Exploring Knowledge Management and Green Corporate Strategy (GCS) Nexus

[1]Luke Amadi, [2]Imoh Imoh-Ita, [3]Mina M Ogbanga

[1,2] Department of Political Science & Administrative Studies University of Port Harcourt, Nigeria
[3] Department of Sociology, University of Port Harcourt, Nigeria

Abstract: **There are raging debates that corporate practices of large corporate organizations such as multinational oil companies (MNOCs) are at variance with sustainable environmental development proclivity. Knowledge Management (KM)   could assume new roles for institutional overhaul of corporate organizations such as MNOCs where Green Corporate Social Responsibility (GCSR) could be prioritized in crude oil resource exploitation to alleviate deleterious environmental effects. A four decade scenario of oil spill (1976 to 2011) and case analysis between Shell Petroleum Development Company (SPDC) a major MNOC in the Niger Delta South -South Nigeria and Ogoni an oil bearing community in the Niger Delta was examined to demonstrate how Ogoni sealed SPDCs' operations since 1993. The study deployed sets of primary and secondary data sources as well as seminal theoretical issues raised on environmental sustainability. Findings suggest that   green KM initiatives have had minimal impacts on multinational oil companies (MNOCs) and their business transactions as MNOCs protect their historical corporate interests against KM scrutiny. The paper proposes a green corporate social responsibility (GCSR) as a model for corporate resource sustainability.**

Keywords: **Sustainable Development, Environmental Degradation, KM, Green Corporate Strategy.**

1.   INTRODUCTION

Recent trends suggest that novel environmental awareness have changed how companies do business (Hart,1997). In the 1960s and 1970s, corporations were in a state of denial regarding their impact on environment as a vortex of   ecological problems which compelled government regulation ensued. In the United States, Lake Eric was dead. In Europe, the Rhine was on fire. In Japan, people were dying of mercury (Hart, 1997).

David Korten (1995) unravels the myths of global economy and argues that rather than concentrating on increasing economic growth and GDP, we should concentrate on ending poverty, improving our quality of life, and achieving a sustainable balance with the Earth.

Most periphery coastal societies such as the Niger Delta are witnessing environmental degradation which is now common place in the region described as volatile, impoverished and marginalized. Local people in the delta are acutely aware of how much wealth oil can produce (UNDP, 2006).

Following the discovery of oil in commercial quantity in 1956 in Oloibiri, Bayelsa State, a number of multinational companies have been involved in oil exploration and exploitation. The oil industry in Nigeria is operated by six-joint venture operations between Nigeria and the Trans-National Corporations: Shell (Netherlands/UK), Exxon Mobil (US), Chevron-Texaco (US), AGIP (Italy), and Elf-Aquitaine (France). Oil production in Ogoni ran from 1958 till 1993 when it was shut down in the face of a massive campaign of public protest against SPDC's operations.

In recent decades, "Oil and gas alone have generated 40 % of Nigeria's national GDP. Between 2000 and 2004, oil accounted for about 79.5 % of total government revenues and about 97% of foreign exchange revenues. Within the delta, a few oil companies and individuals appear to be flush with cash" (UNDP, 2006, p.5). Crude oil plays a key role in

Nigeria's economy today as it has accounted for more than 70% of Nigeria's total merchandizing exports (Kadafa, 2012; Amadi, 2013).

The Nigerian constitution provides that oil is the property of the federal government. The government under the auspices of the Nigerian National Petroleum Company (NNPC) operates in partnership with these multinational companies. The petroleum Act determines the structural operations of oil exploration in Nigeria. There are other relevant legislative mechanisms which are promulgated by the Nigerian government to give directions on how oil exploration could be safely conducted.

Duhon,(1998) argues that Knowledge Management (KM)is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers.

This corporate perspective underscores the critical fact that KM, historically at least, is primarily about managing the knowledge about and within an organization. Since the 1990s, KM launched the vast empirical and theoretical research trajectory, there is minimal cutting edge institutional dynamics on corporate environmental sustainability practice among firms such as oil multinationals and natural resource extraction in the coastal regions of the global South such as the Niger Delta in Nigeria.

