	15.0	94.3
	don't know	32	5.7	5.7	100.0
	Total	560	100.0	100.0	

Table 15: Evaluation of the biological functioning of the marine environment Offshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	28	5.0	5.0	5.0
	rarely	24	4.3	4.3	9.3
	sometimes	122	21.8	21.8	31.1
	usually	191	34.1	34.1	65.2
	always	173	30.9	30.9	96.1
	don't know	22	3.9	3.9	100.0
	Total	560	100.0	100.0	

Assessment of currently environmental Quality Onshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	22	3.9	3.9	3.9
	rarely	13	2.3	2.3	6.3
	sometimes	193	34.5	34.5	40.7
	usually	125	22.3	22.3	63.0
	always	167	29.8	29.8	92.9
	don't know	40	7.1	7.1	100.0
	Total	560	100.0	100.0	

Table 16: Assessment of currently environmental Quality Offshore

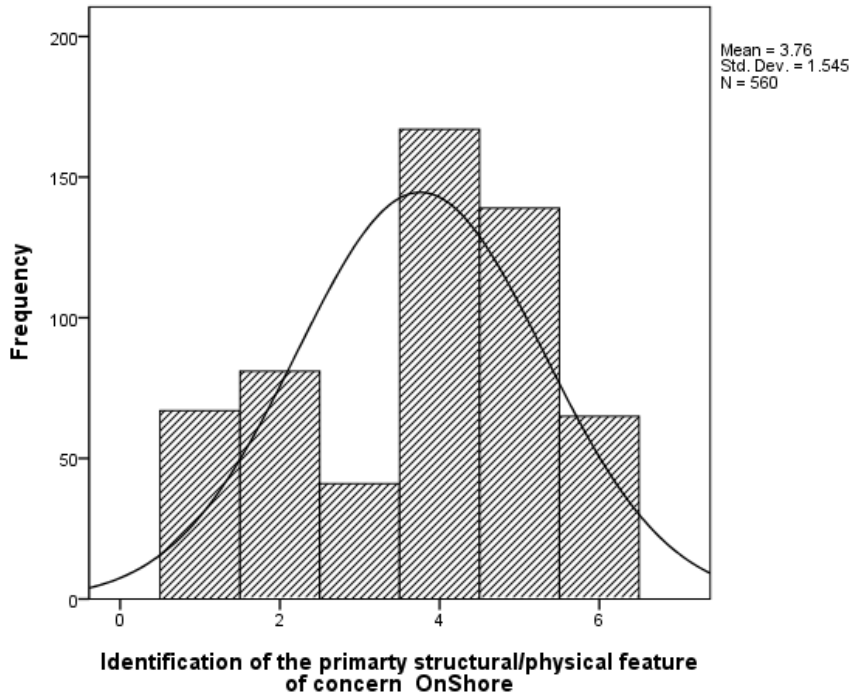
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	13	2.3	2.3	2.3
	rarely	23	4.1	4.1	6.4
	sometimes	171	30.5	30.5	37.0
	usually	163	29.1	29.1	66.1
	always	145	25.9	25.9	92.0
	don't know	45	8.0	8.0	100.0
	Total	560	100.0	100.0	

Table 17: Assessment of non-impacted areas Onshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	56	10.0	10.0	10.0
	rarely	49	8.8	8.8	18.8
	sometimes	97	17.3	17.3	36.1
	usually	190	33.9	33.9	70.0
	always	145	25.9	25.9	95.9
	don't know	23	4.1	4.1	100.0
	Total	560	100.0	100.0	

Table 18: Assessment of non-impacted areas Offshore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	40	7.1	7.1	7.1
	rarely	45	8.0	8.0	15.2
	sometimes	103	18.4	18.4	33.6
	usually	201	35.9	35.9	69.5
	always	138	24.6	24.6	94.1
	don't know	33	5.9	5.9	100.0
	Total	560	100.0	100.0	


Mean = 3.76
Std. Dev. = 1.545
N = 560
Frequency
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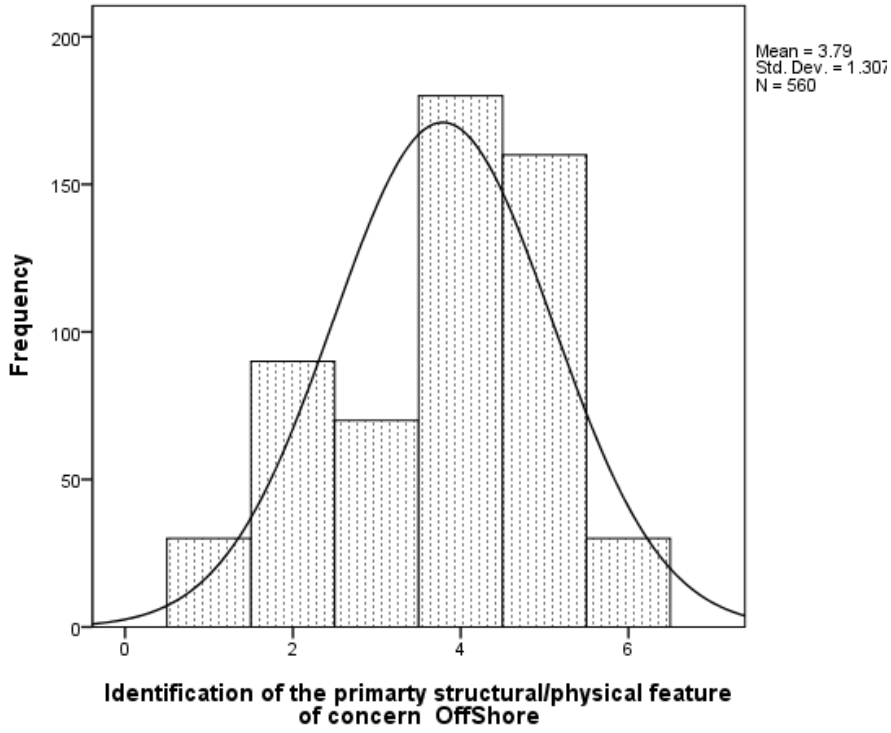
2
4
6
Identification of the primarty structural/physical feature of concern OnShore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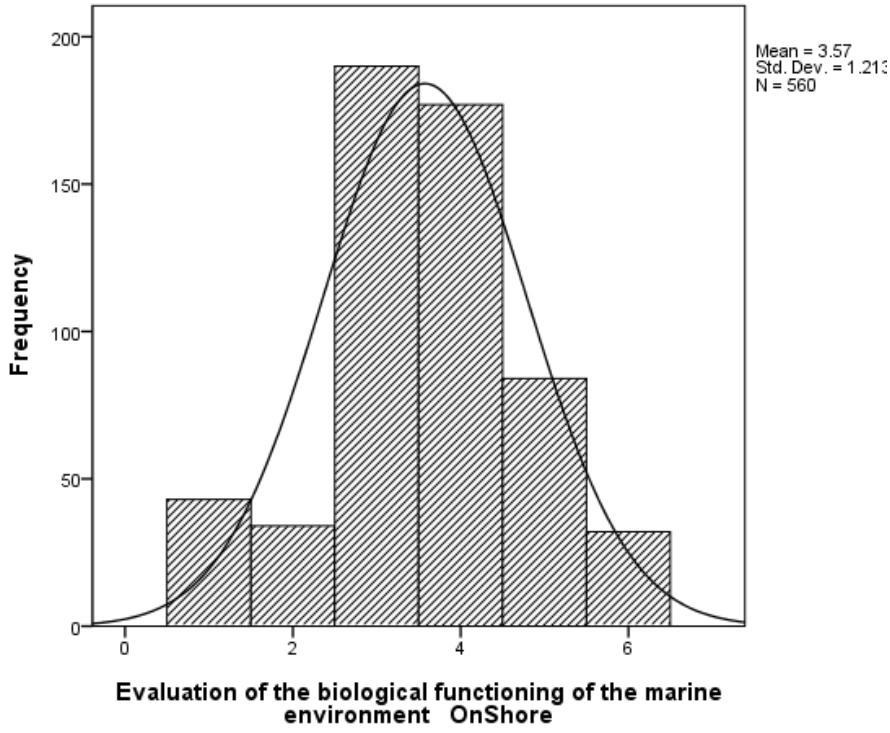
Identification of the primarty structural/physical feature of concern OffShore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Frequency
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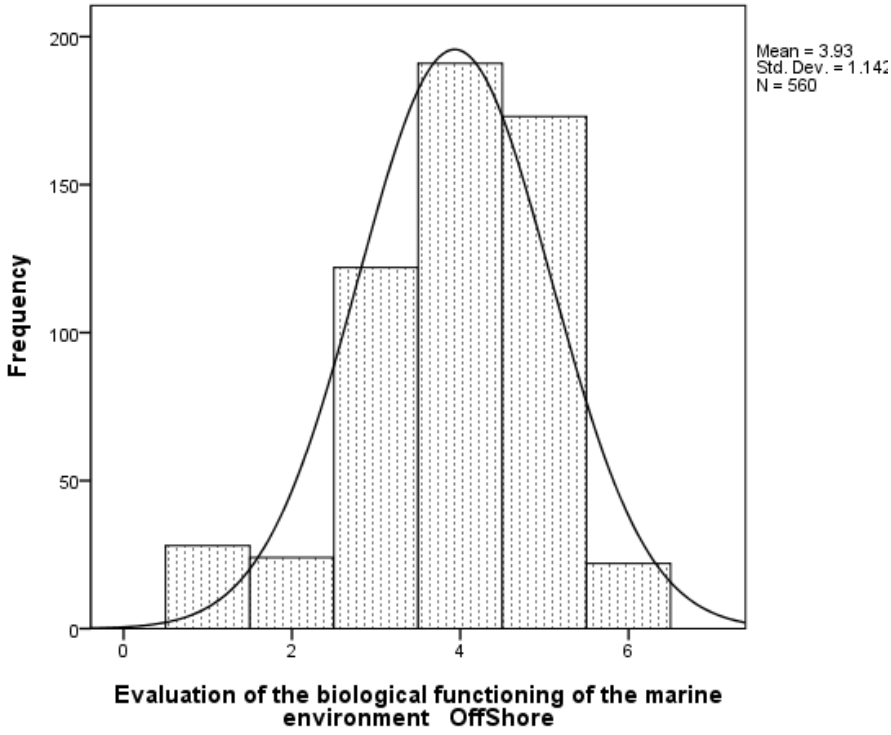
6
Evaluation of the biological functioning of the marine environment OnShore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Std. Dev. = 1.142
N = 560
Frequency
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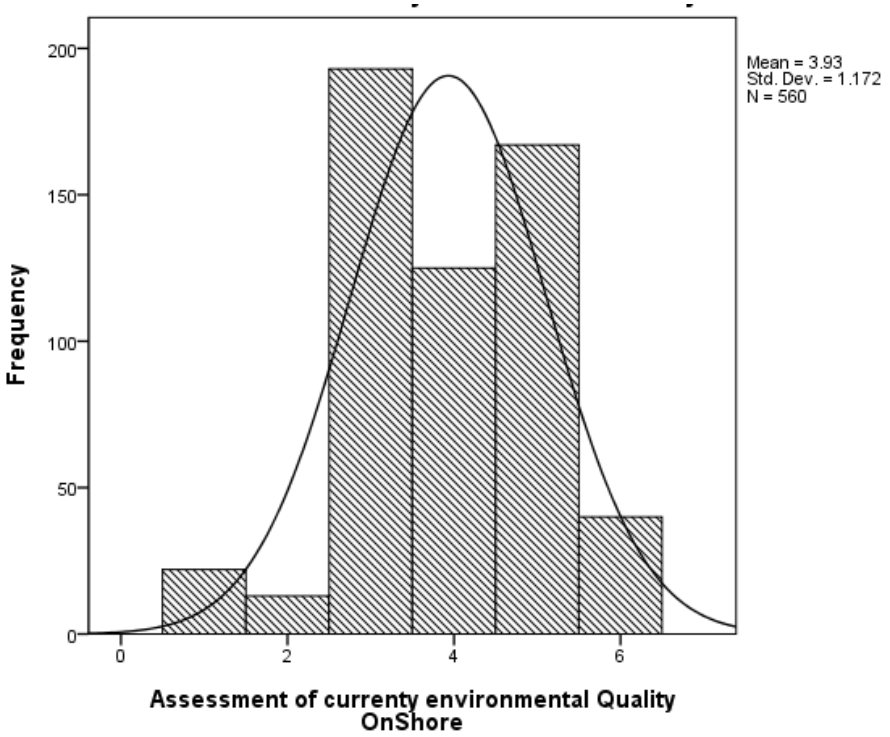
0
2
4
6
Evaluation of the biological functioning of the marine environment OffShore


Mean = 3.93
Std. Dev. = 1.172
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Frequency
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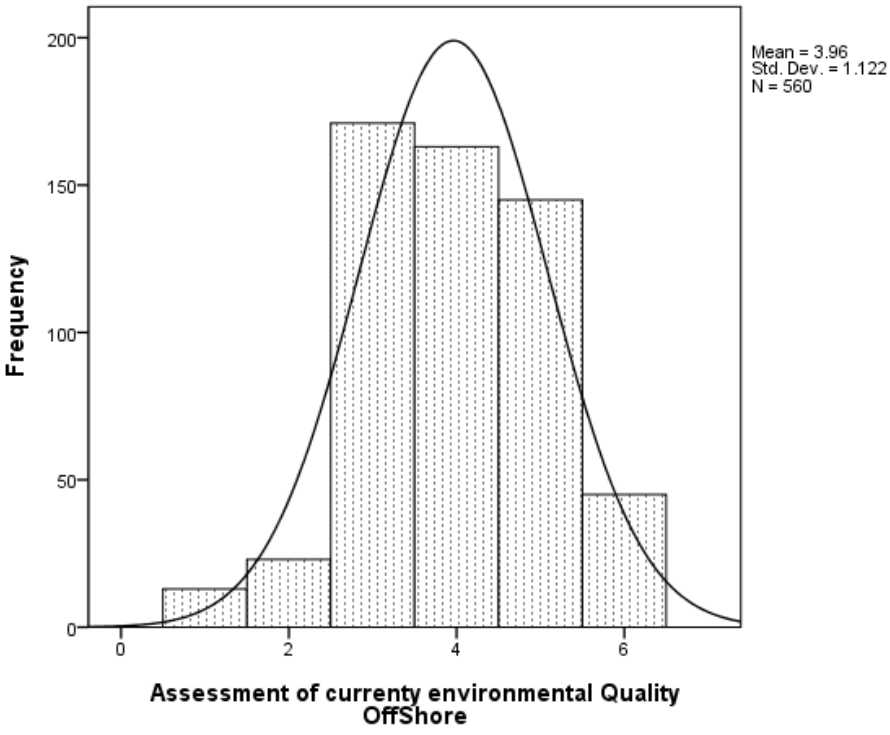
2
4
6
Assessment of currenty environmental Quality
OnShore


Mean = 3.96
Std. Dev. = 1.122
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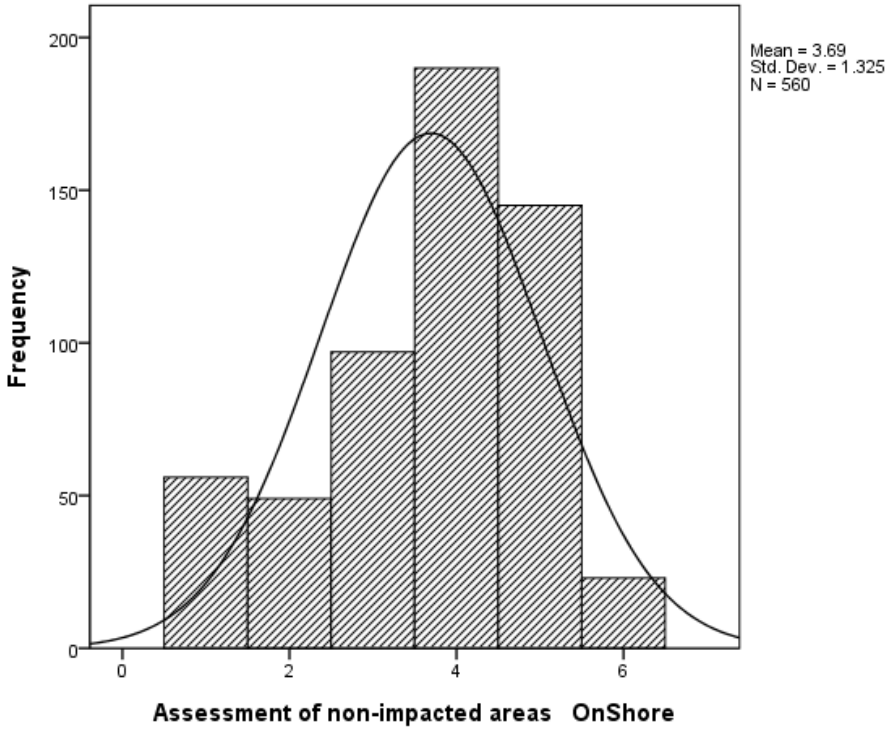
2
4
6
Assessment of currenty environmental Quality
OffShore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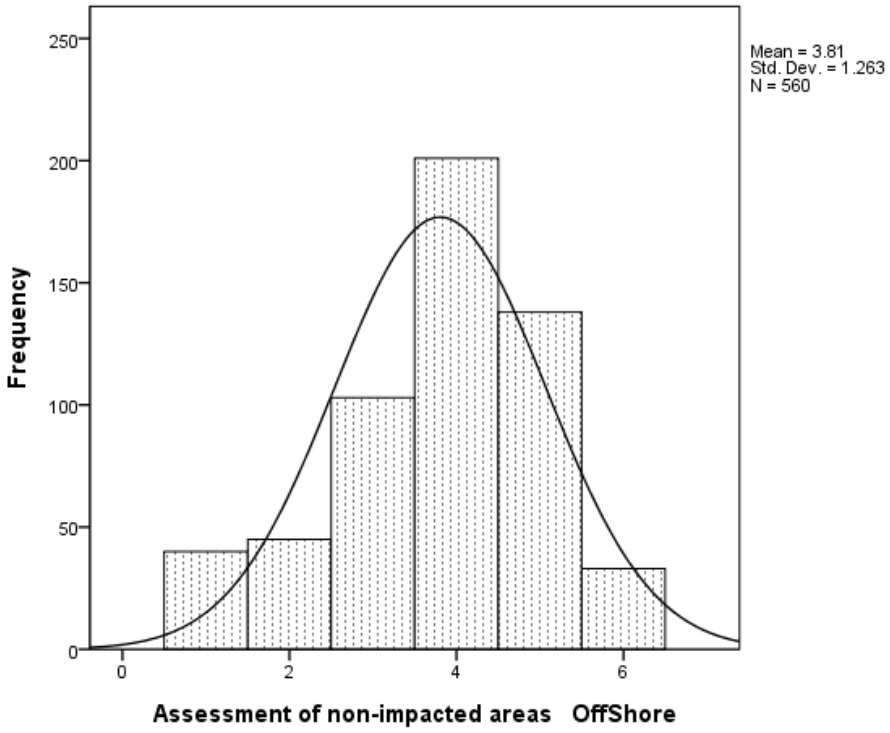
6
Assessment of non-impacted areas OnShore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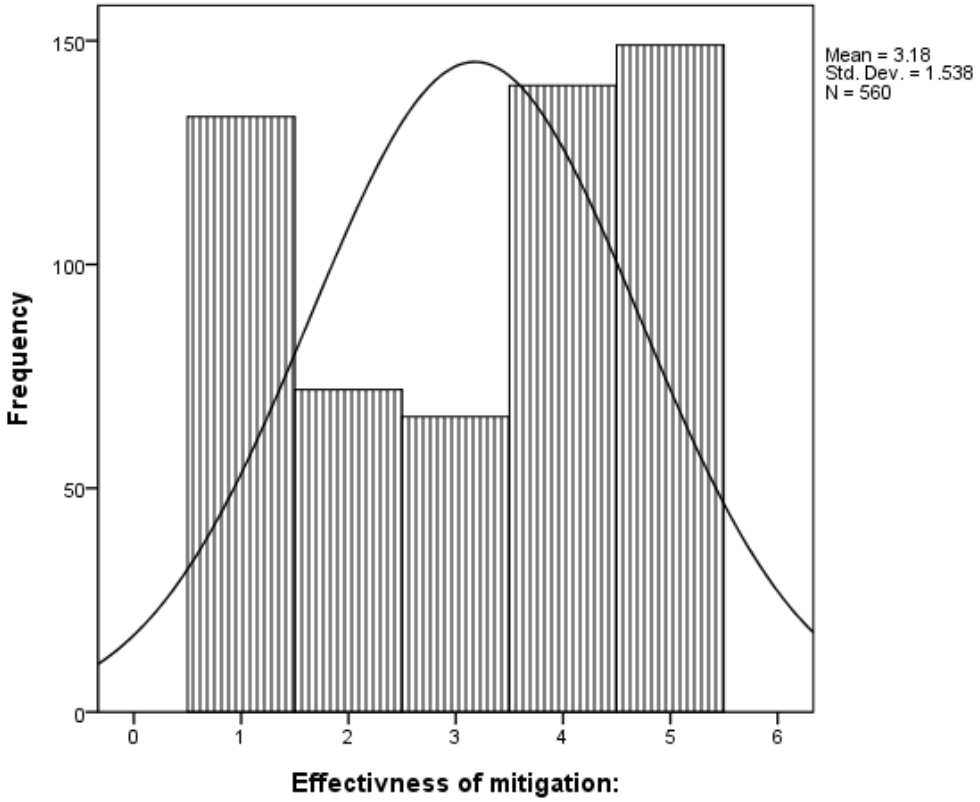
6
Assessment of non-impacted areas OffShore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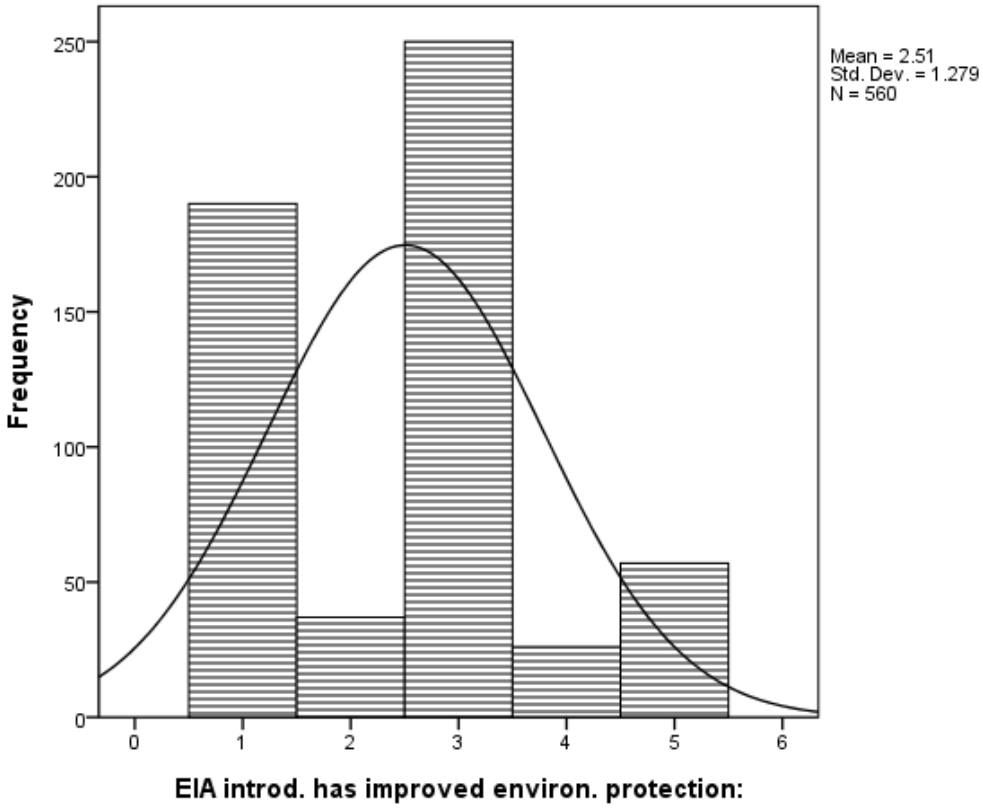
6
Effectivness of mitigation: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Std. Dev. = 1.279
N = 560
Frequency
250
200
150
100
50
0
0
1
2
3
4
5
6
EIA introd. has improved environ. protection:

