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A Critical Evaluation of South Sudan's Policy Framework for Health and Safety Management in the Oil and Gas Industry in Paloich- Melut County: A Case Study of Dar Petroleum Operating Company

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Abstract

The paper conducted a critical evaluation of South Sudan's policy framework for health and safety management in the oil and gas industry in Paloich- Melut County with interests in Dar Petroleum Operating Company. Specifically, the study assessed the effect of government policy, the organizational practices that affects the health and safety management of community and to explore the challenges affecting the implementation of policy frameworks for health and safety management practices by Dar Petroleum Operating Company. Descriptive survey research design was used to collect quantitative and qualitative data thus following mixed method approach. Quantitative data was collected using questionnaires while Qualitative data was obtained from in-depth interviews. Quantitative data was analyzed using descriptive and inferential statistics. Qualitative data was analyzed using thematic analysis. The results revealed that government policy and organizational practices are positively and significantly related to health and safety management practices among oil exploration companies. However, organizational challenges and health and safety management practices among oil exploration companies is negatively and significantly related. The main challenges were lack of resources, poor leadership and corruption. The study concluded that an increase in adoption of Government Policy and organizational practices led to a significant increase on safety management practices among oil exploration companies. The study recommended that the oil and gas exploring companies strengthen the capacities of all concerned to achieve the sound management intellectual capital, exploration and production waste minimization, sound management of oil fields and hazardous wastes at all levels.

Keywords: *Health and Safety Management Practices, Government Policy, Company Policy, Organizational Practices & South Sudan*

1.0 Introduction

The exploration and extraction of oil is carried out near human populations. It has been estimated globally that there are over 70,000 oil fields across 100 countries with over 1600 billion barrels of known crude oil reservoirs (CIA, 2017). Existing oil fields have been estimated to potentially impact the health and environment of over 600 million people worldwide (O’Callghan-Gordo *et al.*, 2016). African continent also has its own share of health hazards that have been experienced as a result of oil exploration practices. In Nigeria, it was noted that there was a high rate of neurological symptoms, including headache, dizziness, eye and skin irritation, and anemia after adjusting for age, sex, and smoking status (Kponee *et al.*, 2015). Further, using hospital records, numerous cases of asthma, bronchitis, eye, and skin infection were identified in rural Nigerian communities near oil fields (Ogbija *et al.*, 2015). It was also reported that the communities experienced environmental degradation of air, water, or land due to oil drilling operations, identifying oil spills and air pollution from flaring as important risk factors to environmental health (Ogbija *et al.*, 2015).

Among foreseeable challenges to exploration of oil-gas resources include infrastructure, economic concerns, and environmental impact(s) management (Mutebi, 2020). It is therefore upon stakeholders, local community members and their government(s) to put into perspective workable policies for successful exploration of oil resources in Eastern Africa and South Sudan in particular. The main challenge in exploration of oil-gas resources is that there are no specific workable policies fronted by the local communities or government policies suited to spearhead management of oil exploration in East African Countries,- South Sudan being inclusive (Rochette & Wright, 2015). In year 2012, the petroleum Act (2012) was passed to serve as a baseline for contractual understanding in the sector management. The Act was to be followed for public scrutiny on social-economic implication of oil contracts, and for overall good of the nation (good health and safety management). It is for the interest of South Sudanese, if all organizations involved in exploration of oil and its production have relevant capacity and qualifications. The unfortunate aspect is the 2012 Act on oil exploration is mired. The different parties which should append their signatures onto the 2012 petroleum bill include: executive (President), technical partners and funding agencies. Organizations which were to foresee a complete signing off and therein evaluations of implementation of the 2012 Act left South Sudan due to resurgence of the war. Furthermore, the Chinese contractor which had initially won the tender has on many occasions sought re-negotiation of the tender.