Onyancha (2006), suggests evidence of KM dynamics in South Africa in the late 2000s, but concludes that other countries in Eastern, Central and Southern Africa are also called upon to follow South Africa's example. This attempt to create linkages between KM and green corporate strategy (GCS) is almost an unexplored terrain. Not a few studies are discussing ecological consequences of poor KM initiatives in Africa.

Socially Responsible Investing (SRI) is an investment philosophy that uses screens based on environmental and social preferences to select or avoid investing in certain companies (Renneboog, et al;2008).Such critical demands should be essential in oil resource extraction.

The above premise implicates oil exploration in the Niger Delta characterized with environmental pollution. In *Nisisioken Ogale* a community in Ogoni Rivers State as in many other communities, UNEP (2011) shows that there are drinking water from wells that is contaminated with benzene, a known carcinogen, at levels over 900 times above the World Health Organization (WHO) guideline. The report states that this contamination warrants emergency action ahead of all other remediation efforts.

Beyond environmental degradation is poverty and low Human Development Index (HDI) comparatively with other resource rich countries. With HDI of 0.453, the area rates far below countries or regions with similar oil and gas resources. For example, the HDI for Saudi Arabia in 2000 stood at 0.800, while in 2003 the United Arab Emirates, Kuwait, Libya, Venezuela and Indonesia achieved scores of 0.849, 0.844, 0.799, 0.772 and 0.697, respectively (UNDP,2006) .

Other challenges include conflicts among the communities. The analysis of the dimensions of the conflict in the Niger Delta has shown that corporate politics including the share of resource rents are contributory factors to communal crisis and the escalation of insurgent activities such as militancy. This has been acknowledged not only by several researchers, but also by a consultancy hired by Shell. A report (which leaked in December 2003) concluded that the company itself " is part of the conflict dynamics … and corporate practices can lead to conflict" (Watts,2004).

On its part, SPDC claims that; "Over the years we have reduced the amount spilled at our operations for reasons we can control, like corrosion or operational failures"(Shell Bulletin,2013:2). In its April 2012 corporate report, captioned, 'Shell in Nigeria: Improving lives in the Niger Delta,' it reported that each year, its operations in Nigeria generate billions of dollars for the government that are important for the funding of national and economic development plans and programmes (Egba, 2013).

On extractive transparency, Shell states; "Shell initiated and was a leading sponsor of the Nigerian Extractive Industry Transparency Initiative,(NEITI), which openly publishes payments made to the government by the energy industry and the allocation of money to states by the federal government. We are keen that oil producing state governments adopts similar initiatives" (Shell Bulletin, 2013:1).

Beyond the escalating challenges of environmental degradation, elite conspiracy and corruption have been core issues integral to the deleterious resource extraction in the Niger Delta as most oil resource revenue are not transparently accounted for. For instance, the most important contribution Shell companies in Nigeria make to society is through the monies they pay to the federal government – approximately $36 billion in taxes and royalties from 2005-2008 (Hennchen, 2010).In addition to these payments, in 2008 Shell companies and their partners administered over $158.2 million (Shell share $56.8 million) to the Niger Delta Development Commission (NDDC) as required by law. In the same year, the operations run by the SPDC contributed a further $84 million (Shell share $25.2 million) to community development (CD) projects (Hennchen, 2010). These promote and support small businesses, agriculture, skills training, education, healthcare, micro lending and capacity building (Royal Dutch Shell, 2009:22). As a direct effort to peace-building Shell like other oil companies are paying a monthly contribution to the amnesty program run by the government (Hennchen, 2010).