Table 19: Effectiveness of mitigation:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	133	23.8	23.8	23.8
	Rarely	72	12.9	12.9	36.6
	Sometimes	66	11.8	11.8	48.4
	Usually	140	25.0	25.0	73.4
	Always	149	26.6	26.6	100.0
	Total	560	100.0	100.0	

Table 20: EIA introd. has improved environ. protection:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	190	33.9	33.9	33.9
	Strongly disagree	37	6.6	6.6	40.5
	agree	250	44.6	44.6	85.2
	uncertain	26	4.6	4.6	89.8
	disagree	57	10.2	10.2	100.0
	Total	560	100.0	100.0	

Table 21: Existing information is adequately incorp. into EIA:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	60	10.7	10.7	10.7
	Rarely	67	12.0	12.0	22.7
	Sometimes	68	12.1	12.1	34.8
	Usually	157	28.0	28.0	62.9
	Always	208	37.1	37.1	100.0
	Total	560	100.0	100.0	

Table 22: Assumptions used

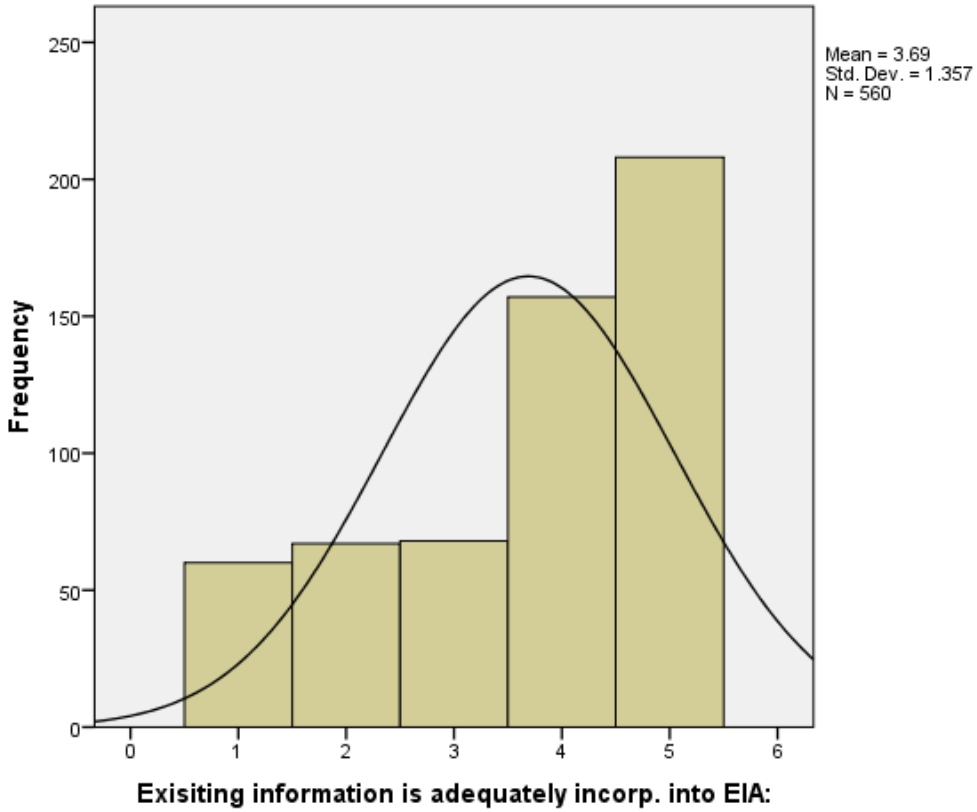
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	51	9.1	9.1	9.1
	rarely	43	7.7	7.7	16.8
	sometimes	201	35.9	35.9	52.7
	usually	167	29.8	29.8	82.5
	always	98	17.5	17.5	100.0
	Total	560	100.0	100.0	

Table 23: Limitation of data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	49	8.8	8.8	8.8
	rarely	53	9.5	9.5	18.2
	sometimes	200	35.7	35.7	53.9
	usually	191	34.1	34.1	88.0
	always	67	12.0	12.0	100.0
	Total	560	100.0	100.0	

Table 24: Uncertainties in analysis/assessment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	45	8.0	8.0	8.0
	rarely	73	13.0	13.0	21.1
	sometimes	192	34.3	34.3	55.4
	usually	147	26.3	26.3	81.6
	always	103	18.4	18.4	100.0
	Total	560	100.0	100.0	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100
50
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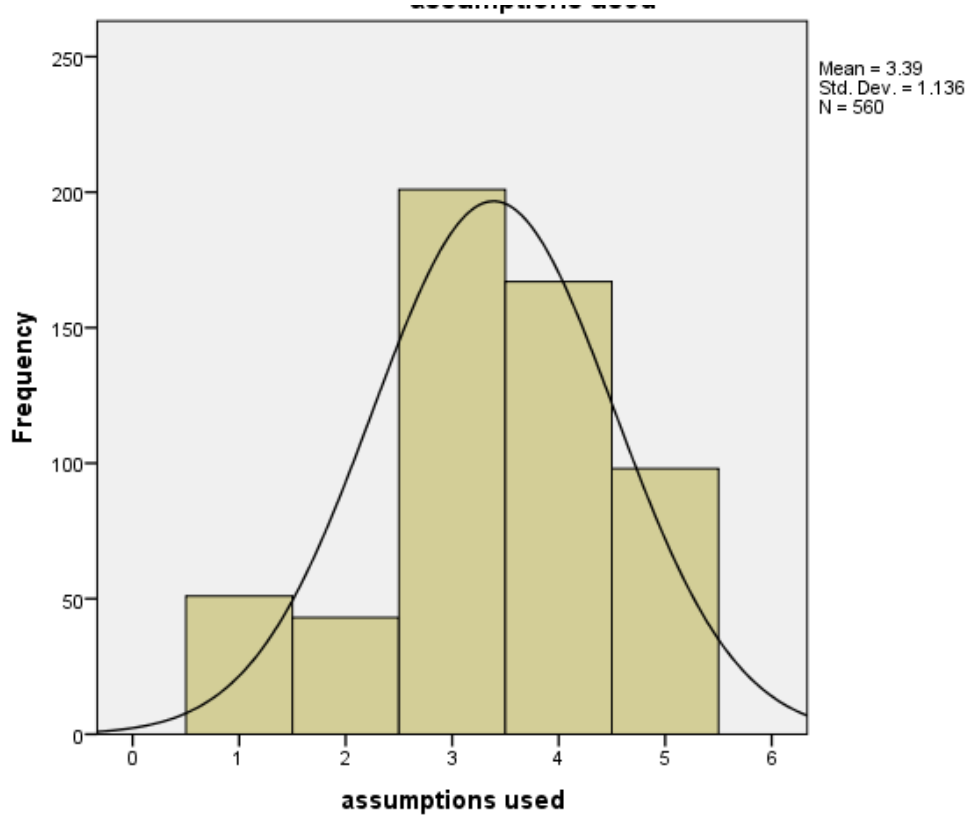
0
1
2
3
4
5
6
Exisiting information is adequately incorp. into EIA: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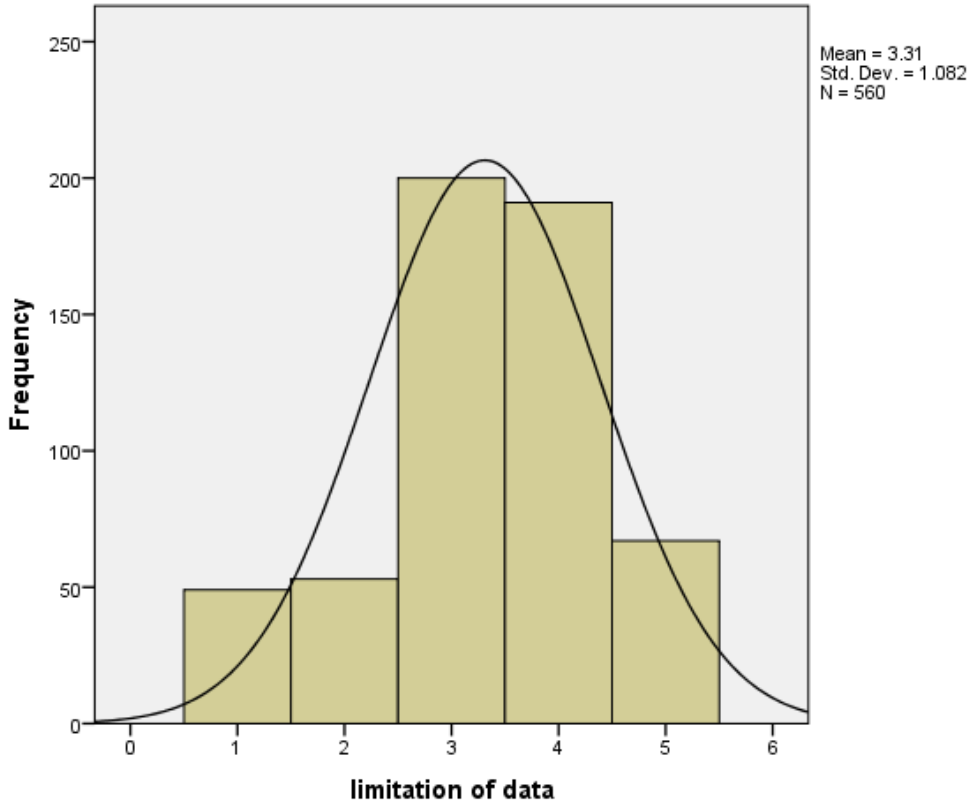
1
2
3
4
5
6
assumptions used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Std. Dev. = 1.082
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Frequency
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150
100
50
0
0
1
2
3
4
5
6
limitation of data

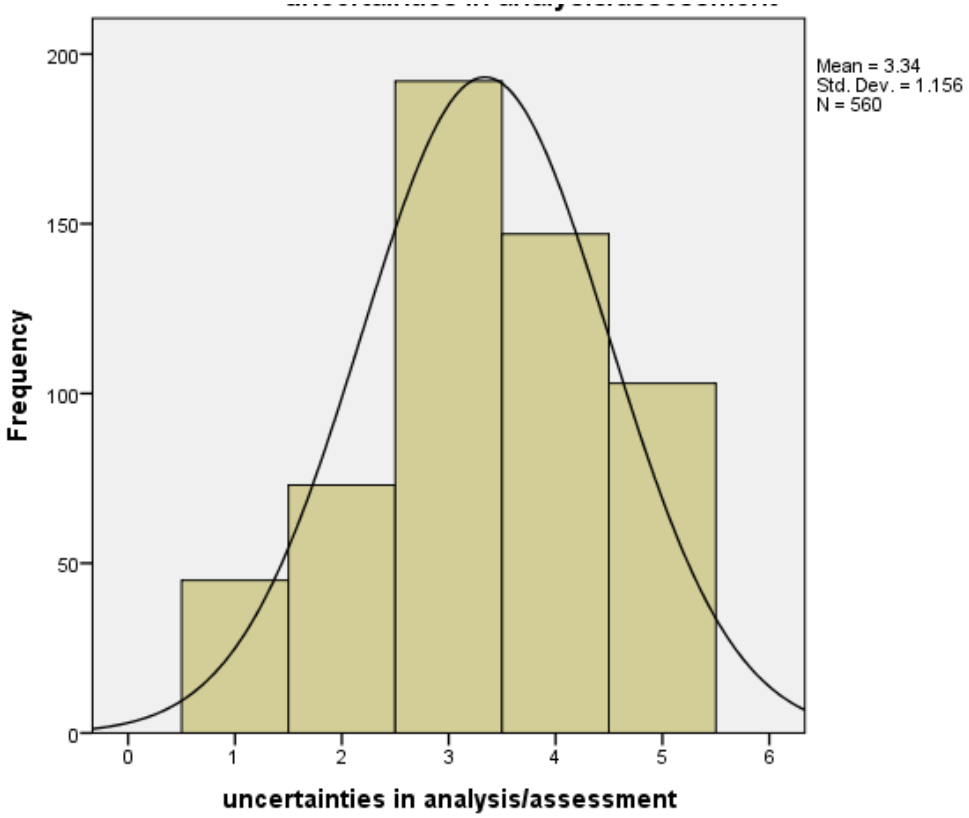

Mean = 3.34
Std. Dev. = 1.156
N = 560
Frequency
200
150
100
50
0
0
1
2
3
4
5
6
uncertainties in analysis/assessment

Table 25: Presentation of information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	151	27.0	27.0	27.0
	very poor	102	18.2	18.2	45.2
	adequate	182	32.5	32.5	77.7
	good	72	12.9	12.9	90.5
	very good	53	9.5	9.5	100.0
	Total	560	100.0	100.0	

Table 26: Organization of information on and description of approach

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	135	24.1	24.1	24.1
	very poor	90	16.1	16.1	40.2
	adequate	177	31.6	31.6	71.8
	good	109	19.5	19.5	91.3
	very good	49	8.8	8.8	100.0
	Total	560	100.0	100.0	

Table 27: Consultation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	164	29.3	29.3	29.3
	very poor	104	18.6	18.6	47.9
	Adequate	139	24.8	24.8	72.7
	Good	85	15.2	15.2	87.9
	very good	68	12.1	12.1	100.0
	Total	560	100.0	100.0	

Table 28: Project overview

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	132	23.6	23.6	23.6
	very poor	98	17.5	17.5	41.1
	adequate	180	32.1	32.1	73.2
	good	81	14.5	14.5	87.7
	very good	69	12.3	12.3	100.0
	Total	560	100.0	100.0	

Table 29: Physical requirements and project schedule

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	121	21.6	21.6	21.6
	very poor	104	18.6	18.6	40.2
	adequate	179	32.0	32.0	72.1
	good	91	16.3	16.3	88.4
	very good	65	11.6	11.6	100.0
	Total	560	100.0	100.0	

Table 30: Processes and procedures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	158	28.2	28.2	28.2
	very poor	81	14.5	14.5	42.7
	adequate	141	25.2	25.2	67.9
	good	109	19.5	19.5	87.3
	very good	71	12.7	12.7	100.0
	Total	560	100.0	100.0	

Table 31: Residuals emissions and wastes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	137	24.5	24.5	24.5
	very poor	70	12.5	12.5	37.0
	adequate	169	30.2	30.2	67.1
	good	112	20.0	20.0	87.1
	very good	72	12.9	12.9	100.0
	Total	560	100.0	100.0	

Table 32: Environmental description: geographical extent - appropriately focus - Baseline conditions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	125	22.3	22.3	22.3
	very poor	71	12.7	12.7	35.0
	Adequate	175	31.3	31.3	66.3
	Good	108	19.3	19.3	85.5
	very good	81	14.5	14.5	100.0
	Total	560	100.0	100.0	

Table 33: Assessment effects on: human population, fauna and flora, soil including seabed and subsoil, water including the sea and aquifers under the seabed, air and climate, landscape and seascape, tangible property (where necessary), architecture and archaeological

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	127	22.7	22.7	22.7
	very poor	81	14.5	14.5	37.1
	adequate	169	30.2	30.2	67.3
	good	111	19.8	19.8	87.1
	very good	72	12.9	12.9	100.0
	Total	560	100.0	100.0	

Table 34: Potential risks of spills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	132	23.6	23.6	23.6
	very poor	67	12.0	12.0	35.5
	adequate	170	30.4	30.4	65.9
	good	101	18.0	18.0	83.9
	very good	90	16.1	16.1	100.0
	Total	560	100.0	100.0	

Table 35: Assessment of the magnitude of environmental changes considering: nature, locations, and duration of change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	117	20.9	20.9	20.9
	very poor	82	14.6	14.6	35.5
	adequate	155	27.7	27.7	63.2
	Good	159	28.4	28.4	91.6
	very good	47	8.4	8.4	100.0
	Total	560	100.0	100.0	

Table 36: Evaluation of the significance of potential impacts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	133	23.8	23.8	23.8
	very poor	59	10.5	10.5	34.3
	Adequate	168	30.0	30.0	64.3
	Good	109	19.5	19.5	83.8
	very good	91	16.3	16.3	100.0
	Total	560	100.0	100.0	

Table 37: Alternatives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	137	24.5	24.5	24.5
	very poor	46	8.2	8.2	32.7
	Adequate	158	28.2	28.2	60.9
	Good	152	27.1	27.1	88.0
	very good	67	12.0	12.0	100.0
	Total	560	100.0	100.0	

Table 38: Mitigation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	150	26.8	26.8	26.8
	very poor	51	9.1	9.1	35.9
	adequate	147	26.3	26.3	62.1
	good	144	25.7	25.7	87.9
	very good	68	12.1	12.1	100.0
	Total	560	100.0	100.0	

Table 39: Description of environmental management (EMS and project specific actions)

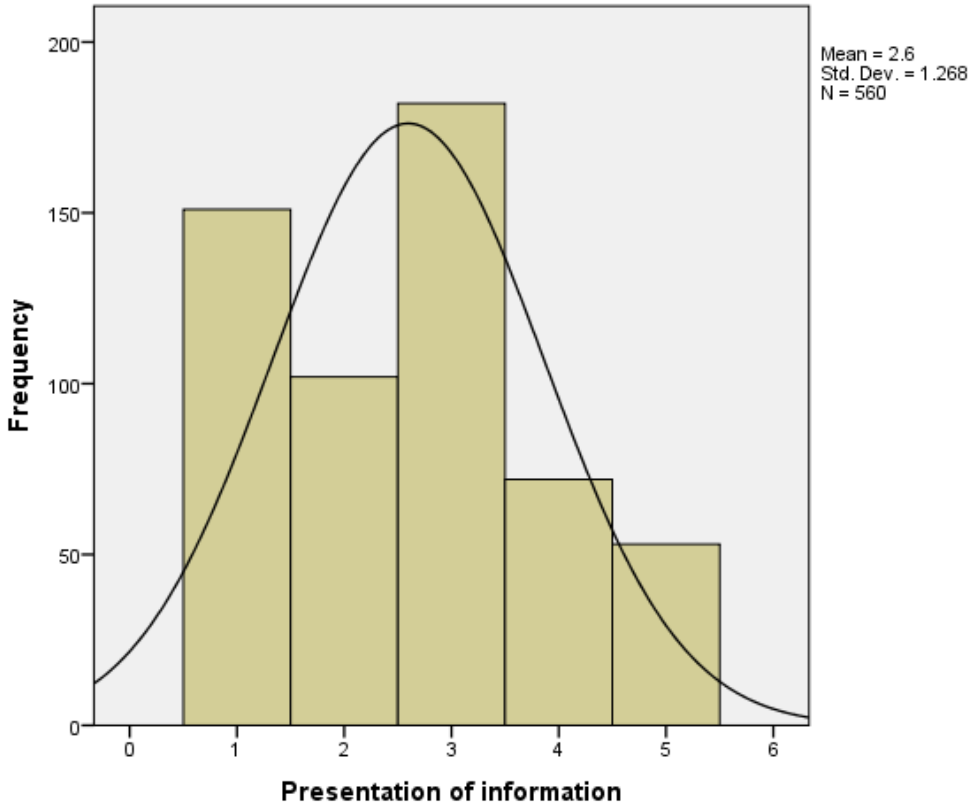
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	151	27.0	27.0	27.0
	very poor	52	9.3	9.3	36.3
	adequate	162	28.9	28.9	65.2
	good	154	27.5	27.5	92.7
	very good	41	7.3	7.3	100.0
	Total	560	100.0	100.0	