Health and safety management and policy frameworks are expected to draw the lines in which organizations conduct their practices. With the policy frameworks implemented appropriately, healthy life of the people may be achievable in the areas where oil is being explored. However, if the health and safety management policy frameworks are not in place or are poorly being implemented then achieving good health of the citizens may be a challenge as noted from the observations made in the background. It is against this background having identified health and environmental risk that this study was initiated as an enquiry to identify the gap between policy guidelines and practice reality on the ground especially in the wake of contracts being nullified.

1.1 Statement of the Problem

The government of South Sudan has petroleum Act 2012 which stipulates on different measures which a contractor and contractee need to adhere to while engaging in any of the oil exploration projects throughout South Sudan. The policy indicates that the social-economic, environmental

consideration is a key aspect which needs to be put into consideration while mining oil. The 2012 Act provides the safety requirements, health and safety management plan, and environmental management plan among others. However, not much has been appreciated as per the reality on the ground (African Development Bank [AFDB], 2016). A key point of concern has been on the health conditions of the people living and working around the oil exploration sites (Takpiny, 2019).

In Paloich-Melut County, there are many cases of deformities, miscarriage, and death during delivery on daily basis, having a serious negative impact on people, especially on reproduction rates. Other cases reported that pose a threat on the health of people includes drinking water being polluted by oil and cases of birth defects. This is whereby some children were born with no limbs, toes, hands and vision due to the effects of oil pollution. Notably, since 2017, 267 miscarriage cases have been recorded whereas the number of babies born deformed or with disabilities is 10 and the number of death during labor is 12 (Ngor, 2020). These figures do not include those who live in remote areas with no hospitals and roads to connect them with state headquarters. This urges to enquire whether what is stipulated and implemented in policies for health concerns is actually addressing the health of people especially in oil extraction and source. Based on these facts, this study intends to uncover the effect of policy frameworks on the health and safety management and the challenges surrounding its implementation within the region, especially when company policy and oil extractions Act 2012 stipulated health services delivery and management guidelines are stipulated.

Literature on the policy frameworks and health and safety management in the oil exploration in South Sudan, most of the studies have been conducted in the developed countries and Asian countries, but little is known within the African region, especially South Sudan focusing on health service management. This study sought to fill this empirical gap as well as bring out the role that policy frameworks, if implemented correctly may promote proper health and safety management practices among oil exploration companies. This study investigated the effect of policy frameworks on the health and safety management practices among the oil exploration companies in Paloich-Melut County, South Sudan.