The paper argues for corporate greening   as it seeks to provide answers to some fundamental questions such as; how KM has been designed to accommodate greening by SPDC and specific green KM practices Shell observes in relation to environmental sustainability. Also, what green strategy   Shell does not observe which results oil spill and shutting down of its operation by Ogoni people. It argues that the need to re-examine the environmental impact of Shell's operation in the Niger Delta is important to both local and international policy makers and researchers seeking to mitigate environmental degradation for sustainable development through effective and responsible corporate governance. This is primarily aimed at understanding   the strategic gaps between the stated objectives of the multinational corporation in line with sustainable development and further redress issues of environmental degradation such as oil spill, acid rains, gas flaring, water contamination, environmental insecurity and conflicts with the understanding and practice of green KM. What follows is the literature review.

2.   LITERATURE REVIEW

In the last two decades, debates and policy issues on KM have received increasing attention in corporate discourse . This revolution has had a profound impact on how business activities impact environmental wellbeing of the wider society by bringing to the fore sustainable, renewable and equitable corporate choices.

More recently, corporate environmental accounting have been germane in developmental discourse and similar literature which seeks for more efficient use of natural resources in manufacturing and corporate services (Hobson, 2003; Schor, 2005; Davidson,.& Hatt. et al.,2005).In the closing years of the last millennium, senior managers have come to accept that people, not cash, buildings or equipment, are the critical differentiators of a business enterprise (Fitz-enz,, 2000).

Corporate social responsibility (CSR) has been an integral part of corporate relationship of corporate organizations (Friedman,1970;Mcwilliams, and Siegel,2001).Its interface with environmentalism following sustainable development debate has given it a novel impetus with concepts such as green corporate social responsibility(GCSR) Marrewijk;(2003) provides concepts and definitions of CSR and corporate sustainability to buttress the novel relevance of CSR in the sustainable development discourse.

Similarly, the study of   KM in sustainable development contexts has provided novel engagement with disciplines such as eco-efficiency and greening as recent concern has been raised on environmental sustainability in corporate policy framings (Amadi, et al; 2014). A correlate of this prognosis is corporate environmentalism which underscores environmentally beneficial actions for corporations. Corporate environmentalism is often viewed as part of corporate social responsibility (CSR). Friedman (1970) provided one of the seminal debates on the profitability of corporate social responsibility(CSR) with emphasis on strict adherence to societal demands against corporate objectives.

It is pertinent to understand how the perceptions of the corporate world are shaping or influencing greening. Existing literature shows evidence of unsustainable corporate environmental resource use. Ecologist, Juliet Schor.(2005)had demonstrated this growing concern when she argued that it is important to remember that all manufactured goods have environmental effects associated with their production and in some cases, consumption.

Koenig (1990) examined existing differentiations in the logic and dynamics of KM between Explicit Knowledge (information or knowledge that is set out in tangible form), Implicit Knowledge(information or knowledge that is not set out in tangible form but could be made explicit)and Tacit Knowledge(information or knowledge that one would have extreme difficulty operationally setting out in tangible form).

The quantification of managerial intelligence has appeared as tools for measuring tacit knowledge (Sternberg, & Wagner,1992) .The shift in the development of KM Koenig(1990) tells us not only about its history, but also reveals a great deal about what constitutes KM and more importantly, how KM should be framed to meet the dynamic trends in future corporate practices.

Booth (1998) argues that intellectual capital is the ability to translate new ideas into products or services and it comprises people related assets, non-people related (market assets) and internal assets. Davenport (1994)echoes that KM is the process of capturing, distributing, and effectively using knowledge.

Koenig (1990)observed that another way to view and define KM is to describe it as the movement to replicate the information environment known to be conducive to successful R&D—rich, deep, and open communication and information access—and deploy it broadly across the firm. He argued that it is almost trite now to observe that we are in the post-industrial information age and that an increasingly large proportion of the working population consists of information workers. Koenig(1990) demonstrates that the role of the researcher, considered the quintessential information worker, has been studied in depth with a focus on identifying environmental aspects that lead to successful research , and that the strongest relationship by far is with information and knowledge access and communication.