Table 40: Monitoring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	140	25.0	25.0	25.0
	very poor	49	8.8	8.8	33.8
	Adequate	169	30.2	30.2	63.9
	good	147	26.3	26.3	90.2
	very good	55	9.8	9.8	100.0
	Total	560	100.0	100.0	

Table 41: Non-technical summary

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	152	27.1	27.1	27.1
	very poor	140	25.0	25.0	52.1
	adequate	132	23.6	23.6	75.7
	good	80	14.3	14.3	90.0
	very good	56	10.0	10.0	100.0
	Total	560	100.0	100.0	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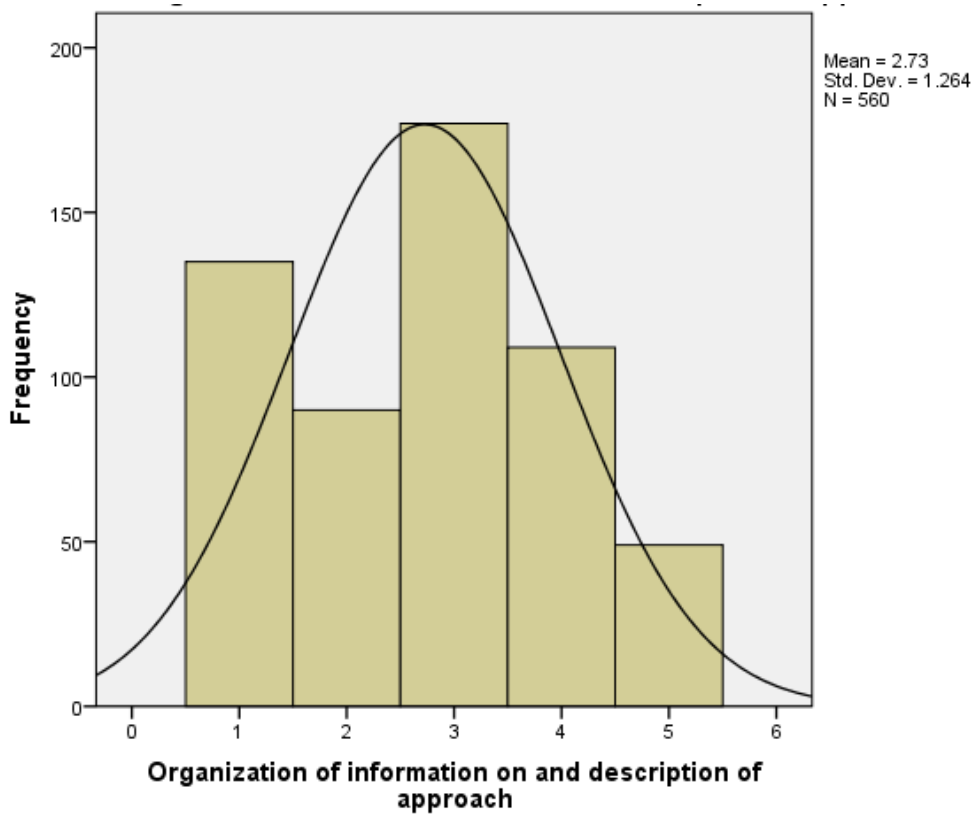
1
2
3
4
5
6
Presentation of information