1.2 Research Objectives

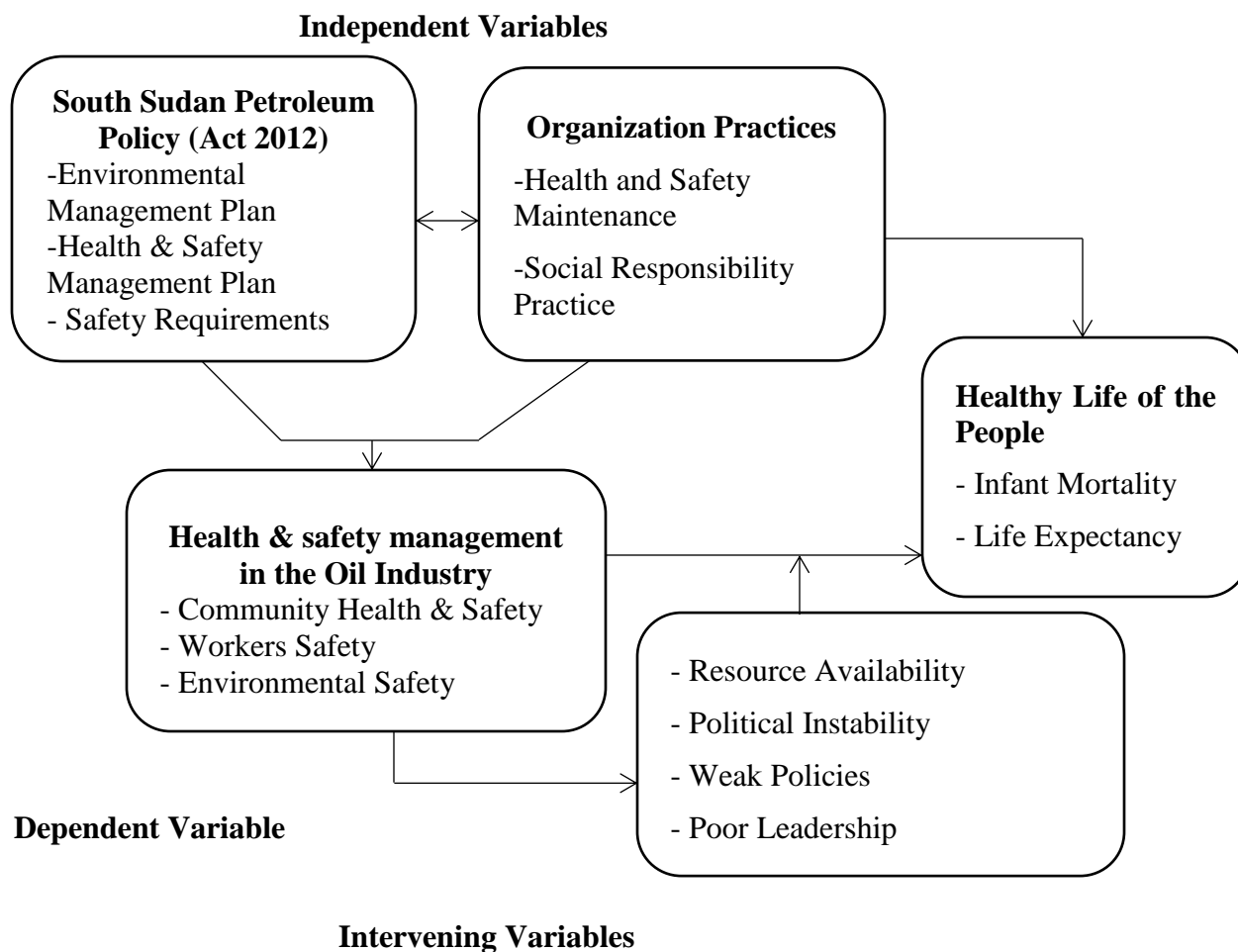
This study was guided by the following objectives:

- i. To assess the government and oil extraction company policy on the health and safety management practices by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan.
- ii. To examine whether organizational practices are guided by the South Sudan Policy framework and how it affects the health and safety management of community by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan.
- iii. To explore the challenges affecting the implementation of policy frameworks for health and safety management practices by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan.

2.0 Conceptual Framework

This study conceptualizes that the dependent variable depends upon the independent variables. In the case of this study, health and safety management in the oil exploration is considered the dependent variable which relies on South Sudan Petroleum Policy (Act 2012) and organizational policies. Additionally, the study also points out that there is an intervening variable which forms

the challenges that may independently affect the effectiveness of the policies in the health and safety management in the oil exploration industry. The relationship between the variables is as illustrated by Figure 1.



3.0 Research Methodology

The study was conducted at the Dar Petroleum Operating Company (DPOC) in Melut County. The target population for this study included DPOC Key Officials (10), Ministry of Petroleum Officials (5), Local government agency officials (5), primary respondents (100) and the 25 opinion leaders (Social justice and peace practitioners, Development committees, Medical practitioners, and Pastoral teams). Descriptive survey research design was used to collect quantitative and qualitative data thus following mixed method approach. Quantitative data was collected using questionnaires while Qualitative data was obtained from in-depth interviews. Quantitative data was analysed using descriptive and inferential statistics. Qualitative data was analyzed using thematic analysis.

4.0 Results and Discussion

The study administered a total of 145 questionnaires. A total of 122 questionnaires were filled and returned resulting to 85% response rate.