At the conceptual level are perspectives which consider the empirics of KM and posit that KM emerged as a scientific discipline in the early 1990s (Hansen,1992;Kim, and Hwang,1992; Edvinsson,.& Malone, 1997;Allee, 2002;Harlow, 2008).It was initially supported solely by corporate practitioners, later consultants. Such empirics have also been explored in the series of subsequent studies undertaken by scholars to understand the dynamics of corporate innovation (Benbasat, & Zmud, 1999). For instance in Japanese corporate organizations, Nonaka & Takeuchi (1995) explore, "The knowledge creating company" examining how "Japanese Companies Create the Dynamics of Innovation" their contention has been the relevance of effective corporate information management, known as SECI model. Since then KM has been a growth discipline encompassing ecological studies. Spender (2006) adopts a rationalist treatment of knowledge assets which relates data and meaning to purposive practice.

Sveiby (2001) identified three tracks in the course of development of KM. IT systems, (IT track) customers,(People track), innovation on IT (Interactive tract) such as web pages, e-business, e-commerce, on-line transactions. He emphasized "The People-Track", but argued that although old in its theory origins, is still in its infancy when it comes to KM applications. Sveiby ,(2001) shows that the people track is the most promising because the issues are about how to maximize the ability of an organization's people to create new knowledge and how to build environments conducive to sharing of knowledge. The question is how to create innovation enhancing environments.

The debate on "innovation enhancing environment" is a corollary of sustainability discourse where corporate organizations could down play profit maximization and emphasize sustainable environmental development. Korten (1995) made similar observation and reinforced the need for attention to ecological issues in corporate transactions. Such innovations according to Govindarajan and Trimble,(2005) are central to the success and viability of an organization.

There is a growing movement in the world of business to engage in the international dialogue about corporate sustainability. The Exxon Valdez oil spill, the Bhopal disaster, the fraudulent financial reporting and subsequent collapse of Enron, Tyco, and Worldcom, and the 2008-2009 collapse of financial industries destroyed public trust and confidence in the corporate world, and affected the bottom-line performance of numerous companies because their behavior and financial reporting could not be trusted(Kibert, et al;2012).

Driven by this plague of environmental mishaps, fraud, and corporate scandals over the past three decades, the business world has embraced the notion of responsibility beyond mere financial performance (Kibert, et al;2012).The corporate sustainability movement attempts to apply sustainability to guide the behavior of business with respect to both society and the environment as well as its responsibility to stakeholders. In this new model, corporations value their success not solely based on its financial bottom-line, but also on their environmental and social performance. This shift in corporate attitudes from purely profit-making operations to sustainable organizations is nothing short of startling (Kibert, etal;2012).

Sustainable development defined, as development that meets the needs of the present generation without compromising the ability of the future from meeting theirs (WCSD,1987), is pro poor, pro people and pro -environment. However, its ambitious objectives seem minimally attained at a time of revaluing oil multinationals and resource exploitation as issues such as greening seem less prioritized among corporate multinationals. Significantly there is a wide gap between corporate policy pronouncement and corporate policy implementation. Bakan (2005)reasserts such hugely significant

debate in exploring the increasing problems associated with corporations. He shows that profit and power are the motif forces that drive corporations.

At the 1992 Earth Summit, both greening and eco-efficiency were endorsed as new business concepts and means for companies to implement Agenda 21 in the private sector(WSSD,1992).Strategies that have been linked to eco-efficiency include; "Factor 4" and "Factor 10", which call for specific reductions in resource use, "natural capitalism", which incorporates eco-efficiency as part of a broader strategy, and the "cradle-to-cradle" movement, which claims to go beyond eco-efficiency in abolishing the very idea of waste.

There are literatures discussing aspects of corporate greening challenges among oil multinationals (Hart,1997; Dressen,2003). Paul Dressen (2003) revealed how the ideological environmental movement -- essentially comprised of wealthy, left-leaning Americans and Europeans -- wants to impose its views on billions of poor, desperate Africans, Asians and Latin Americans, violates these people's most basic human rights, and denies them economic opportunities, the chance for better lives, and the right to rid their countries of diseases that were vanquished long ago in the U.S. and Europe. He argues further that the UK based British Petroleum became the world's second largest hydrocarbons producer in 1998 when it finalized a $55billion merger with Amoco Corporation and changed its name to BP Amoco. Dressen,(2003:11) reports that after a $36 billion merger with Arco the following year, the company adopted the simpler moniker, BP. The company installed expensive solar panels on 200 of its 17,000 service stations and, over a two year period spent nearly $ 200 million on a barrage of clever news releases and newspaper, television and "wall" ads on the side of buildings. He argued that all turned the same basic messages: "We protect the environment, vigorously support the Kyoto global warming treaty and devote past sums to wind and solar energy by the way, we still produce petroleum (But we produce it more responsibly than our competitors)".