Mean = 2.73
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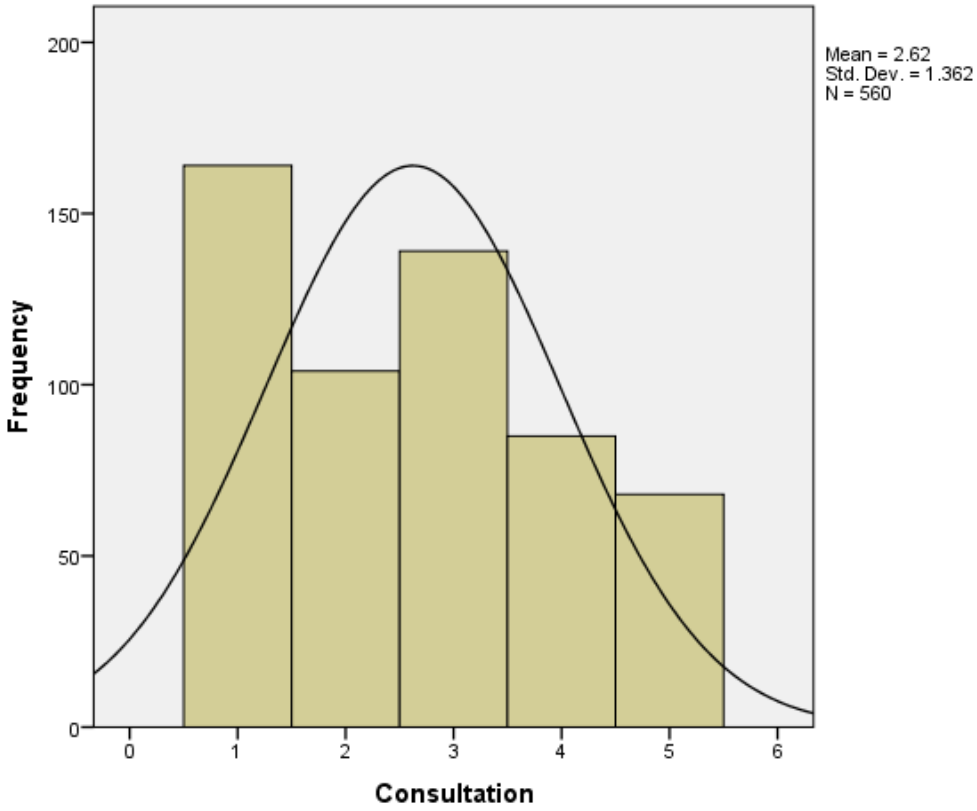
3
4
5
6
Organization of information on and description of approach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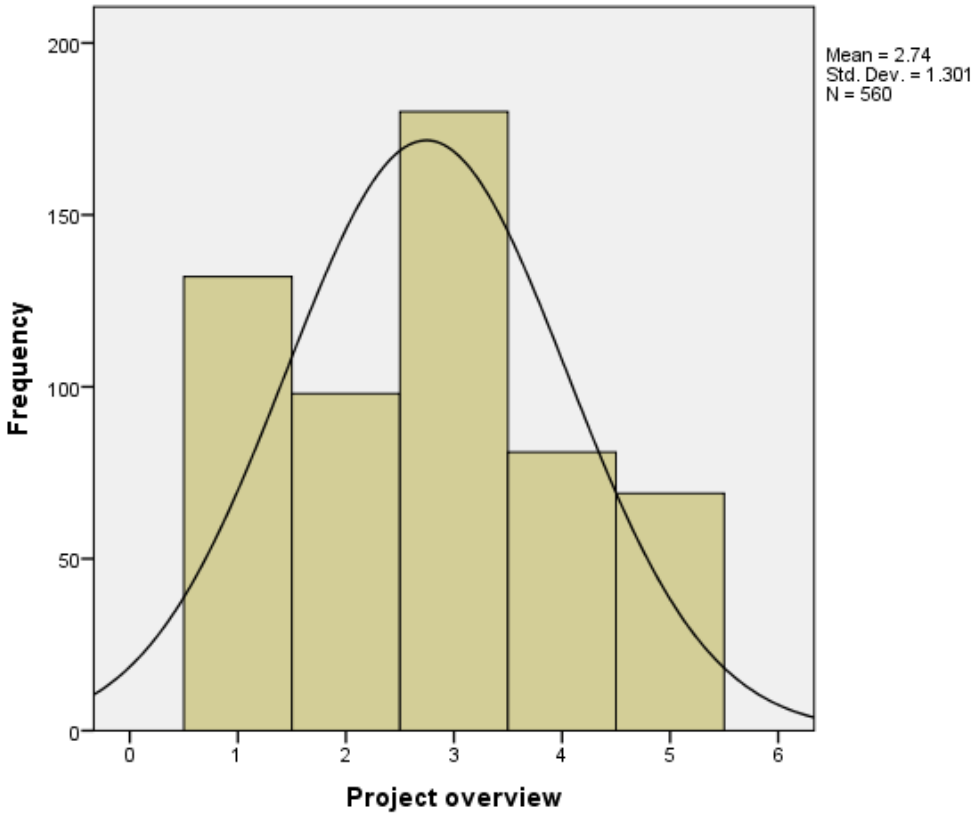
4
5
6
Consultation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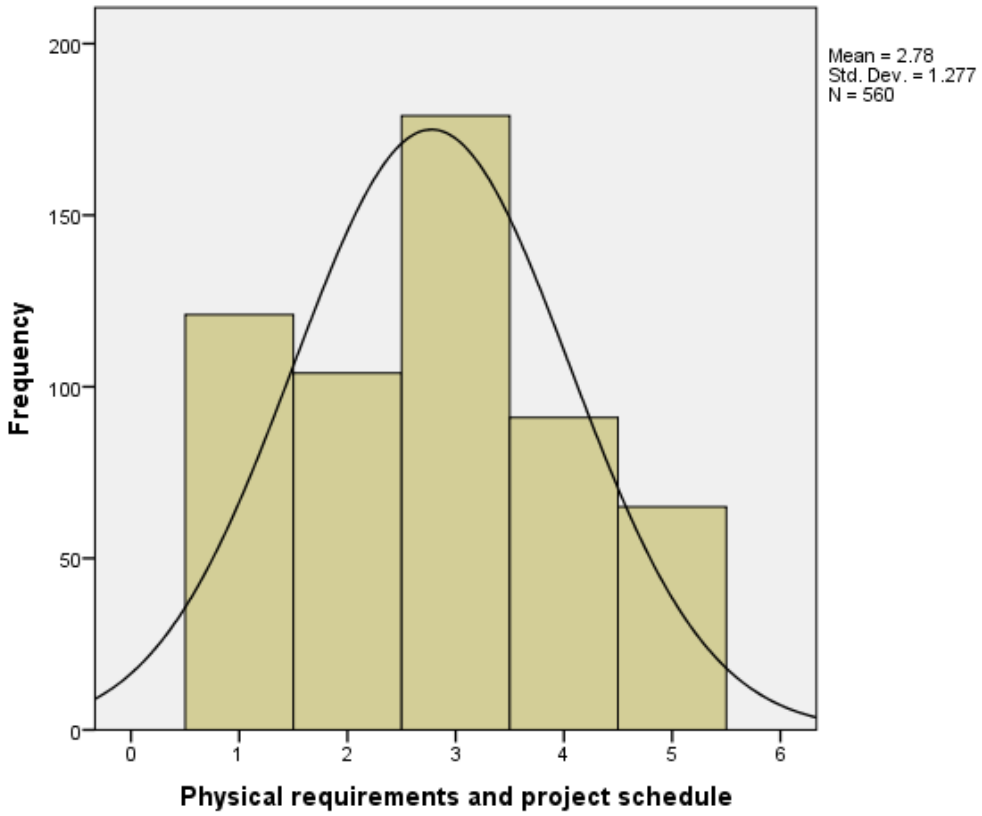
1
2
3
4
5
6
Project overview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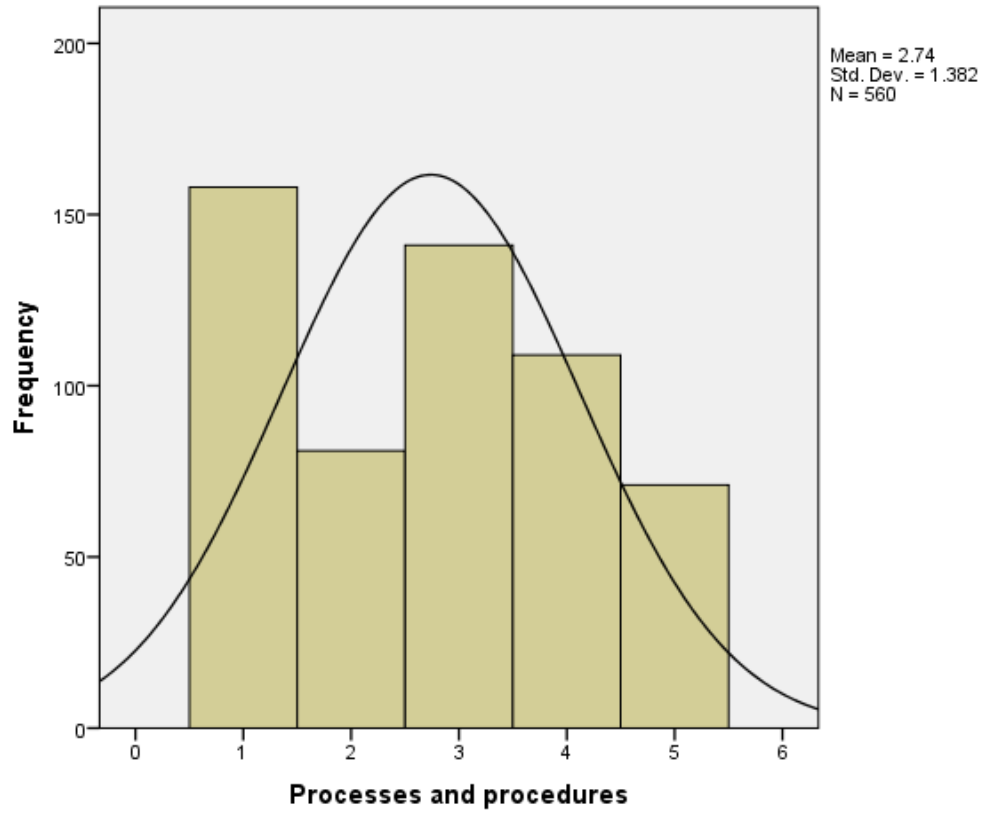
1
2
3
4
5
6
Physical requirements and project schedule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4
5
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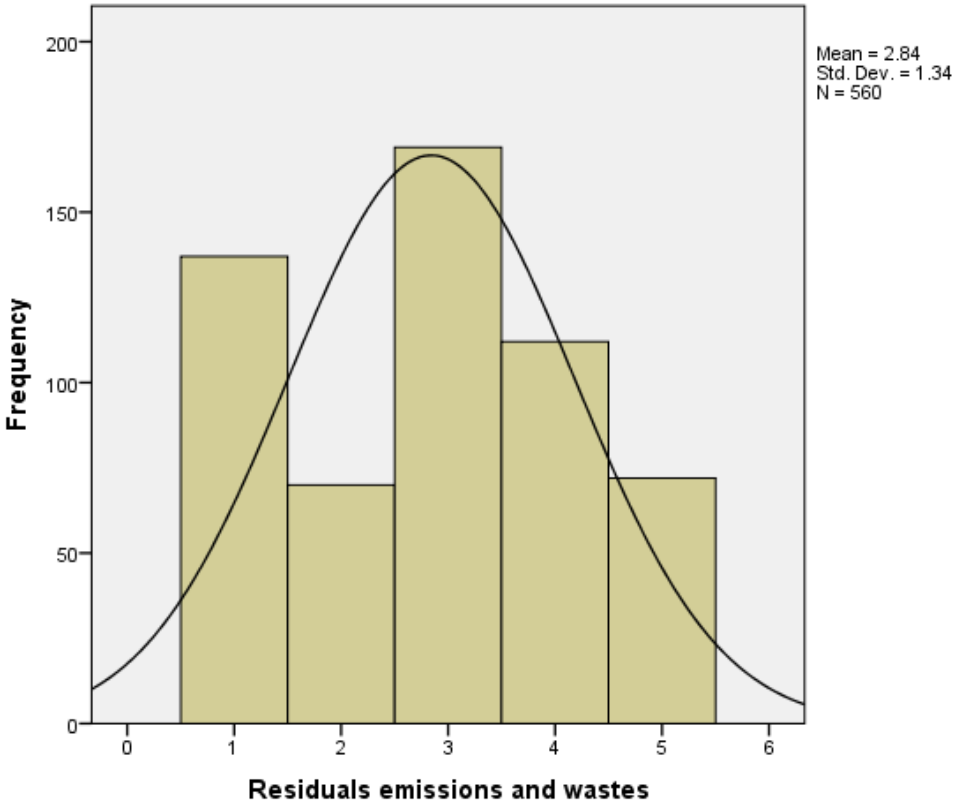
Processes and procedures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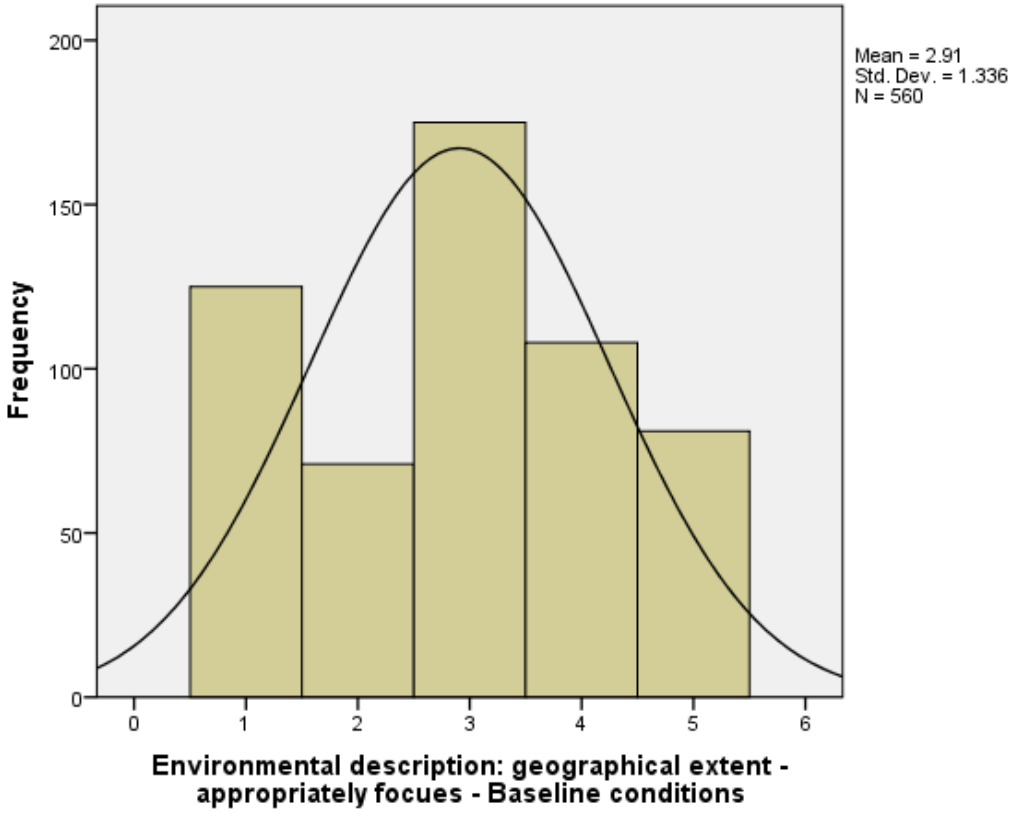
2
3
4
5
6
Residuals emissions and wastes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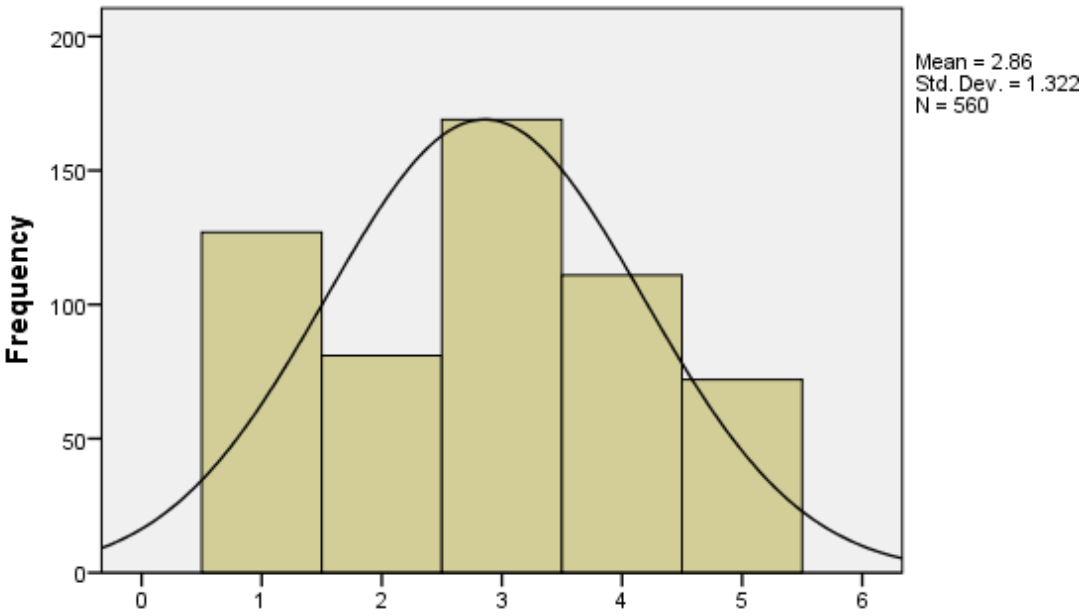
4
5
6
Environmental description: geographical extent - appropriately focues - Baseline conditions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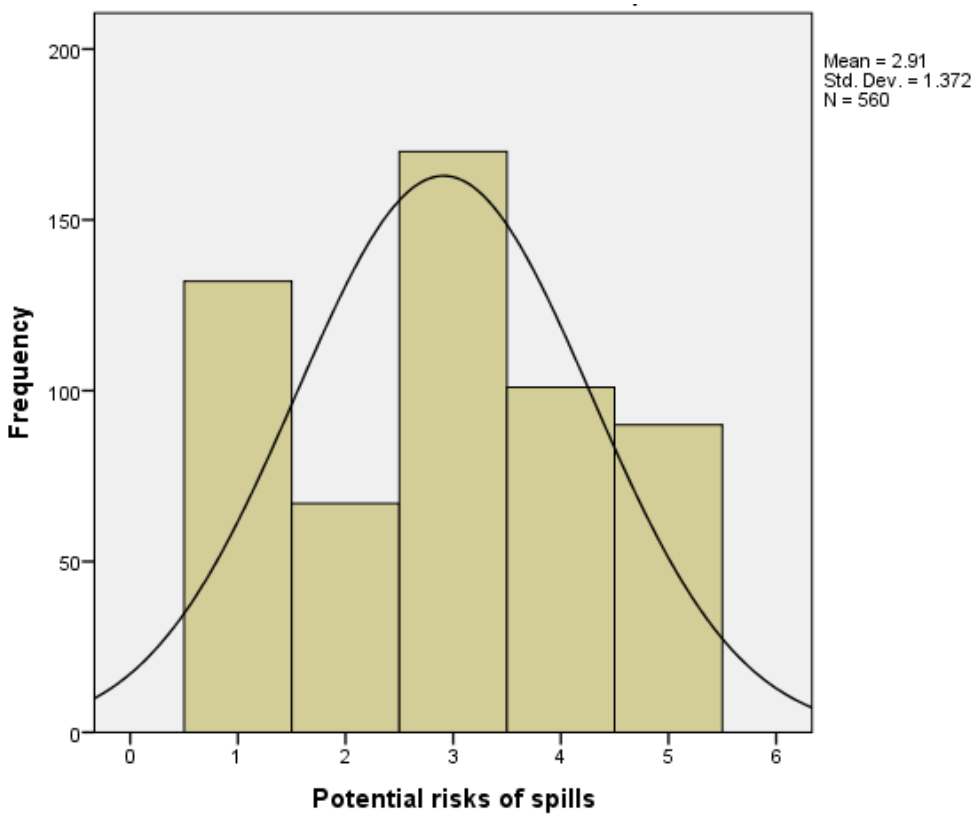
3
4
5
6
Assessment effects on: human population, fauna and flora, soil including seabed and suboil, water including the sea and aquifers under the seabed, air and climate, landscape and seascape, tangible property (where necessary), architecture and archaelogical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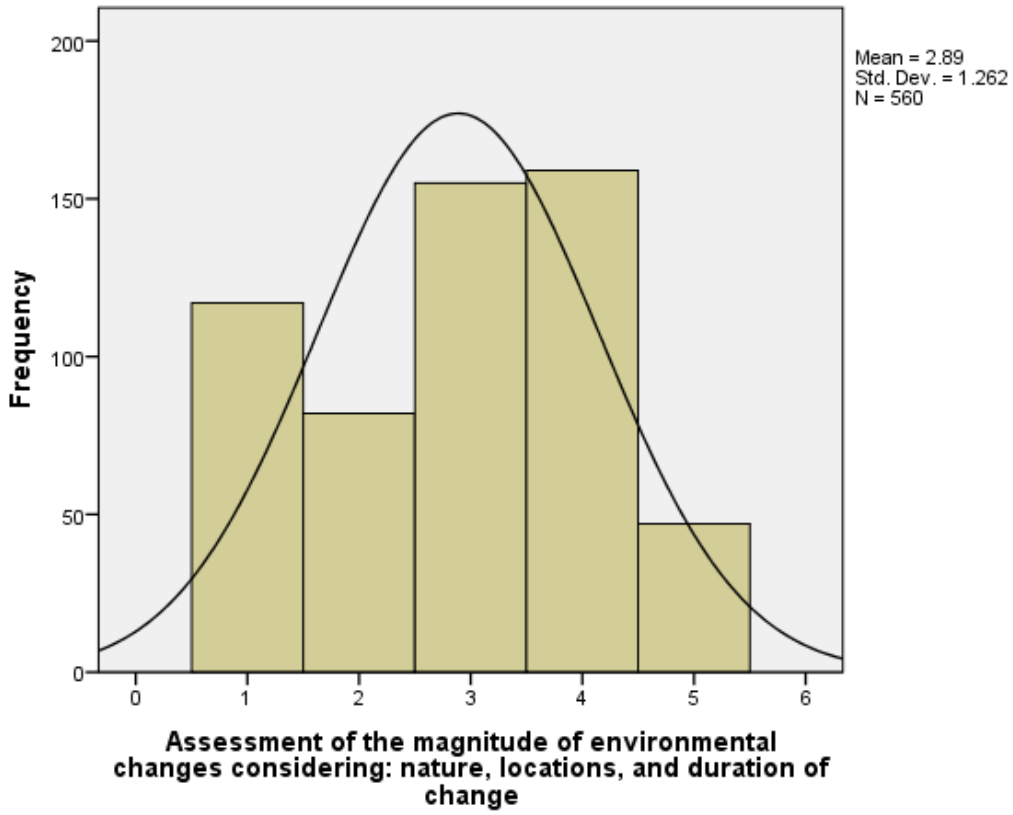
2
3
4
5
6
Potential risks of spills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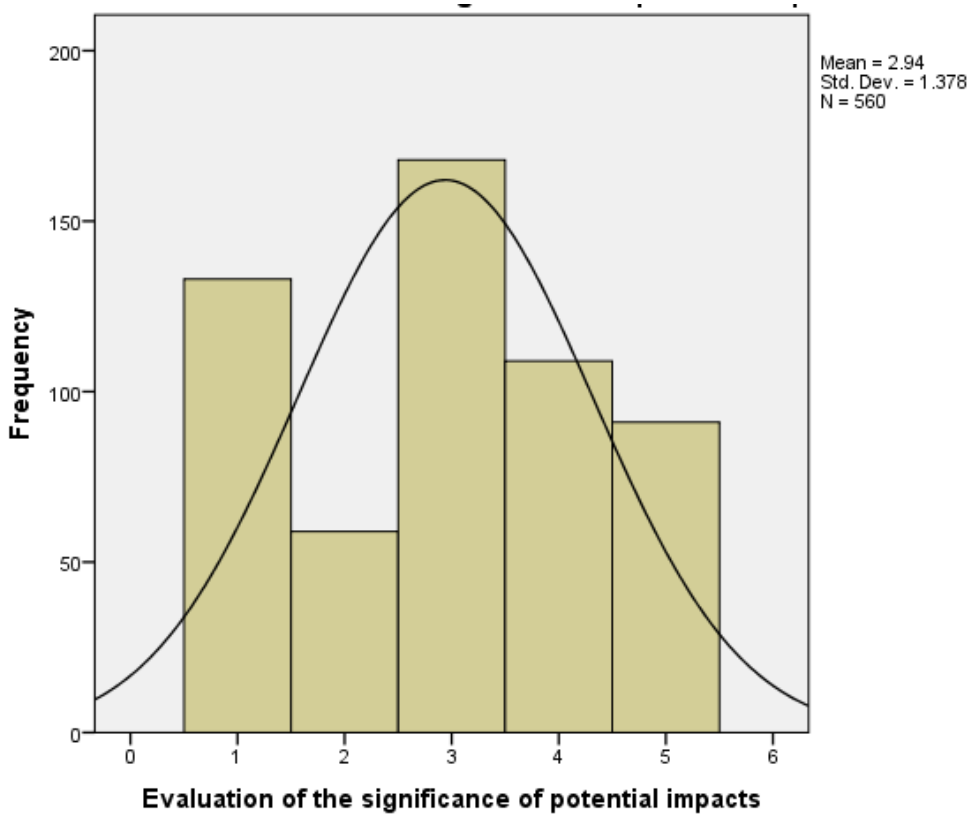
4
5
6
Assessment of the magnitude of environmental changes considering: nature, locations, and duration of change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Std. Dev. = 1.378
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Frequency
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50
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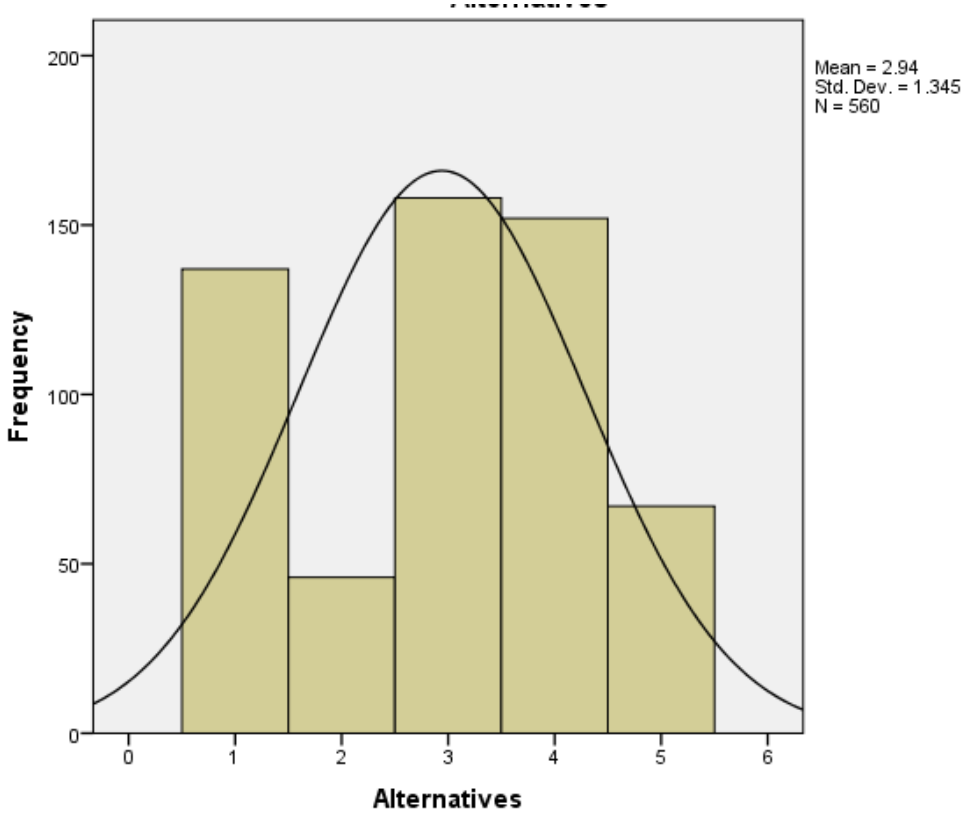
1
2
3
4
5
6
Evaluation of the significance of potential impacts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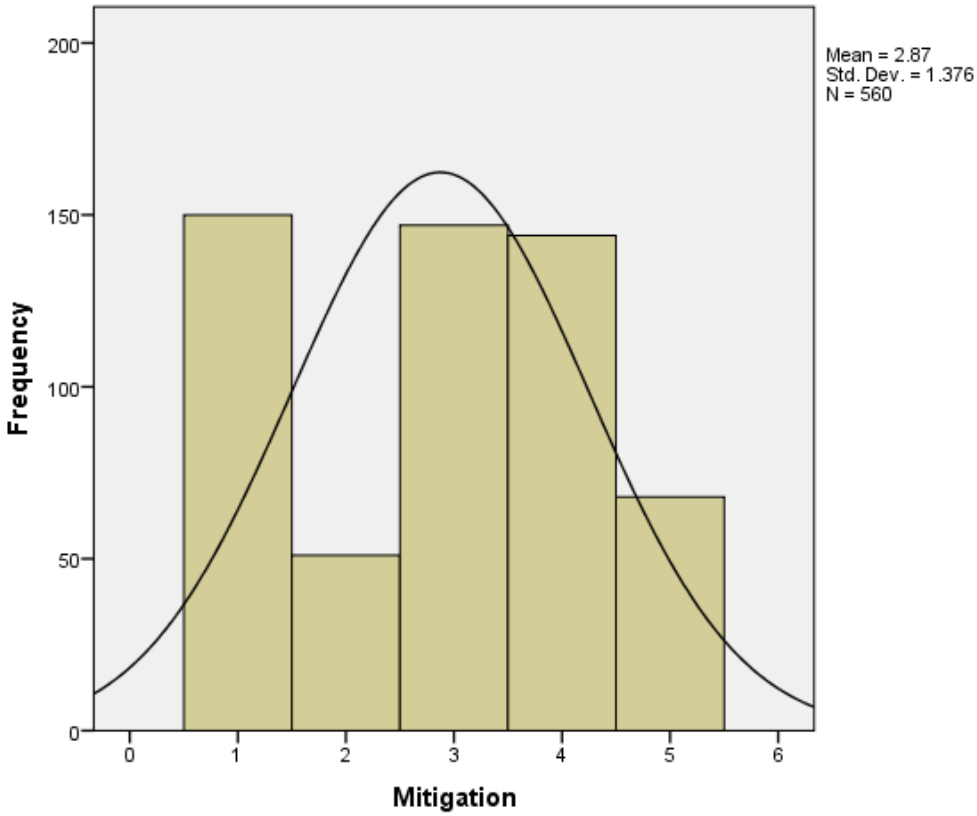
Frequency
Alternatives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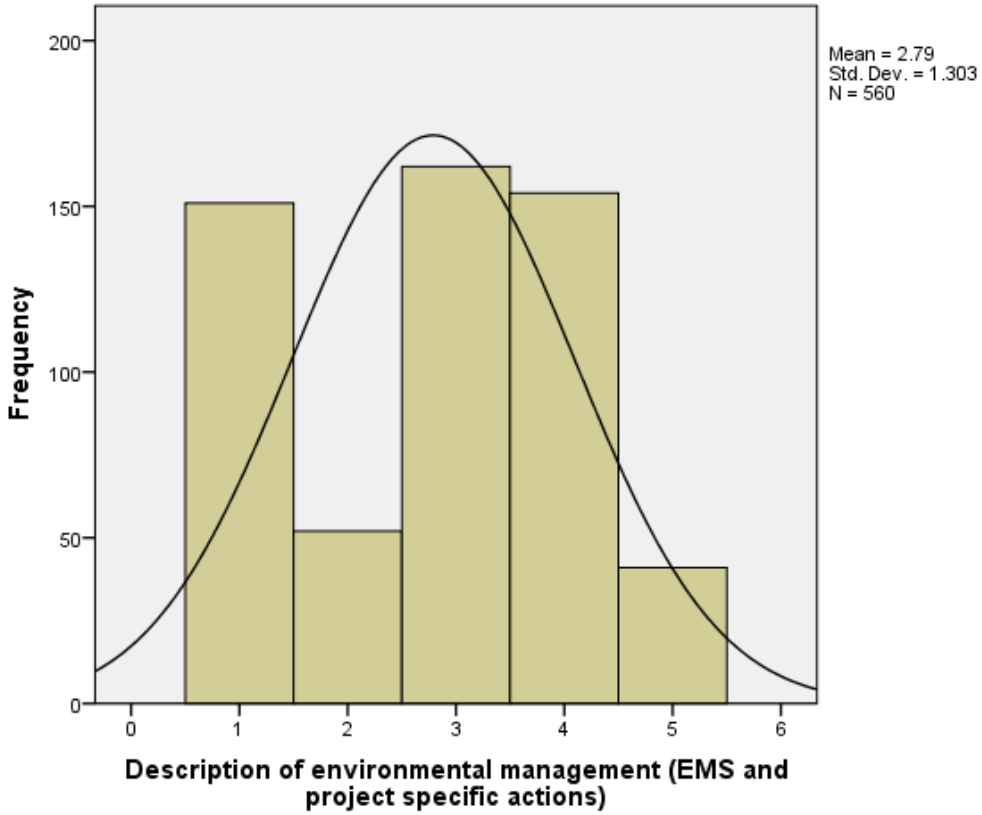
Frequency
Mitigation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1
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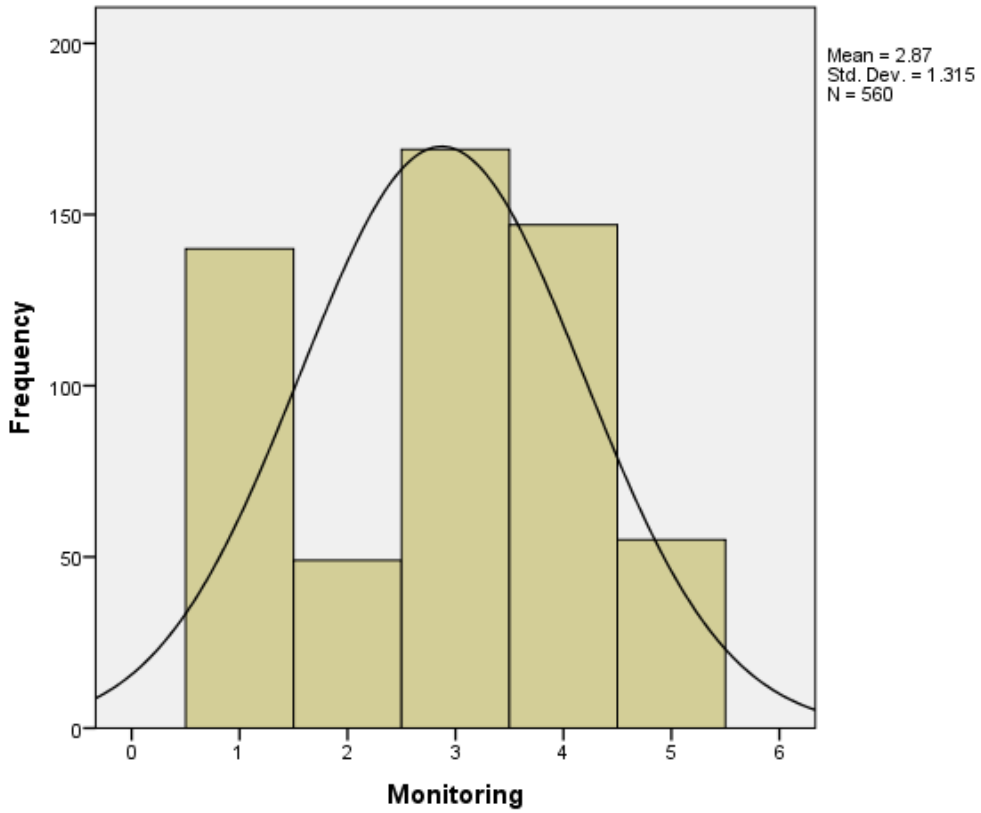
3
4
5
6
Description of environmental management (EMS and project specific actions)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4
5
6
Monitoring

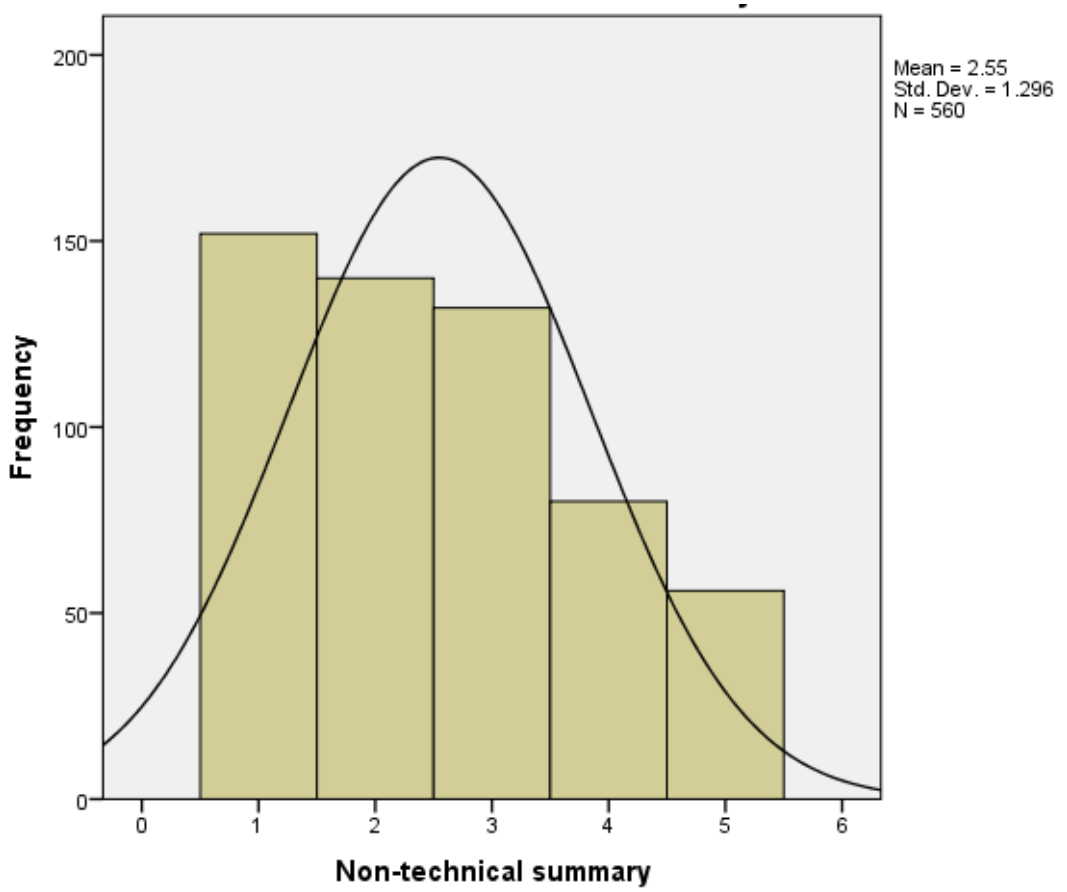


Table 42: Extent of env. statements produced been consistent in quality:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Significant Variation	202	36.1	36.1	36.1
	Moderate Variation	206	36.8	36.8	72.9
	Minor variation	79	14.1	14.1	87.0
	Negligible variation	56	10.0	10.0	97.0
	No variation	17	3.0	3.0	100.0
	Total	560	100.0	100.0	