4.1 Qualitative analysis

Qualitative data was analyzed using thematic analysis. The respondents were asked in what other ways the government policy (Act 2012) affects the health and safety management by Dar Petroleum Operating Company. The responses were that;

“The government policy (Act 2012) affect the health and safety management of DPOC through imposing health and safety regulations and laws for implementation of health and safety procedures.”

Using the interview guide, the respondents were asked on the government and company policy on the health and safety management practices by Dar Petroleum Operating Company in Paloich-Melut County, South Sudan. An Environmental health officer noted that;

“Safe system of work, safe equipment and competence workers and protection from risk of injury. Controlling risks, accidents and investigations.”

Further, some key Officials responded that;

“The health and safety management practices shall be maintained and continuously developed and shall set out the safety objectives. The system by which the objectives are to be achieved and performance standards are to be met through health and safety ways.”

A respondent from the Local government agency indicated that;

“The policies are the government Act 2012, Exploration petroleum sharing agreement, environmental protection regulations and the company internal rules and regulations.”

The interview guide poised the question on how the organizational health practices affect the health and safety management of community by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan. An official indicated that;

“The organizational practices include provision of health care services and safety signs, supervisor, first aid, reporting accidents, incidents and diseases and provision of training for health and safety information, awareness creation among community members around the oil fields and provision of clean water to the local community.”

A health official indicated that;

“Successful implementation of health and safety policies comes with a lot of benefits which includes reduction of litigation, accidents and illness in the organization. This improves the company and the communities around the operating areas and better performance of the company.”

The interview guide poised the question on the challenges affecting the implementation of policy frameworks for health and safety management practices by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan.

“The challenges include inadequate resources to implement the safety policy, improper health and safety planning and procedures of implementing health and safety rules and regulations. There is also the lack of cooperation between the company and the communities at the Melut County.”

A health official indicated that;

“Institutional capacity building is a challenge because the company is unable to handle issues of deformities, death and environmental pollution in the County.”

4.2 Regression Analysis

The study conducted regression analysis to establish the statistical significance relationship between the study variables. The results presented in Table 1,2 and 3 present the results used of the regression model in explaining the study phenomena.

Table 1: Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.669 ^a	.447	.426	.59909

a. Predictors: (Constant), Policy Framework

As shown in the model summary, R is .669 and R Square .447. This means that 44.7% variation of the health and safety management practices at DPOC is addressed by the policy framework (government policy and organizational practices). The residue of 55.3% can be explained by other factors besides the policy framework.

Table 2: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.364	3	7.455	20.771	.000 ^b
	Residual	27.636	77	.359		
	Total	50.000	80			

a. Dependent Variable: Health and Safety Management Practices

b. Predictors: (Constant), Policy Framework

From the ANOVA results, it is evident that the model under examination was statistically significant in explaining the relationship between the dependent and independent variables. This is because the p value obtained (0.00) is less than 0.05 at 5% level of significance. It can therefore be concluded that there is a statistical significant relationship between policy framework and health and safety management practices. This implies that the policy framework has a positive effect on health and safety management practices in the oil and gas industry. In line with this finding, Liu *et al.* (2020) established a significant relationship between Occupational Health and Safety Management Frameworks (OHSMF) and workplace accidents and injuries. Cinaroglu (2018) also noted a significant relationship between policy and health and safety practices.

Table 3: Correlation Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.095	.785		1.395	.167
Government Policy	.229	.047	.488	4.873	.000
1 Organization Practices	.059	.036	.145	1.610	.112
Challenges	-.109	.051	-.204	2.129	.036

a. Dependent Variable: Health and Safety Management Practices

The regression of coefficient results show that Government policy and health and safety management practices among oil exploration companies is positively and significantly related ($\beta=0.229$, $p=0.000$). Organizational practices and health and safety management practices among oil exploration companies is positive but insignificantly related ($\beta=0.059$, $p=0.112$). Lastly, the organizational challenges and health and safety management practices among oil exploration companies is negatively and significantly related ($\beta=-0.109$, $p=0.036$). This means that an increase in organizational challenges leads to a decrease in health and safety management practices