Within the corporate greening strategy (GCS),top corporate Executive, Rich Lecher(2009) identified pillars of green corporate responsibility(GCR)and contends that issues to be considered include the alignment of a company's environmental strategy into an overall business strategy and how environmental values may be translated into an improved brand image. Influential American economist Lesther Thurow (1992) explores the need for corporate environmental sustainability as economists have now come close circle with realities of global warming. Collier (2010) posits that proper stewardship of natural assets and liabilities is a matter of planetary urgency: natural resources have the potential either to transform the poorest countries or to tear them apart, while the carbon emissions and agricultural follies of the developed world could further impoverish them.

It is expedient to examine KM beyond contemporary ICT innovations and re-focus attention towards broader considerations of how technological innovations and applications could shape corporate greening choices and ultimately sustainable environmental outcomes. While this study needs further research, the empirical validity is glaring, Jenkin, et al;(2011) propose, "Green Information Technologies and Systems" to explore employees' perceptions of organizational practices. Their study suggested that organizations are still in the infancy stage of awareness and adoption of "Green" IT/S.

Recent interest in GCSR gave rise to alternative perspectives such as corporate citizenship Marrewijk,(2003)and corporate sustainability (Logsdon, & Wood,2002; Matten, et al; 2003).The later sees CSR as a developmental model, while the former infuses environmental awareness and consciousness on the corporate citizen. Socially responsible investing (SRI) has also become a major strand of CSR, which is an investment philosophy that uses screens based on environmental and social preferences to select or avoid investing in certain companies (Renneboog, et al;2008;Magali,etal;2013).

The dearth of literature on KM and GCSR nexus in the poor societies suggest that KM requires greater attention for responsible and accountable corporate transactions. Whereas a vast intellectual discourse has been launched on KM both in Europe and America in the 1990s with the PRISM model to include ecological and social perspectives in intangible frameworks (Bontis,1999). Kaplan**,** & Norton,1997; Harlow,2008),their respective models—"Intangible Assets Monitor" (IAM) (Sveiby,1997) and "Skandia Navigator" (Harlow,2008)—are representative of the assumptions, principles, and foundations of the intellectual capital standard theory. Kaplan & Norton(1992) devised the "Balanced Scorecard" methodology with respect to effective strategy implementation. In Asia, there is the Japanese SECI model.

There is no clear empirical validation of KM initiatives on greening especially in the environmentally degraded periphery societies such as sub Saharan Africa (SSA). This is the foundational basis of this study. Though a "Knowledge Sharing

for Development: Africa Regional Program Workshop" was held in Cairo in February 2005 and "KM Capacity for African Research Institutes and Networks: East Africa Workshop" in Kampala, Uganda in June 2006 and sub –regional KM workshop in Johannesburg, South Africa in November 29th to December 1st,2006 and subsequent series. There are perhaps a handful of KM frameworks in the context of extractive resource industry at post Natural Resources Charter and the 2002 establishment of EITI.

The scant studies on this subject in poor societies of Africa, parts Asia and Latin America do not match the actual importance of KM. The literature on greening and CSR suggests that the linkages between both could be effective in corporate transformation given the varied interpretations the concepts can be subjected to. The article suggests that sustainability theories of strategic GCSR have the greatest potential for advancing this field of inquiry.