Table 43: Have environmental statements improved over time:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No improvement	55	9.8	9.8	9.8
	Negligible improvement	87	15.5	15.5	25.4
	Minor improvement	135	24.1	24.1	49.5
	Moderate Improvement	182	32.5	32.5	82.0
	Significant improvement	101	18.0	18.0	100.0
	Total	560	100.0	100.0	

Table 44: In your perception, has the introduction of mandatory EIA changed the way projects are planned through their life-cycle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	don't know	37	6.6	6.6	6.6
	never	45	8.0	8.0	14.6
	rarely	82	14.6	14.6	29.3
	sometimes	155	27.7	27.7	57.0
	usually	177	31.6	31.6	88.6
	always	64	11.4	11.4	100.0
	Total	560	100.0	100.0	

Table 45: In your perception, has the introduction of mandatory EIA changed the way projects are managed through their life-cycle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	don't know	43	7.7	7.7	7.7
	Never	58	10.4	10.4	18.0
	Rarely	78	13.9	13.9	32.0
	sometimes	150	26.8	26.8	58.8
	usually	170	30.4	30.4	89.1
	always	61	10.9	10.9	100.0
	Total	560	100.0	100.0	

Table 46: In general, how useful do you perceive current environmental statements to the reference document during the construction of a project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	39	7.0	7.0	7.0
	not useful	65	11.6	11.6	18.6
	slightly useful	87	15.5	15.5	34.1
	moderately useful	191	34.1	34.1	68.2
	very useful	178	31.8	31.8	100.0
	Total	560	100.0	100.0	

Table 47: In general, how useful do you perceive current environmental statements to the working tool during the construction of a project

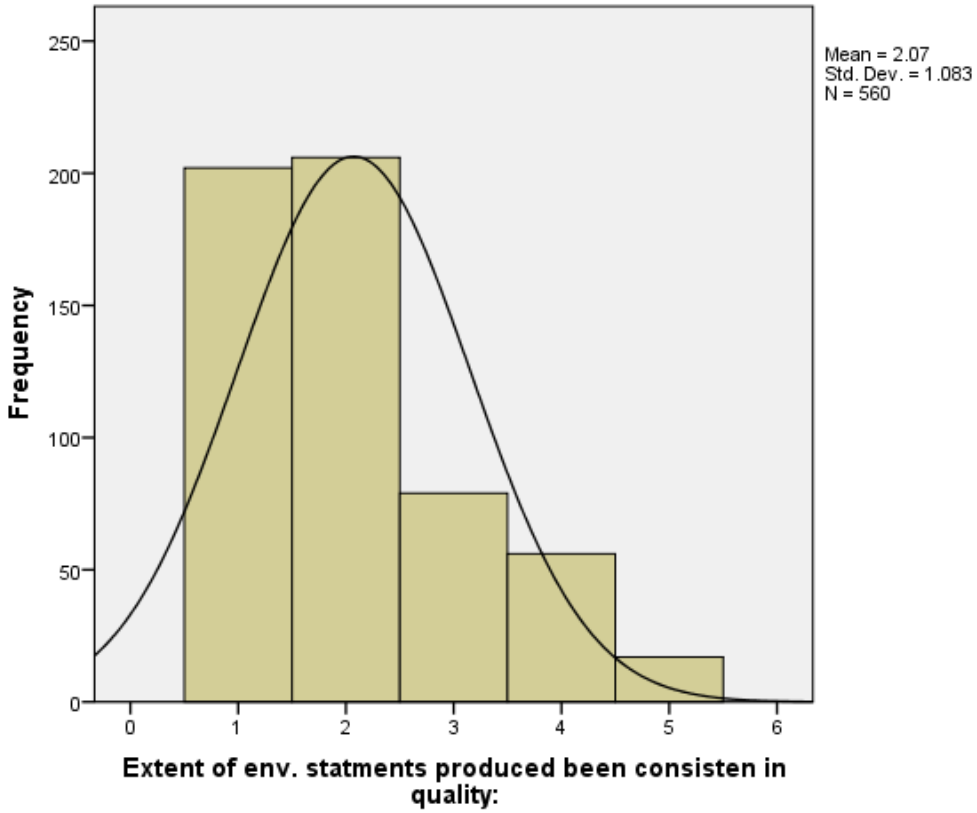
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	35	6.3	6.3	6.3
	not useful	40	7.1	7.1	13.4
	slightly useful	110	19.6	19.6	33.0
	moderately useful	200	35.7	35.7	68.8
	very useful	175	31.3	31.3	100.0
	Total	560	100.0	100.0	

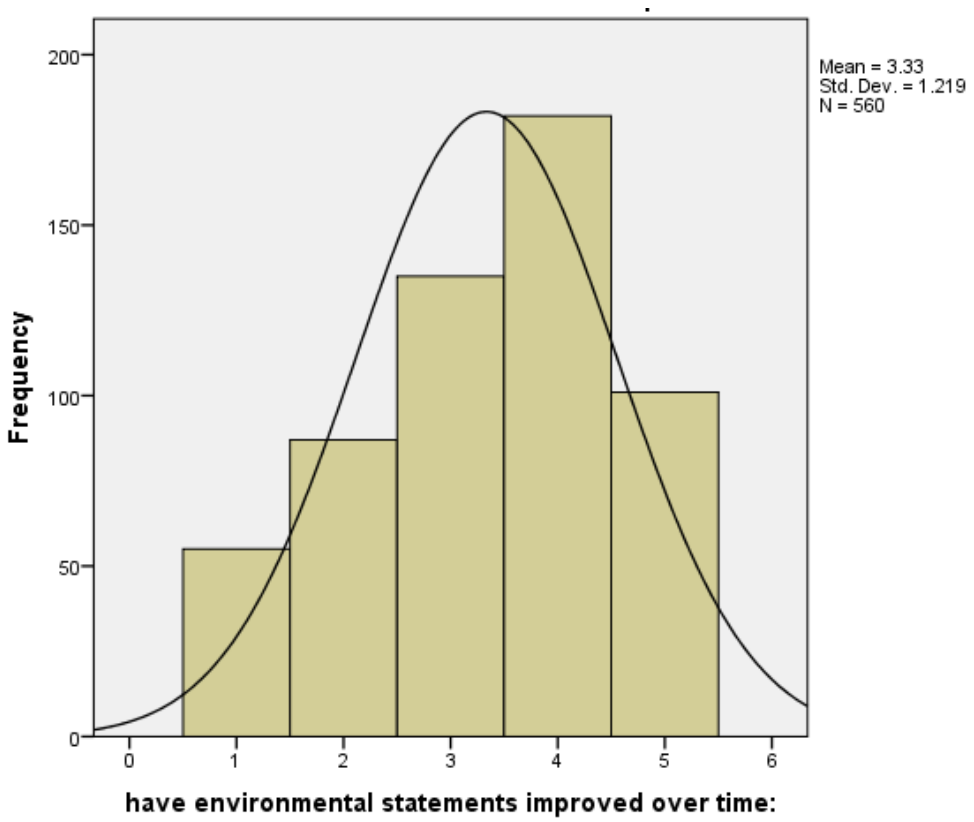
Table 48: In general, how useful do you perceive current environmental statements to the reference document during the operation of a project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	42	7.5	7.5	7.5
	not useful	53	9.5	9.5	17.0
	slightly useful	87	15.5	15.5	32.5
	moderately useful	198	35.4	35.4	67.9
	very useful	180	32.1	32.1	100.0
	Total	560	100.0	100.0	

Table 49: In general, how useful do you perceive current environmental statements to the working tool during the operation of a project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	38	6.8	6.8	6.8
	not useful	68	12.1	12.1	18.9
	slightly useful	83	14.8	14.8	33.8
	moderately useful	193	34.5	34.5	68.2
	very useful	178	31.8	31.8	100.0
	Total	560	100.0	100.0	




Mean = 3.33
Std. Dev. = 1.219
N = 560
Frequency
200
150
100
50
0
0
1
2
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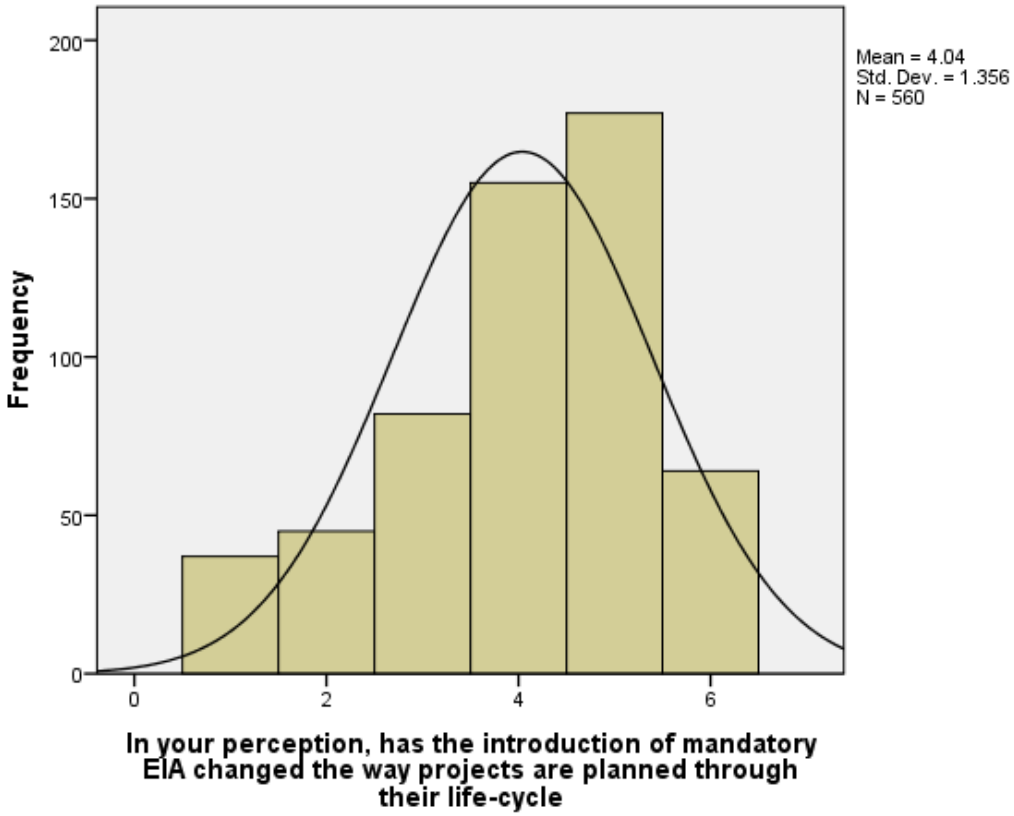
5
6
have environmental statements improved over time:


Mean = 4.04
Std. Dev. = 1.356
N = 560
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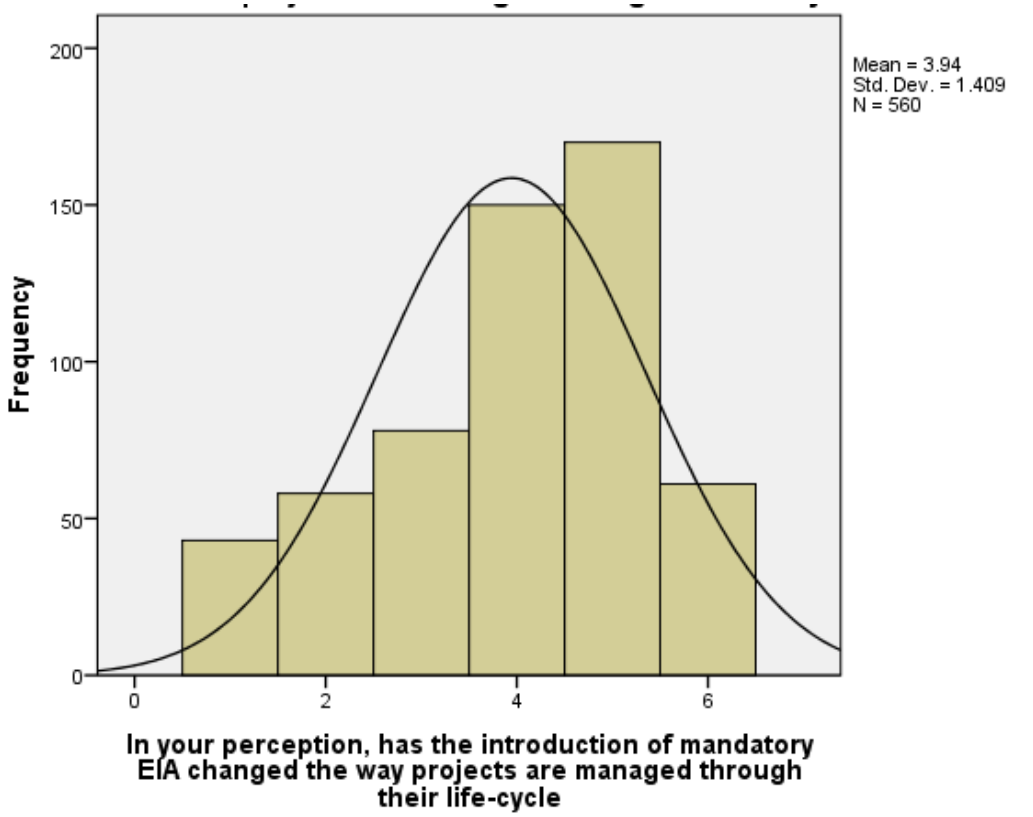
150
100
50
0
0
2
4
6
In your perception, has the introduction of mandatory EIA changed the way projects are planned through their life-cycle


Mean = 3.94
Std. Dev. = 1.409
N = 560
Frequency
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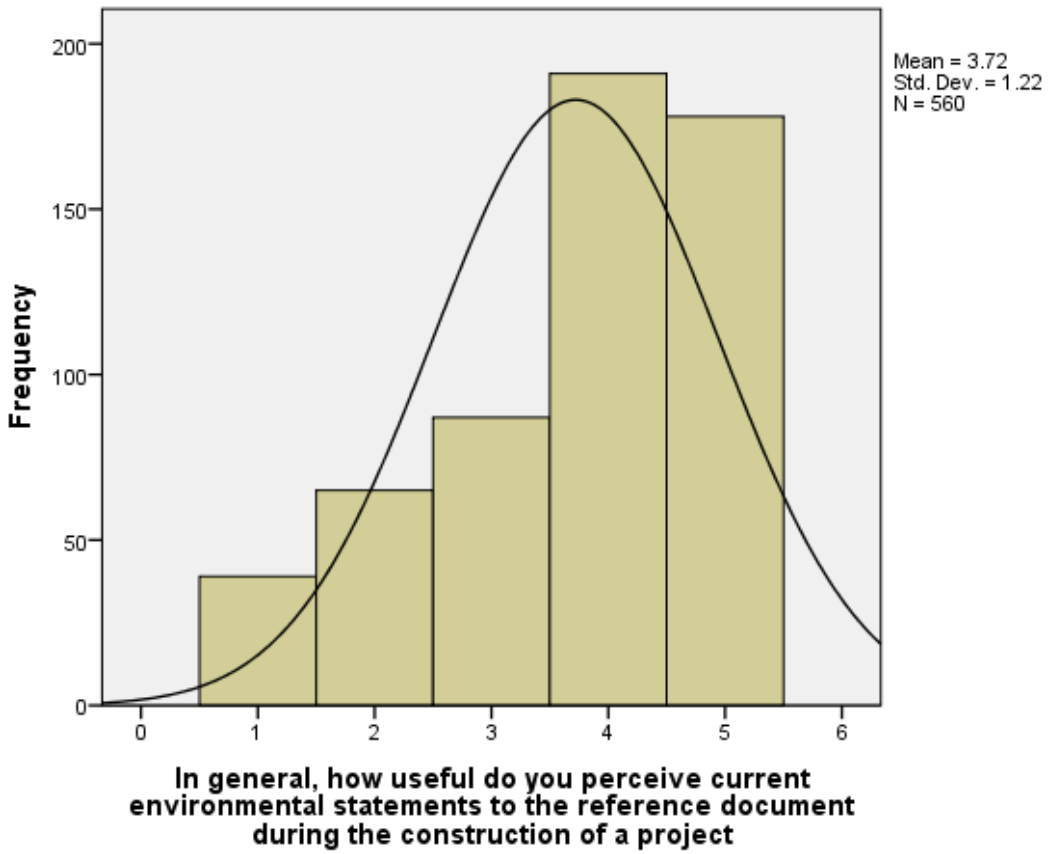
150
100
50
0
0
2
4
6
In your perception, has the introduction of mandatory EIA changed the way projects are managed through their life-cycle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Std. Dev. = 1.22
N = 560
Frequency
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150
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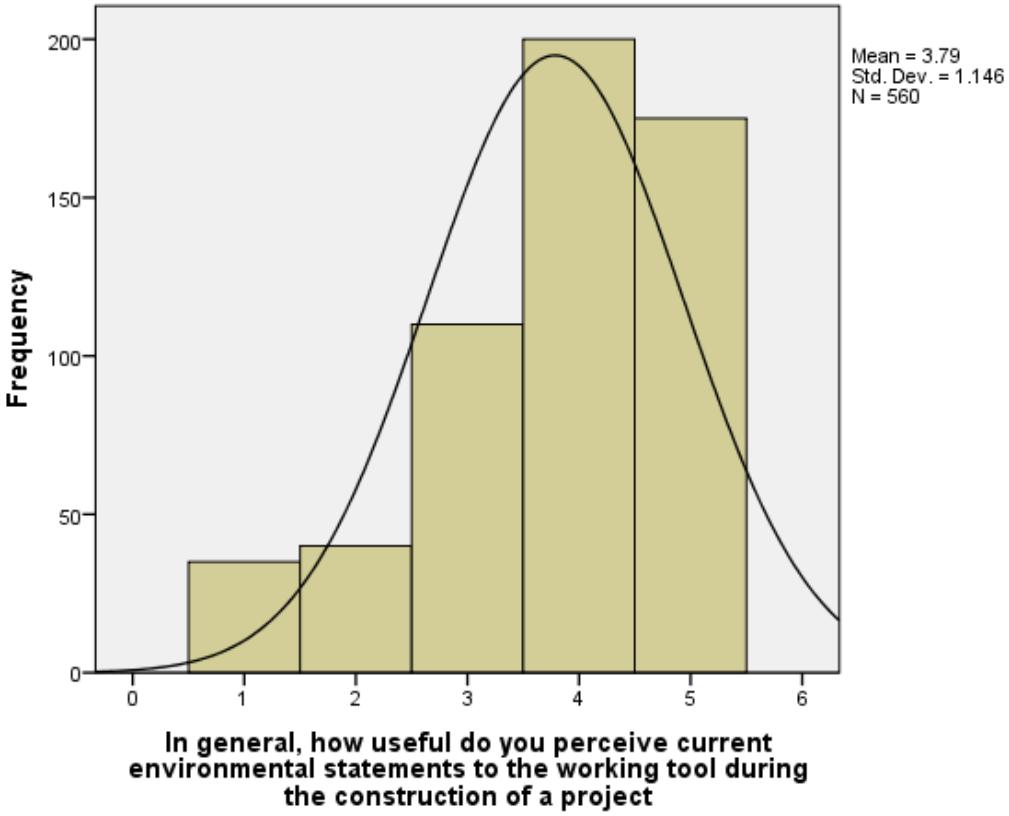
50
0
0
1
2
3
4
5
6
In general, how useful do you perceive current environmental statements to the reference document during the construction of a project