4.3 Discussion of findings

The overall objective of this study was to analyze the health policy provisions in the oil extraction and the health and safety management practices among oil exploration companies in Paloich-Melut County, South Sudan with a specific to Dar Petroleum Operating Company. The first objective of the study was to assess the government and oil extraction company policy on the health and safety management practices. The results indicated that majority of the respondents at 100% were aware of the petroleum Act Policy of 2012 while only a few were not aware of the policy. The government of South Sudan has petroleum Act 2012 which stipulates on different measures, which a contractor and contractee need to adhere to while engaging in any of the oil exploration projects throughout South Sudan. Majority indicated that the petroleum policy was not effective at 70% followed by very effective at 26% and 4% not being sure. 44.7% variation of the health and safety management practices at DPOC is addressed by the policy framework (government policy and organizational practices). Correlation results revealed that Government Policy is positively and significantly associated with the health and safety management practices. The regression results indicated that Government policy and health and safety management practices among oil exploration companies is positively and significantly related. This implies that an increase in Government Policy would lead to an increase on safety management practices among oil exploration companies.

The second objective was to examine whether the South Sudan Policy framework guides organizational practices and how it affects the health and safety management of community by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan. The results indicated that majority at 78% agreed that they were aware of the organization practices implemented by the DPOC to facilitate health and safety management in their location. However, 22% responded that they were not aware of the organization practices implemented by DPOC. Majority found the

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organizational practices were not effective at 67% and effective at 19%. Majority (74%) agreed that there are organization policies and practices on health and safety management governed by the provisions in the section of health, safety and protection of the environment of the Petroleum Act (2012). Correlation results indicated that organizational practices is positively and significantly associated with the health and safety management practices by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan. Regression results indicated that organizational practices and health and safety management practices among oil exploration companies is positively and significantly related. This implies that an increase in organizational practices would lead to an increase on safety management practices among oil exploration companies.

The third objective was to explore the challenges affecting the implementation of policy frameworks for health and safety management practices by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan. The results indicated that majority of the respondents at 89% were aware of the challenges affecting the implementation of policy frameworks for health and safety management practices. Correlation results indicated that organizational challenges is negatively and significantly associated with the health and safety management practices by Dar Petroleum Operating Company in Paloich- Melut County, South Sudan. The regression results indicated that organizational challenges and health and safety management practices among oil exploration companies is negatively and significantly related. Therefore, the organizational challenges had a negative effect and thus increase in challenged would lead to a decrease in safety management practices among oil exploration companies.

5.0 Conclusions

The study concludes that Government policy and health safety management practices among oil exploration companies are positively and significantly related. This implies that an increase in implementation of Government Policy would lead to a significant increase on safety management practices among oil exploration companies.

Regression results indicated that organizational practices and health and safety management practices among oil exploration companies is positively and significantly related. This implies that an increase in implementation of organizational practices would lead to a significant increase on safety management practices among oil exploration companies.