A review of the literature shows that gap exists in the current research on the validation of corporate greening strategies within KM frameworks. While there appears to be agreement that environmental and social performance is multidimensional there is little consensus in the literature on what particular KM practices are driving greening and more importantly what CSR ratings actually measures. Where- as these are not the focus of this study, they enrich the ongoing debate. The paper turns to case analysis on green CSR and the shutting down of Shell's operations in Ogoni land.

3. GREEN CSR AND THE SHUTTING DOWN OF SHELL'S OPERATIONS IN OGONI: A CASE ANALYSIS

Friedman(1970)argued that the only social responsibility of a business was to increase its profits. This according to him results to the notion of corporate executives sacrificing profits for the social good, which he likened to the practice of "taxation without representation." Shell has been active in Nigeria since 1936. When the company faced a reputational dent in 1995 over the Ogoni and the Brent Spar incidents, Shell has undertaken a serious review of its attitude and activities in the region and has carried out internal and external consultations about its practices in the region in line with the company's statement of General Business Principles, which it adopted in 1997(Hennchen,2010).The principles focused on five major areas of responsibility to shareholders, customers, employees, business partners, and the society (the host communities) and on its economic, social and environmental responsibilities (Hennchen,2010).In line with Shell's formulation of its three strategic areas – economic, social and environmental – The paper analyses the environmental issues associated with Shell and the shutting down of its operations in Ogoni community.

Shell started operations in Ogoni in 1958, drilling a total of 96 Shell started operations in Ogoni in 1958, drilling a total of 96 wells to bring nine oil fields on stream. By the end of 1992, Ogoni production was 28,000 barrels of oil a day, about 3% of SPDC's total production. SPDC agrees that, in the past, not enough oil revenue has been returned to the oil producing areas for developmental purposes" (Shell Bulletin,2013).

There are several environmental challenges associated with Shell and oil extraction in the Niger delta such as gas flaring, pollution and non- clean up. The gas was reportedly flared during operation of the flow stations (UNEP,2011). The massive pollution of Bodo city in Ogoni land and ecological implications including food crop production and drinking water were at issue.

There is a very real causal connection between lost livelihoods due to oil spills from company negligence, the rise in illegal bunkering and refining as an economic response of some locals born into desperation." (Hennchen, 2010). Rather than assume responsibility, SPDC kept denying which shows a defective corporate social responsibility (CSR)(Obi,2001). The environmental NGO, *Friends of the Earth*, estimates that the amount of oil spilled by Shell in Nigeria over the past 50 years is about five times that of the BP oil spill in the Gulf of Mexico" (Hennchen, 2010).

In 1970, the Ogoni Divisional Committee addressed a "Humble Petition of Complaint on Shell-BP Operations in the Niger Delta" to the Military Governor of Rivers State, signed by some Chiefs and members of the Ogoni elite, its contents, decried the loss of land to the oil industry, destruction of farmland —" (Obi,2001).

The Movement for Survival of Ogoni People (MOSOP) was established in 1990 it began campaigning for greater control over oil and gas resources on their land for development. It's demands were summarized in their 1990 'Ogoni Bill of Rights'(OBR), addressed to the Nigerian Government By May 1993, popular forces forced Shell out of Ogoni, abandoning its equipment, but operating its pipelines automatically. Shell's symbolic retreat in 1994 from Ogoni (9 oil fields and 96 production wells) was a moral victory for the Ogoni, and demonstrated to them that they could take on one

of the world's richest and most powerful multinationals, Shell, and win (Obi,2001). MOSOP stills bars the gates to Shell's re-entry into Ogoni till the time of this research. The subsequent section examines the methodology, discussions of findings, conclusion and   policy recommendations.

4.   METHODOLOGICAL APPROACH

In recent times growing environmental degradation in the Niger Delta has attracted a wide range of scholarship from various perspectives. This study deployed a content analysis to examine a number of relevant secondary data and policy issues raised on the ongoing dynamics in the Niger Delta. Content analysis refers to a general set of techniques useful for analysing and understanding collections of texts (Meyer, 2015).