Mean = 3.79
Std. Dev. = 1.146
N = 560
Frequency
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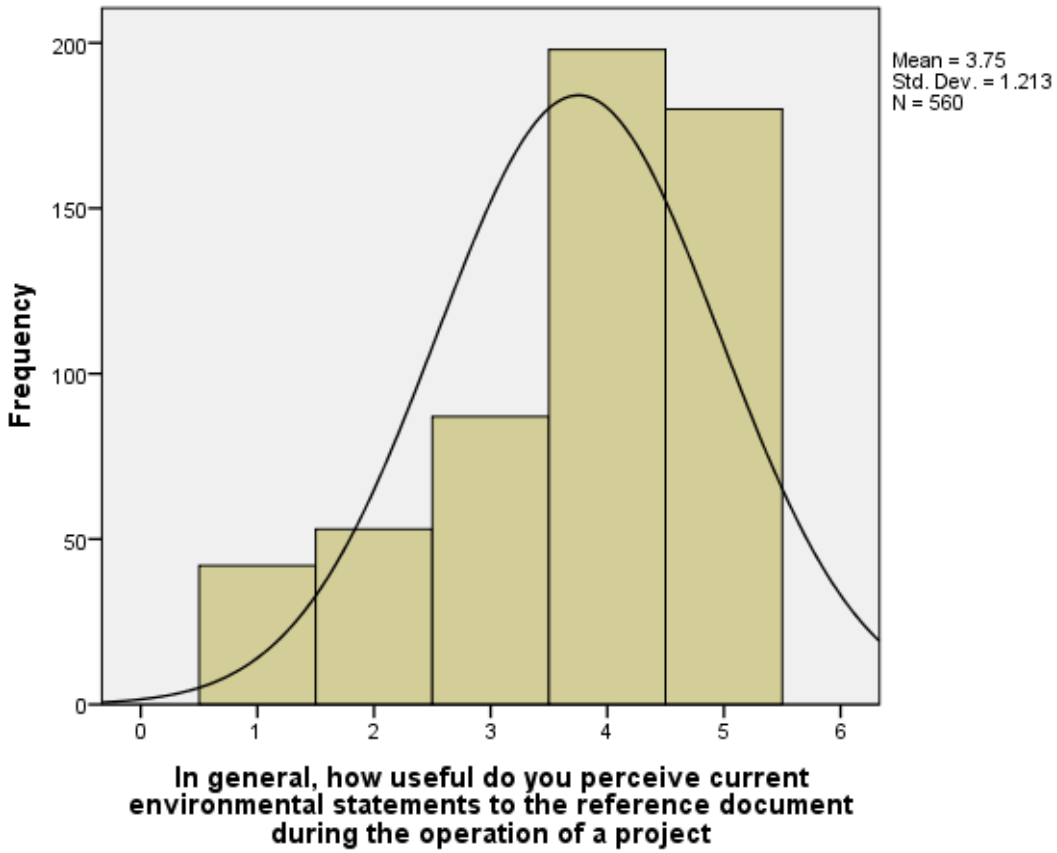
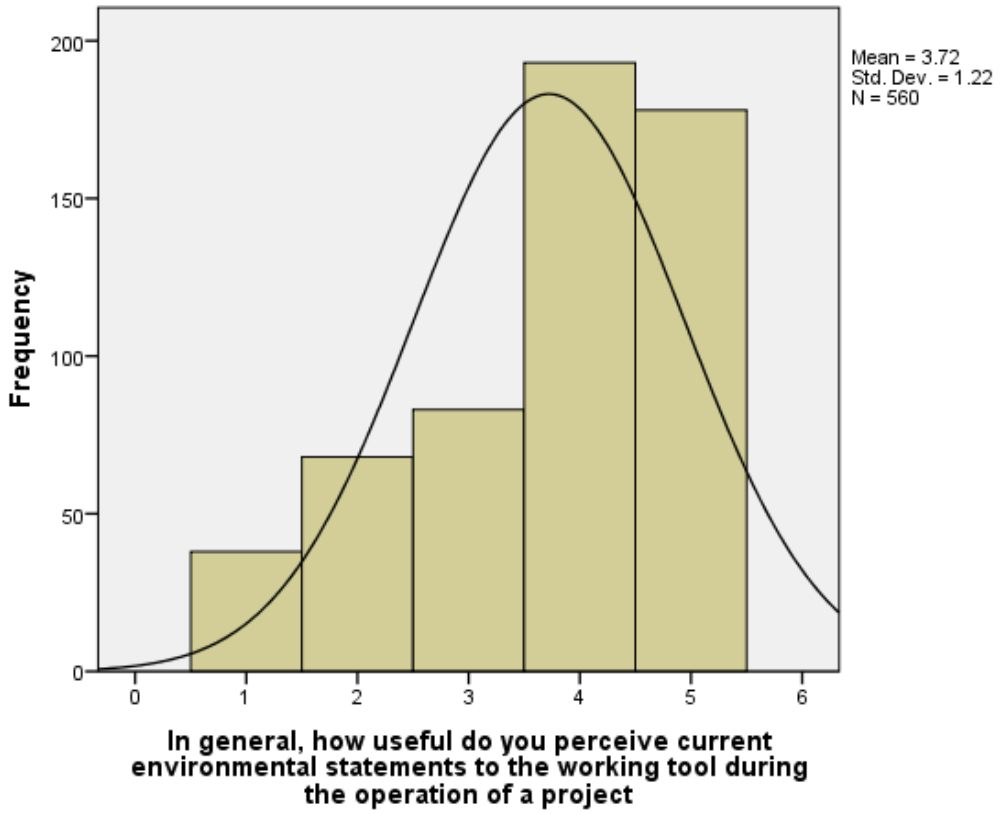
150
100
50
0
0
1
2
3
4
5
6
In general, how useful do you perceive current environmental statements to the working tool during the construction of a project


Mean = 3.75
Std. Dev. = 1.213
N = 560
Frequency
200
150
100
50
0
0
1
2
3
4
5
6
In general, how useful do you perceive current environmental statements to the reference document during the operation of a project



Strategic Environmental Assessment (SEA)

Table 50: Quality and consistency of project specific ES's

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	21	3.8	3.8	3.8
	no improvement	40	7.1	7.1	10.9
	minor improvement	120	21.4	21.4	32.3
	slight improvement	76	13.6	13.6	45.9
	moderate improvement	221	39.5	39.5	85.4
	significant improvement	82	14.6	14.6	100.0
	Total	560	100.0	100.0	

Table 51: Evaluation of transcustary impacts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	30	5.4	5.4	5.4
	no improvement	21	3.8	3.8	9.1
	minor improvement	155	27.7	27.7	36.8
	slight improvement	178	31.8	31.8	68.6
	moderate improvement	111	19.8	19.8	88.4
	significant improvement	65	11.6	11.6	100.0
	Total	560	100.0	100.0	

Table 52: Evaluation of cumulative impacts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	22	3.9	3.9	3.9
	no improvement	55	9.8	9.8	13.8
	minor improvement	121	21.6	21.6	35.4
	slight improvement	150	26.8	26.8	62.1
	moderate improvement	140	25.0	25.0	87.1
	significant improvement	72	12.9	12.9	100.0
	Total	560	100.0	100.0	

Table 53: Consideration of alternatives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	20	3.6	3.6	3.6
	no improvement	79	14.1	14.1	17.7
	minor improvement	111	19.8	19.8	37.5
	slight improvement	144	25.7	25.7	63.2
	moderate improvement	160	28.6	28.6	91.8
	significant improvement	46	8.2	8.2	100.0
	Total	560	100.0	100.0	

Table 54: Data collection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	32	5.7	5.7	5.7
	no improvement	60	10.7	10.7	16.4
	minor improvement	102	18.2	18.2	34.6
	slight improvement	130	23.2	23.2	57.9
	moderate improvement	169	30.2	30.2	88.0
	significant improvement	67	12.0	12.0	100.0
	Total	560	100.0	100.0	

Table 55: Regional planning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	41	7.3	7.3	7.3
	no improvement	50	8.9	8.9	16.3
	minor improvement	131	23.4	23.4	39.6
	slight improvement	130	23.2	23.2	62.9
	moderate improvement	157	28.0	28.0	90.9
	significant improvement	51	9.1	9.1	100.0
	Total	560	100.0	100.0	

Table 56: Communication between organizations and departments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	18	3.2	3.2	3.2
	no improvement	31	5.5	5.5	8.8
	minor improvement	123	22.0	22.0	30.7
	slight improvement	133	23.8	23.8	54.5
	moderate improvement	184	32.9	32.9	87.3
	significant improvement	71	12.7	12.7	100.0
	Total	560	100.0	100.0	

Table 57: Integration of environmental into decision-making

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	31	5.5	5.5	5.5
	no improvement	73	13.0	13.0	18.6
	minor improvement	110	19.6	19.6	38.2
	slight improvement	133	23.8	23.8	62.0
	moderate improvement	152	27.1	27.1	89.1
	significant improvement	61	10.9	10.9	100.0
	Total	560	100.0	100.0	

Table 58: Monitoring and feedback

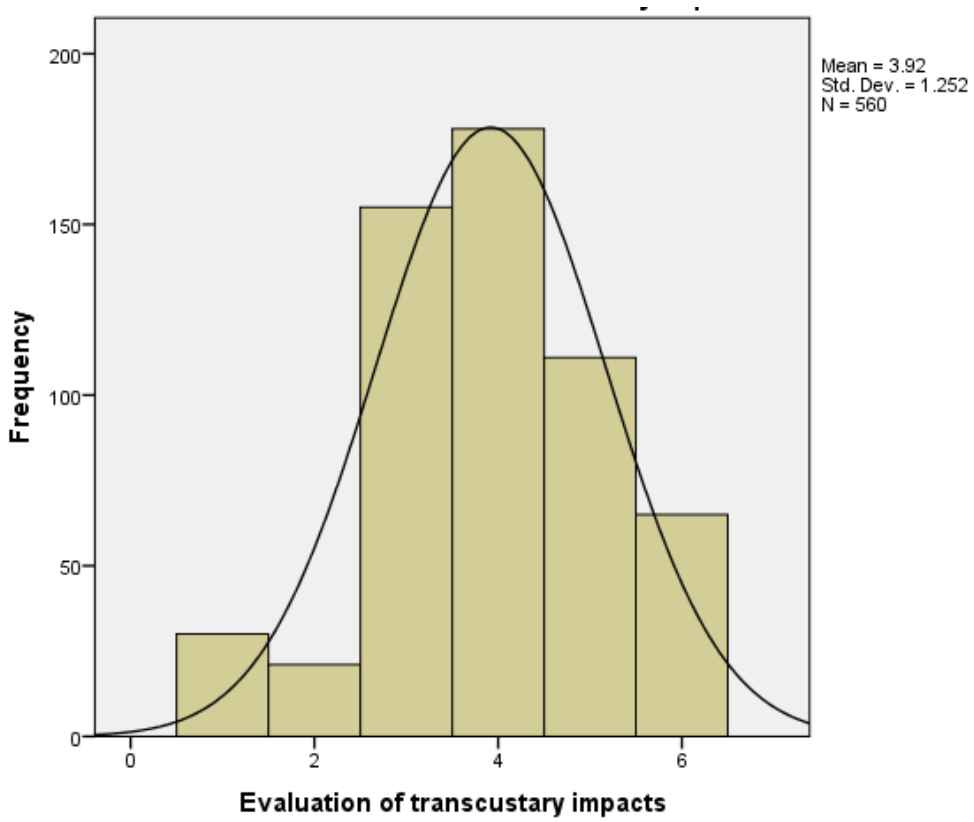
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	17	3.0	3.0	3.0
	no improvement	41	7.3	7.3	10.4
	minor improvement	160	28.6	28.6	38.9
	slight improvement	77	13.8	13.8	52.7
	moderate improvement	181	32.3	32.3	85.0
	significant improvement	84	15.0	15.0	100.0
	Total	560	100.0	100.0	

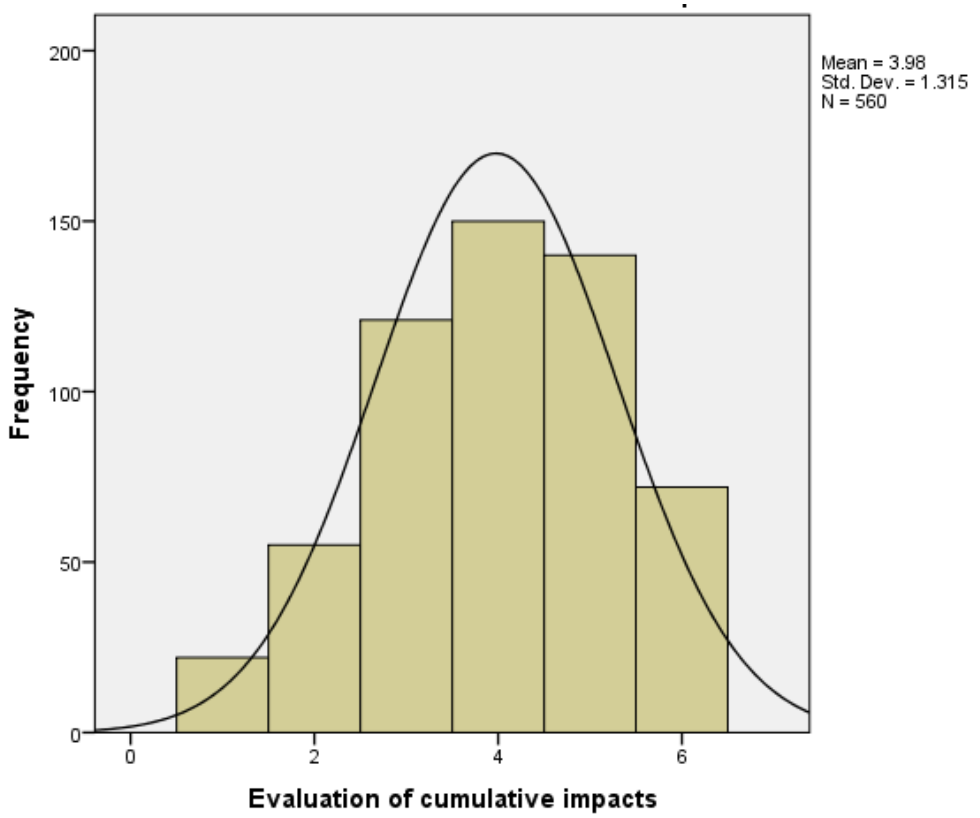
Table 59: Transparency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	31	5.5	5.5	5.5
	no improvement	37	6.6	6.6	12.1
	minor improvement	155	27.7	27.7	39.8
	slight improvement	158	28.2	28.2	68.0
	moderate improvement	130	23.2	23.2	91.3
	significant improvement	49	8.8	8.8	100.0
	Total	560	100.0	100.0	

Table 60: Quality of baseline information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	uncertain	23	4.1	4.1	4.1
	no improvement	40	7.1	7.1	11.3
	minor improvement	204	36.4	36.4	47.7
	slight improvement	130	23.2	23.2	70.9
	moderate improvement	101	18.0	18.0	88.9
	significant improvement	62	11.1	11.1	100.0
	Total	560	100.0	100.0	

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Std. Dev. = 1.315
N = 560
Frequency
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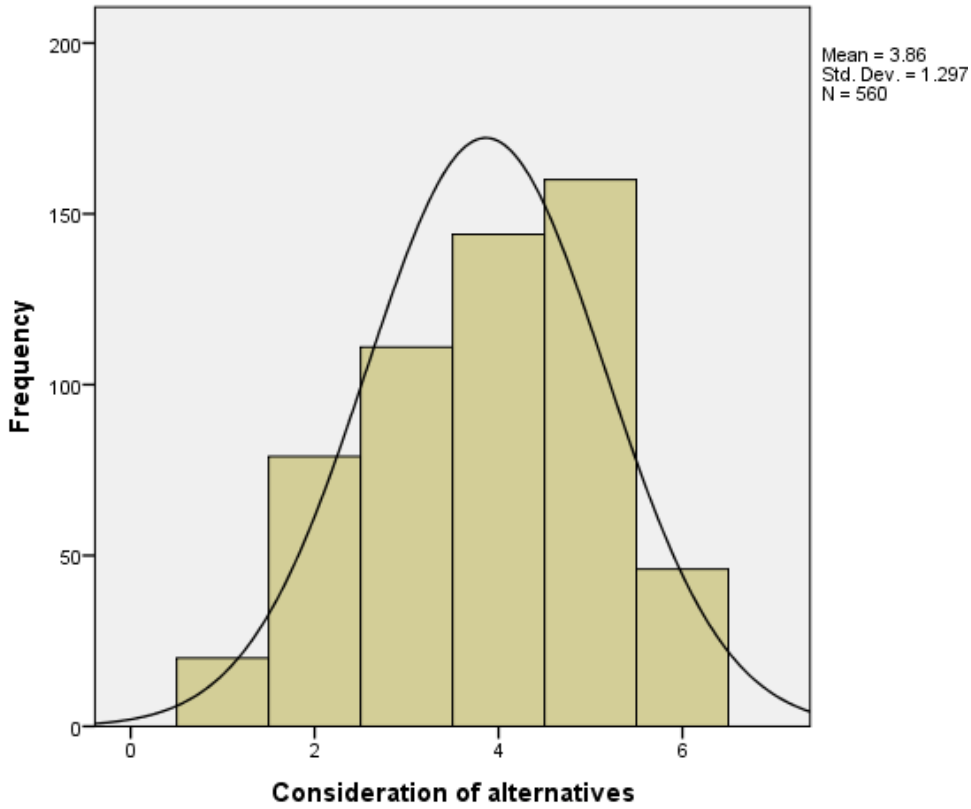
2
4
6
Evaluation of cumulative impacts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Std. Dev. = 1.297
N = 560
Frequency
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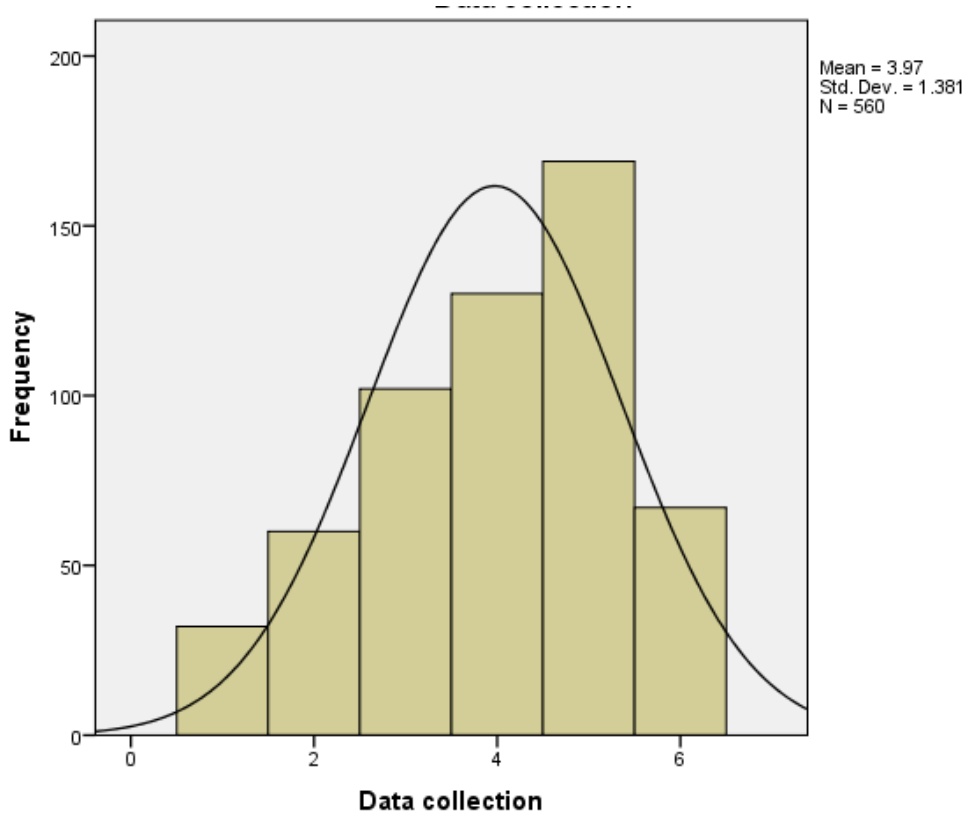
50
0
0
2
4
6
Consideration of alternatives


Mean = 3.97
Std. Dev. = 1.381
N = 560
Frequency
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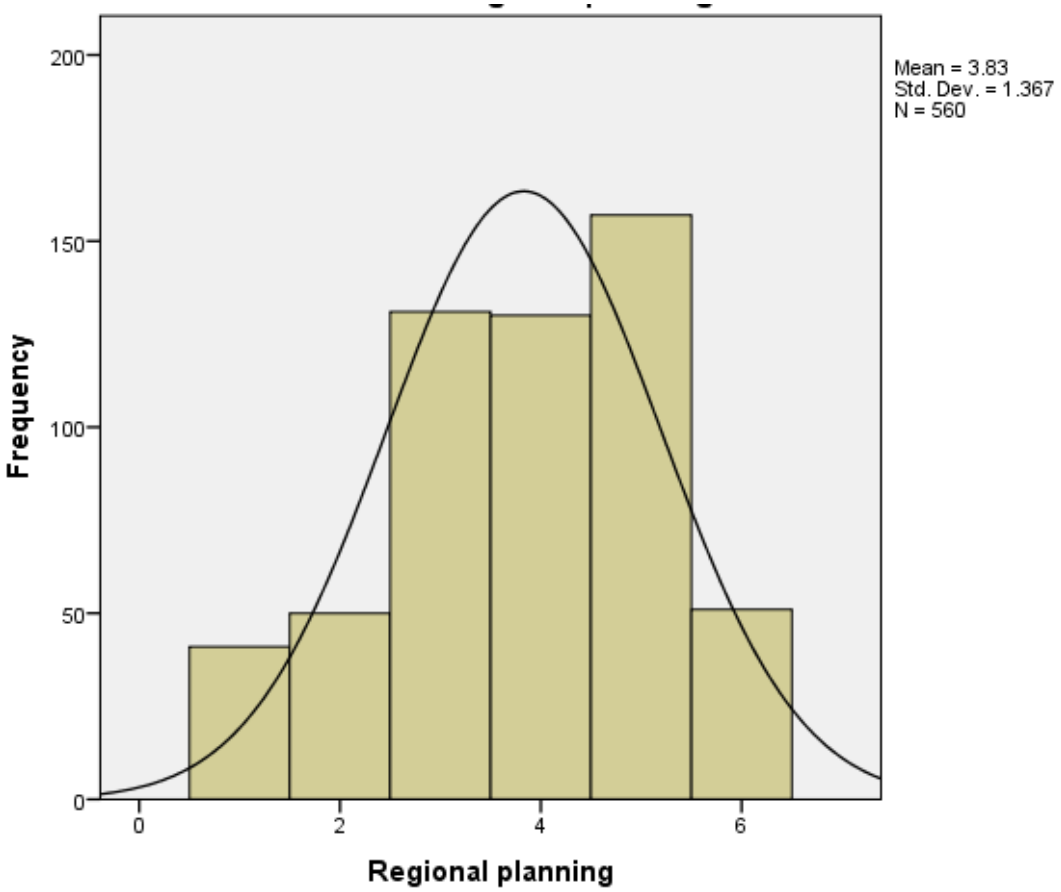
150
100
50
0
0
2
4
6
Data collection