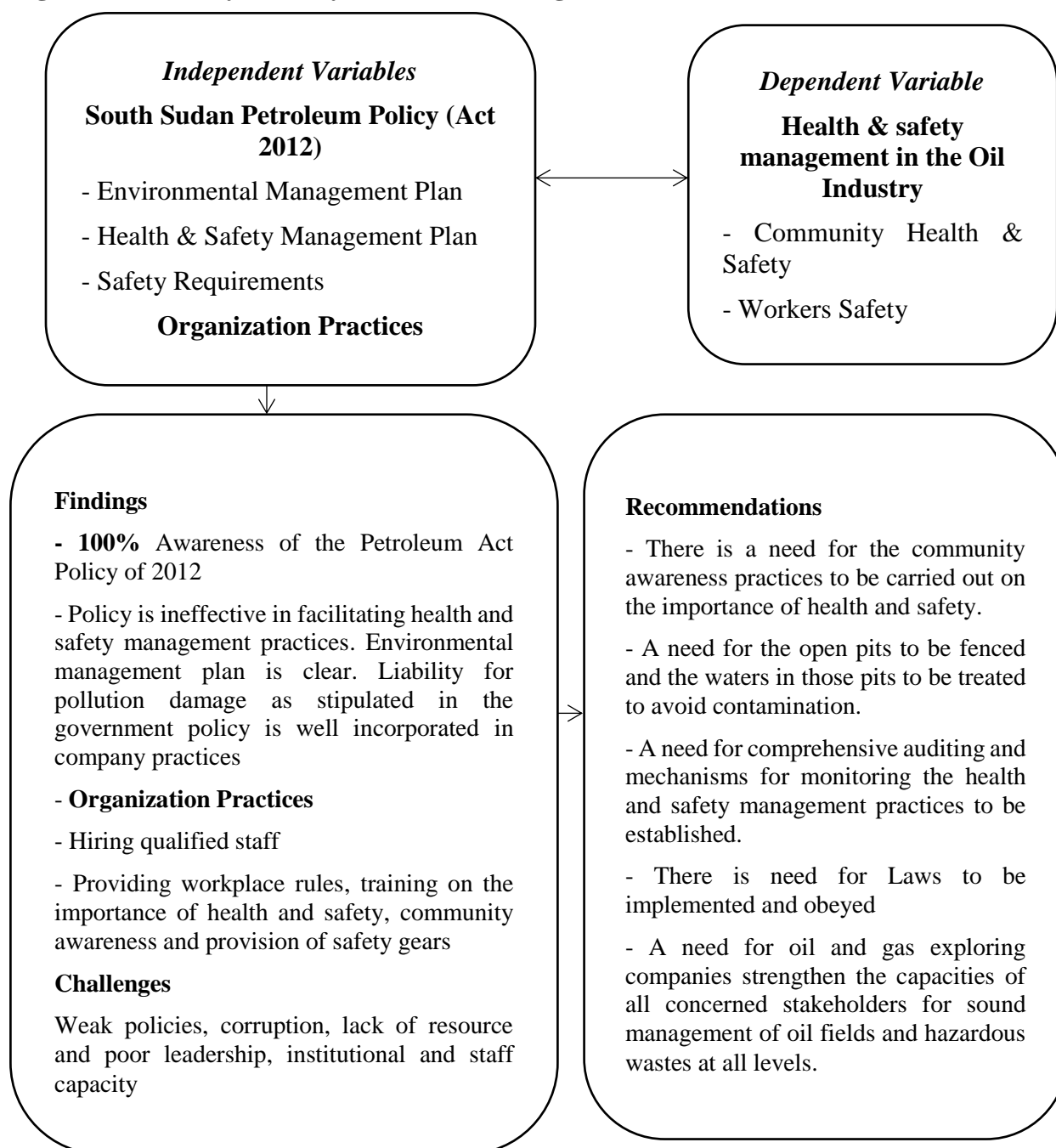
Lastly, organizational challenges and health and safety management practices among oil exploration companies is negatively and significantly related. Therefore, the organizational challenges had a negative effect and thus increase in challenges would lead to a significant decrease in health and safety management among oil exploration companies.

6.0 Recommendations

The study recommends that the oil and gas exploring companies strengthen the capacities of all concerned to achieve the sound management intellectual capital, exploration and production waste minimization, sound management of oil fields and hazardous wastes at all levels. The companies should maximize activities; including green jobs creation with enhanced competence assured quality, for improved standards of living, public health and protection of the environment, and need to continue working together to promote the safe production and use of oil and gas sector management.

The study recommends that the oil and gas exploring companies recognize the need to make special efforts to protect those groups in society that are particularly vulnerable to risks from hazardous oil field or are highly exposed to them. They should protect children and the unborn from waste exposures that impair their future lives. Lastly, the oil and gas exploring companies should facilitate public access to appropriate information and knowledge on exploration and production and associated wastes and oil fields throughout their life cycle, including the risks that they pose to human health.

Figure 2: Summary of Study Variables, Findings and Recommendations



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