Mean = 3.83
Std. Dev. = 1.367
N = 560
Frequency
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100
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0
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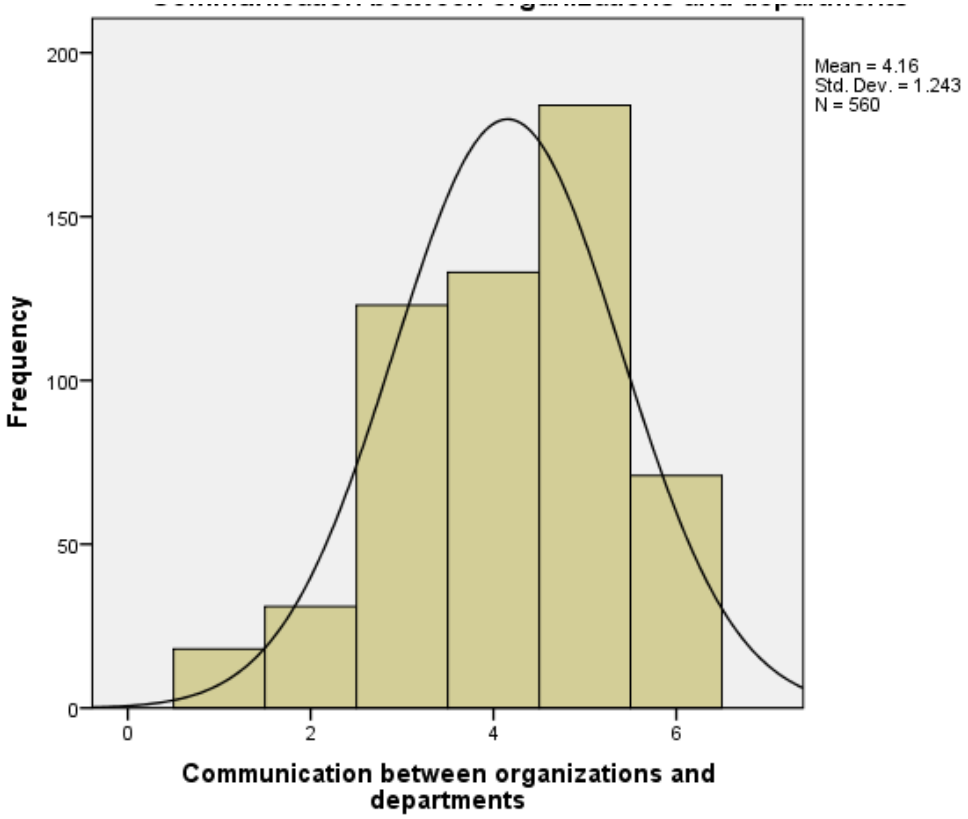
2
4
6
Regional planning


Mean = 4.16
Std. Dev. = 1.243
N = 560
Frequency
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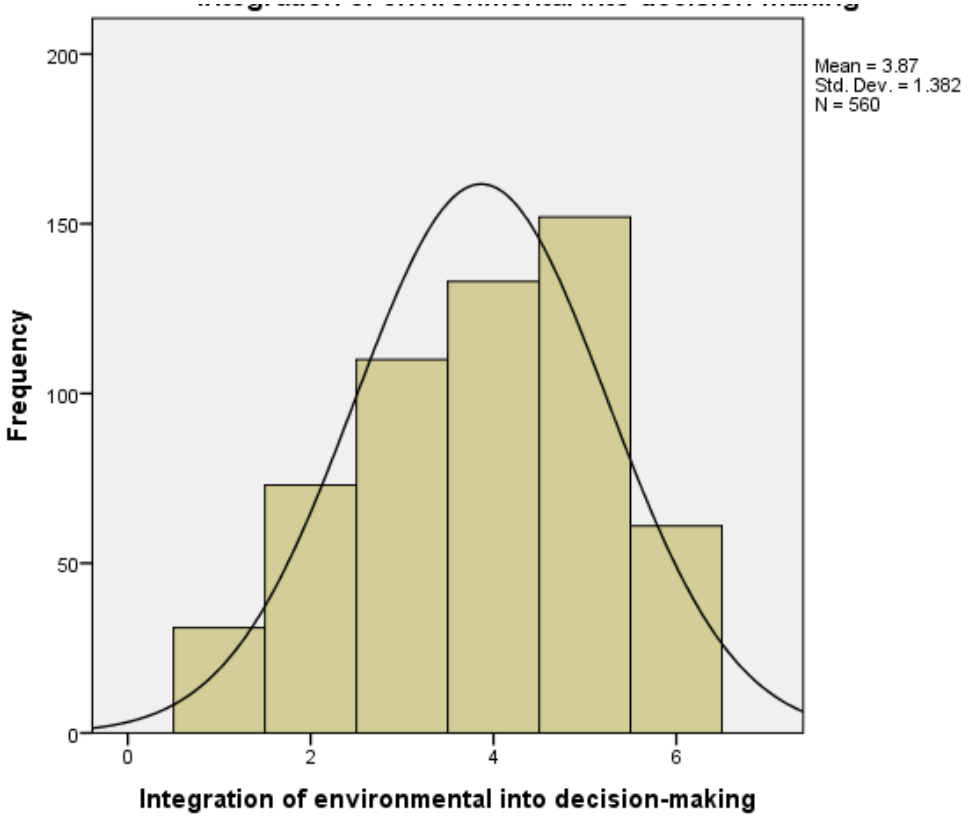
100
50
0
0
2
4
6
Communication between organizations and departments


Mean = 3.87
Std. Dev. = 1.382
N = 560
Frequency
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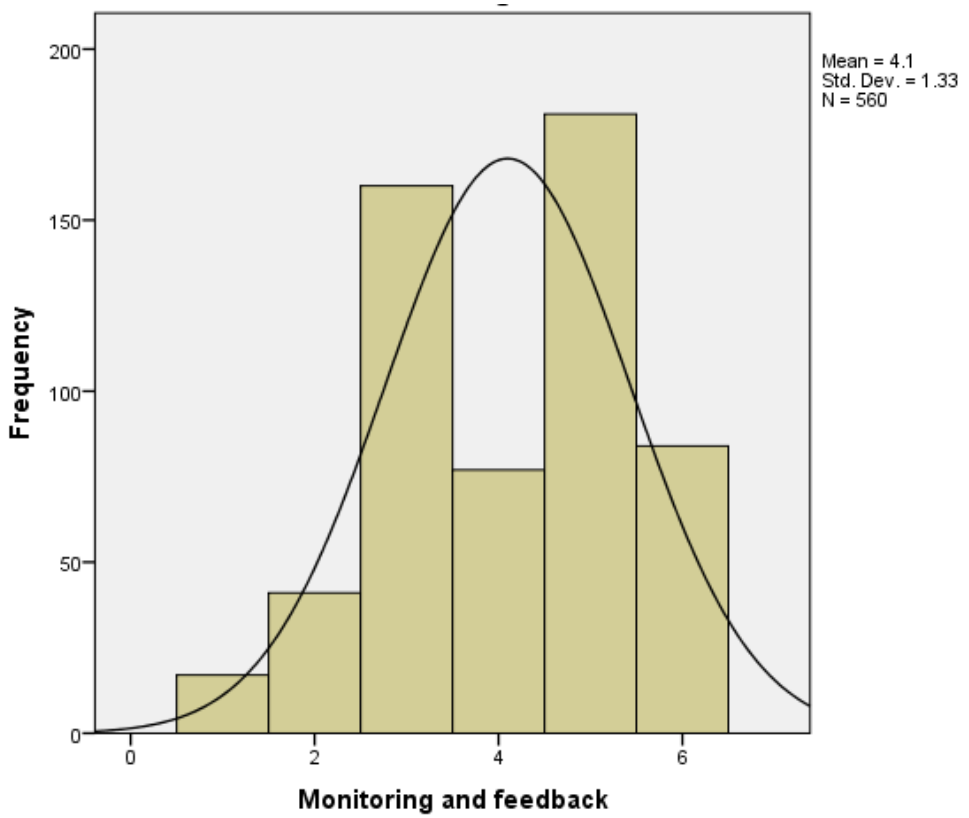
100
50
0
0
2
4
6
Integration of environmental into decision-making


Mean = 4.1
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N = 560
Frequency
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50
0
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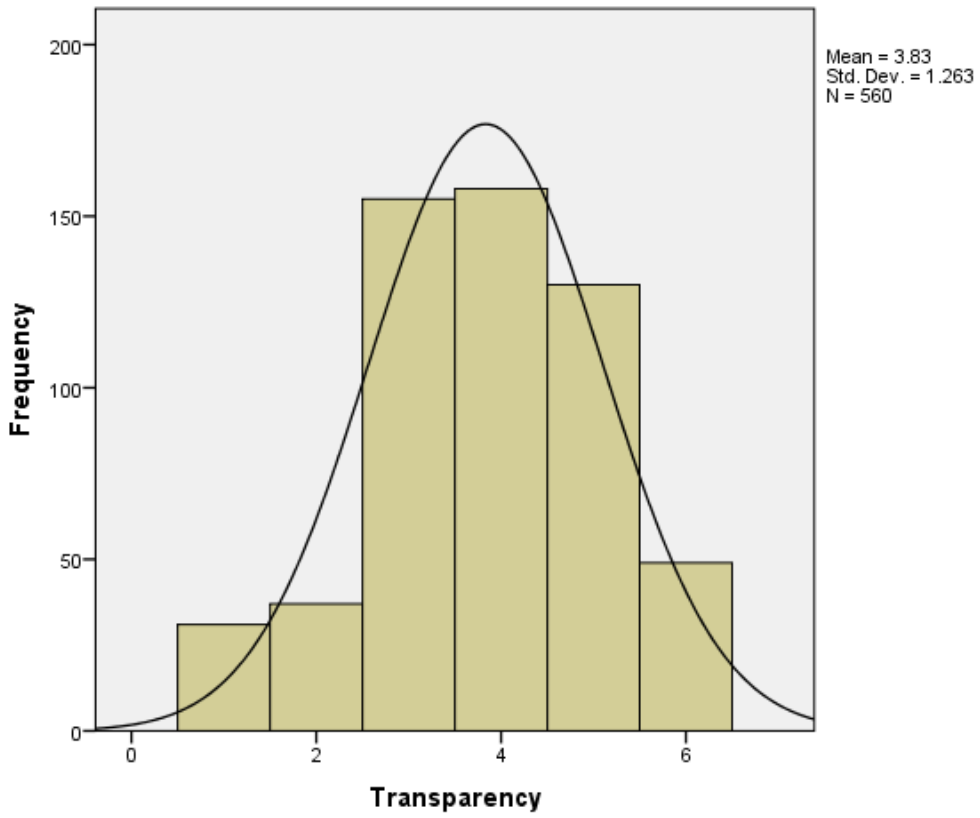
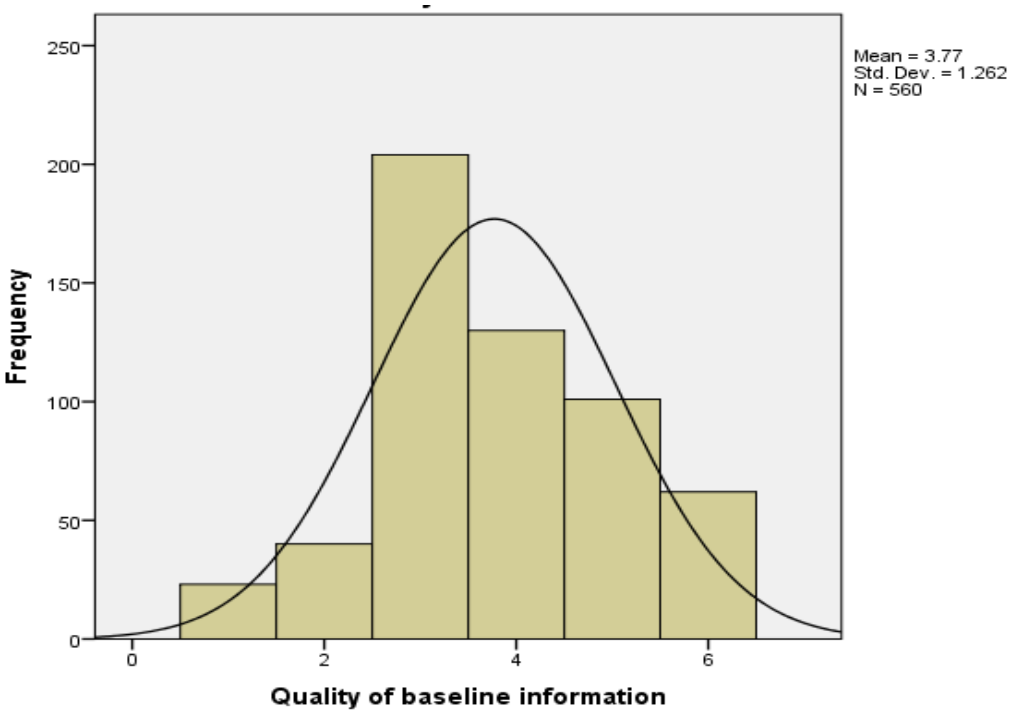
2
4
6
Monitoring and feedback


Mean = 3.83
Std. Dev. = 1.263
N = 560
Frequency
200
150
100
50
0
0
2
4
6
Transparency



Follow up Action

Table 61: Importance of analysis of predicted Vs actual environmental outcomes:

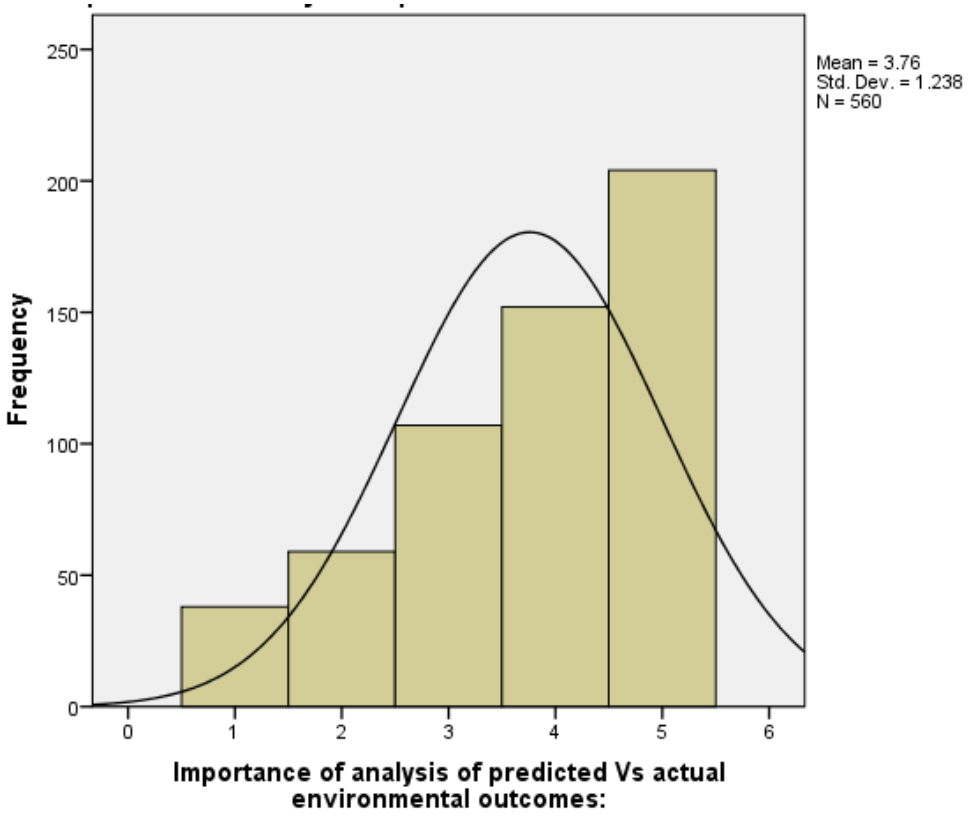
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	38	6.8	6.8	6.8
	Somewhat important	59	10.5	10.5	17.3
	Reasonable important	107	19.1	19.1	36.4
	Moderately important	152	27.1	27.1	63.6
	Very important	204	36.4	36.4	100.0
	Total	560	100.0	100.0	

Table 62: In your perception, how would you rate the link between stated predictions and baseline parameters within environmental statements with associated ecological change monitoring efforts post - project consent:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	47	8.4	8.4	8.4
	Poor	95	17.0	17.0	25.4
	Good	187	33.4	33.4	58.8
	Very good	150	26.8	26.8	85.5
	Don't know	81	14.5	14.5	100.0
	Total	560	100.0	100.0	

Table 63: Is organization adequately involved in post-consent monitoring:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	123	22.0	22.0	22.0
	Rarely	70	12.5	12.5	34.5
	Sometimes	107	19.1	19.1	53.6
	Usually	109	19.5	19.5	73.0
	Always	151	27.0	27.0	100.0
	Total	560	100.0	100.0	


Mean = 3.76
Std. Dev. = 1.238
N = 560
Frequency
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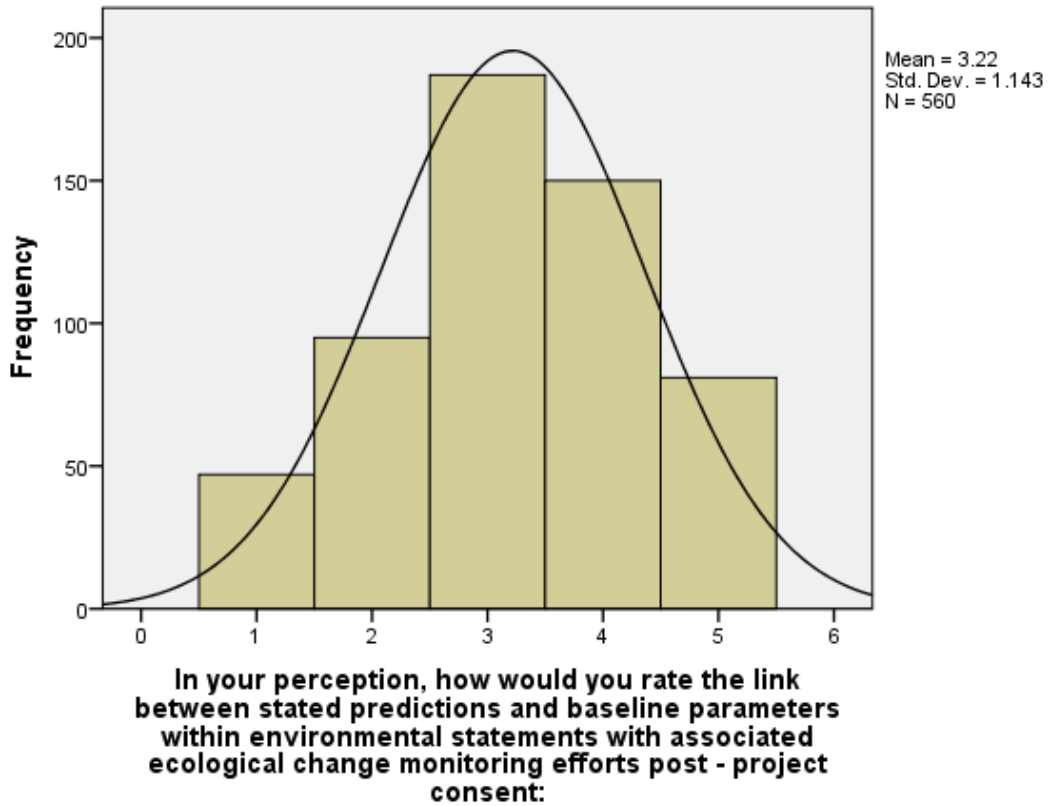
200
150
100
50
0
0
1
2
3
4
5
6
Importance of analysis of predicted Vs actual environmental outcomes:


Mean = 3.22
Std. Dev. = 1.143
N = 560
Frequency
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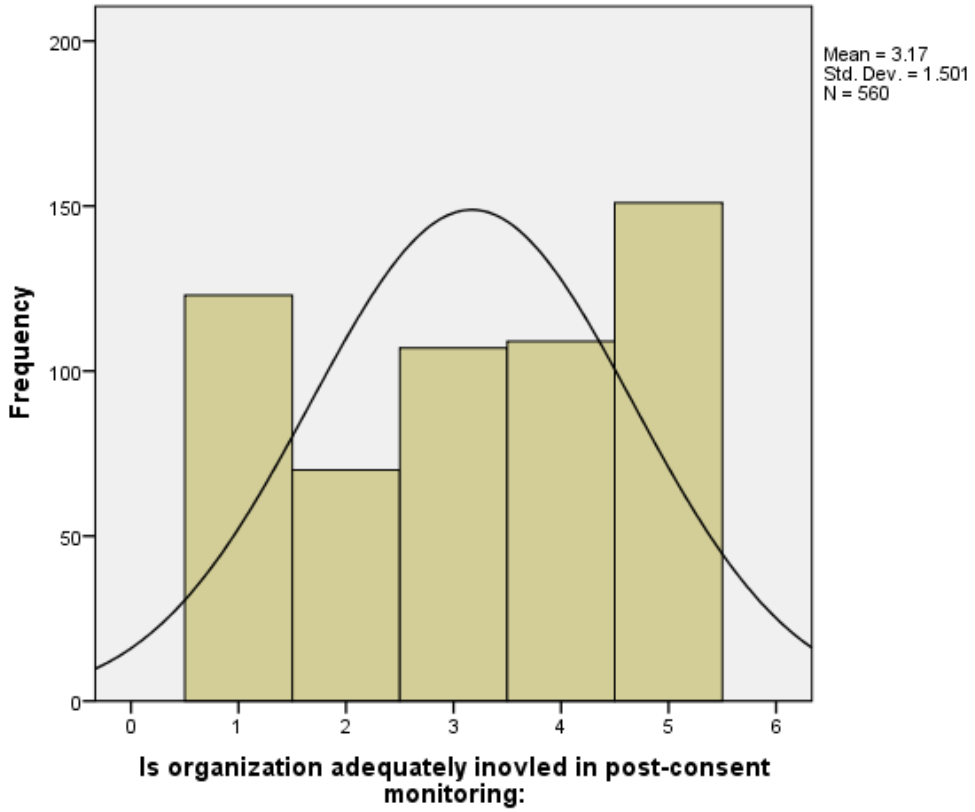
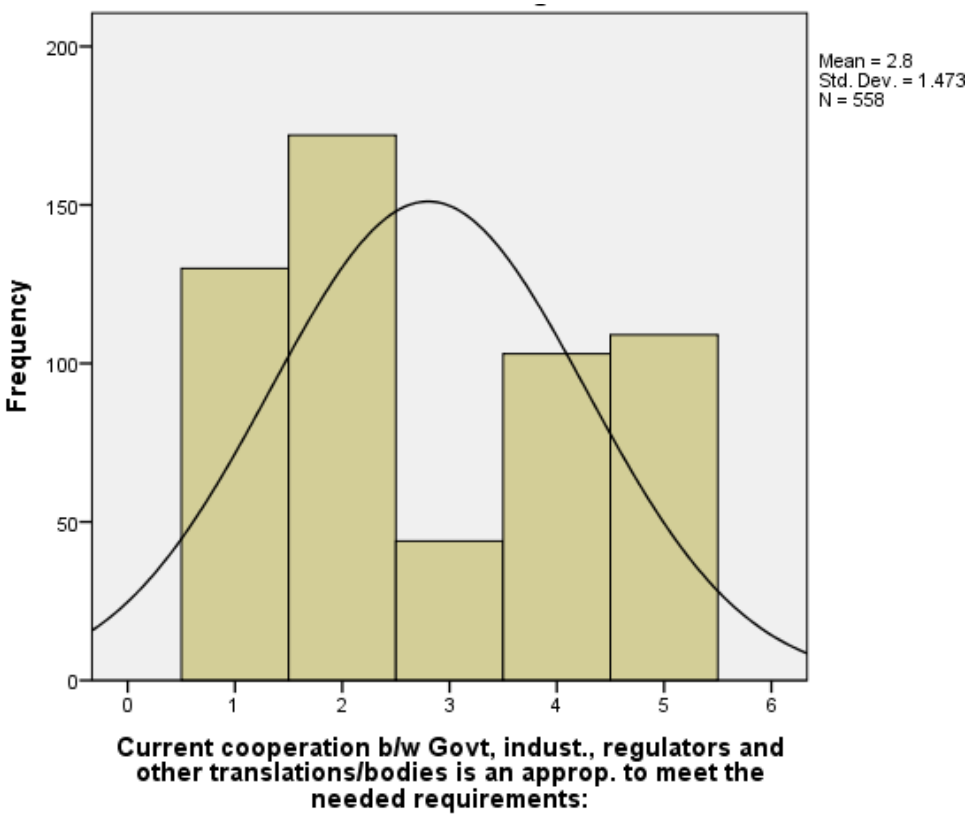
150
100
50
0
0
1
2
3
4
5
6
In your perception, how would you rate the link between stated predictions and baseline parameters within environmental statements with associated ecological change monitoring efforts post - project consent:



Coordination & Collection of Environmental Information

Table 64: Current cooperation b/w Govt, industries, regulators and other translations/bodies is an appropriate to meet the needed requirements:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Stronly Agree	130	23.2	23.3	23.3
	Agree	172	30.7	30.8	54.1
	Uncertain	44	7.9	7.9	62.0
	Disagree	103	18.4	18.5	80.5
	Strongly disagree	109	19.5	19.5	100.0
	Total	558	99.6	100.0	
Missing	System	2	.4		
Total		560	100.0		


Mean = 2.8
Std. Dev. = 1.473
N = 558
Frequency
200
150
100
50
0
0
1
2
3
4
5
6
Current cooperation b/w Govt, indust., regulators and other translations/bodies is an approp. to meet the needed requirements:

Appendix C Comments from questionnaire

Question 6 "If considered necessary, please comment on how you think baseline studies could be improved.

Baseline and monitoring surveys are fundamental to the EIA process, not only to predict potential impacts to inform project decisions, but also to verify subsequent impacts. In Nigeria, it can be improved by constant engagement of the stake holders into EIA process, with priority given to high quality baseline survey and subsequent monitoring activities

Q14b. Please state your reason(s) for your answer to Q14a.

Adequate information is not incorporated into the EIA process thereby reducing the quality of Environmental Statement.

Question 19. In your opinion is further feedback, incorporated in the above aspects needed or would be considered beneficial?

Most respondent omitted the questions and therefore considered missing.

Appendix D Chi-square test and regression analysis (statistical analysis)

Question 1a & Question 9

Table 50a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Effectiveness of mitigation:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	527.816[a]	16	.000
Likelihood Ratio	582.739	16	.000
Linear-by-Linear Association	317.185	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.90.

Table 50b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.753	.018	27.054	.000[c]
Ordinal by Ordinal	Spearman Correlation	.773	.019	28.758	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1a & Question 10

Table 51a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Existing information is adequately incorp. into EIA:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	549.757[a]	16	.000
Likelihood Ratio	597.486	16	.000
Linear-by-Linear Association	344.384	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.18.

Table 51b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.785	.015	29.923	.000[c]
Ordinal by Ordinal	Spearman Correlation	.797	.015	31.164	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1a & Question 13

Table 52a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Extent of env. Statements produced been consistent in quality:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	607.385[a]	16	.000
Likelihood Ratio	688.051	16	.000
Linear-by-Linear Association	353.063	1	.000
N of Valid Cases	560		

a. 5 cells (20.0%) have expected count less than 5. The minimum expected count is 2.03.

Table 52b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.795	.011	30.930	.000[c]
Ordinal by Ordinal	Spearman Correlation	.848	.010	37.859	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1a & Question 14

Table 53a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * have environmental statements improved over time:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	955.137[a]	16	.000
Likelihood Ratio	865.573	16	.000
Linear-by-Linear Association	441.317	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.58.

Table 53b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.889	.009	45.744	.000[c]
Ordinal by Ordinal	Spearman Correlation	.888	.010	45.507	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 9

Table 54a: Highest level of Formal Education: * Effectiveness of mitigation:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	537.305[a]	16	.000
Likelihood Ratio	510.482	16	.000
Linear-by-Linear Association	122.557	1	.000
N of Valid Cases	560		

a. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 4.36.

Table 54b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.468	.037	12.518	.000[c]
Ordinal by Ordinal	Spearman Correlation	.463	.040	12.330	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 10

Table 55a: Highest level of Formal Education: * Existing information is adequately incorp. into EIA:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	714.719[a]	16	.000
Likelihood Ratio	551.312	16	.000
Linear-by-Linear Association	244.911	1	.000
N of Valid Cases	560		

a. 3 cells (12.0%) have expected count less than 5. The minimum expected count is 3.96.

Table 55b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.662	.027	20.859	.000[c]
Ordinal by Ordinal	Spearman Correlation	.605	.032	17.966	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 13

Table 56a: Highest level of Formal Education: * Extent of environmental Statements produced been consistent in quality:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	395.268[a]	16	.000
Likelihood Ratio	390.827	16	.000
Linear-by-Linear Association	220.810	1	.000
N of Valid Cases	560		

a. 5 cells (20.0%) have expected count less than 5. The minimum expected count is 1.12.

Table 56b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.628	.021	19.087	.000[c]
Ordinal by Ordinal	Spearman Correlation	.607	.028	18.039	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 14

Table 57a: Highest level of Formal Education: * have environmental statements improved over time:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	376.910[a]	16	.000
Likelihood Ratio	420.466	16	.000
Linear-by-Linear Association	183.537	1	.000
N of Valid Cases	560		

a. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 3.63.

Table 57b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.573	.027	16.516	.000[c]
Ordinal by Ordinal	Spearman Correlation	.560	.029	15.974	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1a & Question 3(capacity)

Table 58a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Capacity

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	58.022[a]	8	.000
Likelihood Ratio	66.765	8	.000
Linear-by-Linear Association	1.033	1	.309
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.73.

Table 58b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.043	.038	1.017	.310[c]
Ordinal by Ordinal	Spearman Correlation	.019	.040	.450	.653[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1a & Question 3(knowledge)

Table 59a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Knowledge

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	66.916[a]	8	.000
Likelihood Ratio	74.666	8	.000
Linear-by-Linear Association	40.347	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.26.

Table 59b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.269	.037	6.588	.000[c]
Ordinal by Ordinal	Spearman Correlation	.243	.040	5.930	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 3(capacity)

Table 60a: Highest level of Formal Education: * Capacity

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	185.705[a]	8	.000
Likelihood Ratio	155.567	8	.000
Linear-by-Linear Association	70.053	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.48.

Table 60b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.354	.034	-8.941	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.364	.036	-9.244	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 3(capacity)

Table 61a: Highest level of Formal Education: * Knowledge

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	157.119[a]	8	.000
Likelihood Ratio	160.268	8	.000
Linear-by-Linear Association	14.899	1	.000
N of Valid Cases	560		

a. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 2.91.

Table 61b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.163	.037	-3.909	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.163	.042	-3.899	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1a & Question 12

Table 62a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Presentation of information

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	146.966[a]	16	.000
Likelihood Ratio	193.910	16	.000
Linear-by-Linear Association	5.196	1	.023
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.34.

Table 62b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.096	.042	2.288	.022[c]
Ordinal by Ordinal	Spearman Correlation	.067	.044	1.584	.114[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 63a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Organization of information on and description of approach

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	132.864[a]	16	.000
Likelihood Ratio	167.764	16	.000
Linear-by-Linear Association	14.825	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.86.

Table 63b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.163	.043	3.899	.000[c]
Ordinal by Ordinal	Spearman Correlation	.145	.043	3.474	.001[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 64a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Consultation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	132.404[a]	16	.000
Likelihood Ratio	174.974	16	.000
Linear-by-Linear Association	9.310	1	.002
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.14.

Table 64b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.129	.041	3.074	.002[c]
Ordinal by Ordinal	Spearman Correlation	.122	.043	2.913	.004[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 65a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Project overview

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	121.491[a]	16	.000
Likelihood Ratio	156.848	16	.000
Linear-by-Linear Association	8.773	1	.003
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.26.

Table 65b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.125	.042	2.983	.003[c]
Ordinal by Ordinal	Spearman Correlation	.110	.043	2.605	.009[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 66a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Physical requirements and project schedule

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	101.429[a]	16	.000
Likelihood Ratio	134.765	16	.000
Linear-by-Linear Association	8.569	1	.003
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.78.

Table 66b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.124	.041	2.947	.003[c]
Ordinal by Ordinal	Spearman Correlation	.114	.042	2.703	.007[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 67a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Processes and procedures

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	160.036[a]	16	.000
Likelihood Ratio	209.712	16	.000
Linear-by-Linear Association	18.998	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.49.

Table 67b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.184	.041	4.431	.000[c]
Ordinal by Ordinal	Spearman Correlation	.185	.042	4.444	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 68a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Residuals emissions and wastes

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	134.412[a]	16	.000
Likelihood Ratio	180.149	16	.000
Linear-by-Linear Association	24.314	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.38.

Table 68b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.209	.041	5.037	.000[c]
Ordinal by Ordinal	Spearman Correlation	.208	.041	5.025	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 69a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Environmental description: geographical extent - appropriately focus - Baseline conditions

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	148.125[a]	16	.000
Likelihood Ratio	180.076	16	.000
Linear-by-Linear Association	21.573	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.49.

Table 69b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.196	.040	4.733	.000[c]
Ordinal by Ordinal	Spearman Correlation	.202	.041	4.863	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 70a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Assessment effects on: human population, fauna and flora, soil including seabed and subsoil, water including the sea and aquifers under the seabed, air and climate, landscape and seascape, tangible property (where necessary), architecture and archaeological

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	137.321[a]	16	.000
Likelihood Ratio	180.057	16	.000
Linear-by-Linear Association	20.998	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.61.

Table 70b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.194	.041	4.667	.000[c]
Ordinal by Ordinal	Spearman Correlation	.195	.041	4.689	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 71a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Potential risks of spills

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	181.324[a]	16	.000
Likelihood Ratio	230.091	16	.000
Linear-by-Linear Association	22.761	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.02.

Table 71b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.202	.040	4.867	.000[c]
Ordinal by Ordinal	Spearman Correlation	.204	.040	4.923	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 72a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Assessment of the magnitude of environmental changes considering: nature, locations, and duration of change

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	94.982[a]	16	.000
Likelihood Ratio	121.051	16	.000
Linear-by-Linear Association	24.649	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.62.

Table 72b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.210	.041	5.073	.000[c]
Ordinal by Ordinal	Spearman Correlation	.222	.041	5.370	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 73a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Evaluation of the significance of potential impacts

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	183.089[a]	16	.000
Likelihood Ratio	233.997	16	.000
Linear-by-Linear Association	25.196	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.06.

Table 73b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.212	.040	5.132	.000[c]
Ordinal by Ordinal	Spearman Correlation	.216	.040	5.221	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 74a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Alternatives

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	117.653[a]	16	.000
Likelihood Ratio	148.075	16	.000
Linear-by-Linear Association	30.948	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.50.

Table 74b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.235	.041	5.719	.000[c]
Ordinal by Ordinal	Spearman Correlation	.239	.040	5.808	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 75a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Mitigation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	106.614[a]	16	.000
Likelihood Ratio	139.135	16	.000
Linear-by-Linear Association	32.340	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.10.

Table 75b:Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.241	.040	5.854	.000[c]
Ordinal by Ordinal	Spearman Correlation	.244	.040	5.949	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 76a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Description of environmental management (EMS and project specific actions)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	135.074[a]	16	.000
Likelihood Ratio	163.422	16	.000
Linear-by-Linear Association	36.032	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.91.

Table 76b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.254	.042	6.200	.000[c]
Ordinal by Ordinal	Spearman Correlation	.253	.042	6.175	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 77a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Monitoring

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	112.766[a]	16	.000
Likelihood Ratio	136.703	16	.000
Linear-by-Linear Association	34.072	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.86.

Table 77b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.247	.041	6.018	.000[c]
Ordinal by Ordinal	Spearman Correlation	.250	.041	6.091	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 78a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * Non-technical summary

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	134.046[a]	16	.000
Likelihood Ratio	173.612	16	.000
Linear-by-Linear Association	10.929	1	.001
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.70.

Table 78b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.140	.042	3.336	.001[c]
Ordinal by Ordinal	Spearman Correlation	.133	.043	3.179	.002[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 12

Table 79a: Highest level of Formal Education: * Presentation of information

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	482.960[a]	16	.000
Likelihood Ratio	405.979	16	.000
Linear-by-Linear Association	93.142	1	.000
N of Valid Cases	560		

a. 3 cells (12.0%) have expected count less than 5. The minimum expected count is 3.50.

Table 79b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.408	.037	-10.562	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.428	.038	-11.200	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 80a: Highest level of Formal Education: * Organization of information on and description of approach

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	501.202[a]	16	.000
Likelihood Ratio	477.355	16	.000
Linear-by-Linear Association	70.978	1	.000
N of Valid Cases	560		

a. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 3.24.

Table 80b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.356	.040	-9.009	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.351	.043	-8.862	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 81a: Highest level of Formal Education: * Consultation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	416.064[a]	16	.000
Likelihood Ratio	407.050	16	.000
Linear-by-Linear Association	75.208	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.49.

Table 81b:Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.367	.039	-9.314	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.371	.041	-9.429	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 82a: Highest level of Formal Education: * Project overview

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	546.812[a]	16	.000
Likelihood Ratio	524.114	16	.000
Linear-by-Linear Association	81.427	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.56.

Table 82b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.382	.039	-9.754	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.381	.042	-9.748	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 83a: Highest level of Formal Education: * Physical requirements and project schedule

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	577.913[a]	16	.000
Likelihood Ratio	569.658	16	.000
Linear-by-Linear Association	79.747	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.29.

Table 83b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.378	.039	-9.636	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.373	.042	-9.497	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 84a: Highest level of Formal Education: * Processes and procedures

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	351.106[a]	16	.000
Likelihood Ratio	370.656	16	.000
Linear-by-Linear Association	62.720	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.69.

Table 84b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.335	.038	-8.398	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.324	.042	-8.088	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 85a: Highest level of Formal Education: * Residuals emissions and wastes

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	426.246[a]	16	.000
Likelihood Ratio	456.396	16	.000
Linear-by-Linear Association	67.483	1	.000
N of Valid Cases	560		

a. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 4.63.

Table 85b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.347	.039	-8.753	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.327	.042	-8.174	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 86a: Highest level of Formal Education: * Environmental description: geographical extent – appropriately focus – Baseline conditions

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	483.817[a]	16	.000
Likelihood Ratio	504.784	16	.000
Linear-by-Linear Association	76.517	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.69.

Table 86b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.370	.038	-9.407	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.345	.042	-8.696	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 87a: Highest level of Formal Education: * Assessment effects on: human population, fauna and flora, soil including seabed and subsoil, water including the sea and aquifers under the seabed, air and climate, landscape and seascape, tangible property (where necessary), architecture and archaeological

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	462.311[a]	16	.000
Likelihood Ratio	496.105	16	.000
Linear-by-Linear Association	71.324	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.76.

Table 87b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.357	.039	-9.034	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.337	.042	-8.463	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 88a: Highest level of Formal Education: * Potential risks of spills

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	513.824[a]	16	.000
Likelihood Ratio	502.704	16	.000
Linear-by-Linear Association	76.316	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 4.43.

Table 88b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.369	.038	-9.393	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.346	.042	-8.712	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 89a: Highest level of Formal Education: * Assessment of the magnitude of environmental changes considering: nature, locations, and duration of change

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	451.339[a]	16	.000
Likelihood Ratio	478.516	16	.000
Linear-by-Linear Association	65.516	1	.000
N of Valid Cases	560		

a. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 3.11.

Table 89b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.342	.040	-8.607	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.305	.044	-7.571	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 90a: Highest level of Formal Education: * Evaluation of the significance of potential impacts

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	520.439[a]	16	.000
Likelihood Ratio	511.964	16	.000
Linear-by-Linear Association	74.416	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 3.90.

Table 90b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.365	.038	-9.257	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.336	.042	-8.430	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 91a: Highest level of Formal Education: * Alternatives
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	344.799[a]	16	.000
Likelihood Ratio	352.919	16	.000
Linear-by-Linear Association	66.095	1	.000
N of Valid Cases	560		

a. 3 cells (12.0%) have expected count less than 5. The minimum expected count is 3.04.

Table 91b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.344	.038	-8.650	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.311	.042	-7.729	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 92a: Highest level of Formal Education: * Mitigation
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	336.427[a]	16	.000
Likelihood Ratio	351.110	16	.000
Linear-by-Linear Association	57.773	1	.000
N of Valid Cases	560		

a. 3 cells (12.0%) have expected count less than 5. The minimum expected count is 3.37.

Table 92b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.321	.038	-8.020	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.292	.042	-7.214	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 93a: Highest level of Formal Education: * Description of environmental management (EMS and project specific actions)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	344.132[a]	16	.000
Likelihood Ratio	355.232	16	.000
Linear-by-Linear Association	54.238	1	.000
N of Valid Cases	560		

a. 4 cells (16.0%) have expected count less than 5. The minimum expected count is 2.71.

Table 93b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.311	.040	-7.743	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.277	.044	-6.819	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 94a: Highest level of Formal Education: * Monitoring

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	410.755[a]	16	.000
Likelihood Ratio	435.914	16	.000
Linear-by-Linear Association	58.360	1	.000
N of Valid Cases	560		

a. 4 cells (16.0%) have expected count less than 5. The minimum expected count is 3.24.

Table 94b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.323	.039	-8.065	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.286	.043	-7.062	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Table 95a: Highest level of Formal Education: * Non-technical summary
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	514.324[a]	16	.000
Likelihood Ratio	431.935	16	.000
Linear-by-Linear Association	86.759	1	.000
N of Valid Cases	560		

a. 1 cells (4.0%) have expected count less than 5. The minimum expected count is 3.70.

Table 95b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.394	.038	-10.125	.000[c]
Ordinal by Ordinal	Spearman Correlation	-.399	.040	-10.288	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 8

Table 96a: Highest level of Formal Education: *e EIA introd. has improved environ. Protection

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	362.708[a]	16	.000
Likelihood Ratio	323.645	16	.000
Linear-by-Linear Association	181.414	1	.000
N of Valid Cases	560		

a. 6 cells (24.0%) have expected count less than 5. The minimum expected count is 1.72.

Table 96b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.570	.024	16.374	.000[c]
Ordinal by Ordinal	Spearman Correlation	.558	.028	15.882	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 1b & Question 2b

Table 97a: How many years have you been associate and dealing with EIA Process in Nigeria's oil and gas industry: * How many EIA have you been involved:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	713.670[a]	16	.000
Likelihood Ratio	714.781	16	.000
Linear-by-Linear Association	368.963	1	.000
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.29.

Table 97b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.812	.016	32.915	.000[c]
Ordinal by Ordinal	Spearman Correlation	.816	.017	33.300	.000[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Question 2a & Question 22

Table 98a: Primary role of your Organization/Dept in EIA process: * Is organization adequately involved in post-consent monitoring:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	324.052[a]	16	.000
Likelihood Ratio	408.314	16	.000
Linear-by-Linear Association	.020	1	.887
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.00.

Table 98b: Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.006	.035	-.142	.887[c]
Ordinal by Ordinal	Spearman Correlation	.005	.036	.109	.913[c]
N of Valid Cases		560			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.