An exploratory research framework was deployed to examine some of the existing literature on environmental degradation arising from oil spill using sets of secondary data generated from scenarios within a four decade period (1976-2011) as well as relevant theoretical literature exploring issues raised on environmental sustainability implications of oil spill on the host community. These data sources are suitable as a review of the theoretical issues raised by both the multinational oil companies (MNOCs) and the host communities are relevant to policy discourse and future development direction of the Niger Delta.

One central issue of interest is to provide an in-depth understanding of the existing secondary data. The reliance on data in scholarly publications is informed by their supposed validity and relevance to key issues of study. Similarly, primary data on environmental degradation in the Niger Delta was collected through self -administered primary survey conducted between May 2011 and January 2014. The survey was based on UNEP (2011) earlier survey on Environmental degradation in Ogoni community. Semi -Structured questionnaires were administered to respondents from both staff of shell and the host community on Shell and environmental degradation. A simple random sampling technique was used to collect primary data based on sample size of 1,500 respondents in the ten randomly selected communities from three Local Government Areas in Ogoni. The instrument of primary data collection was a semi-structured questionnaire titled; Environmental Degradation in Ogoni land(EDOGON) with reliability index of 0.88.
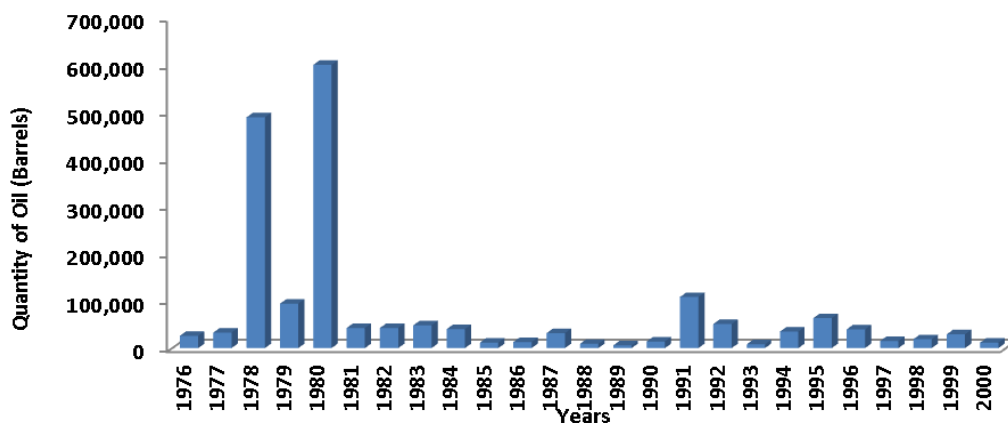

Fig 1: Annual Quantity of Oil Spill 1976-2000
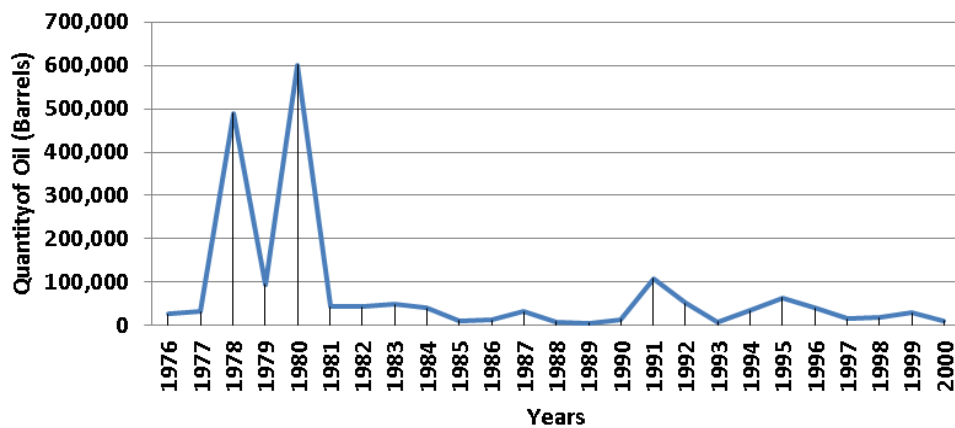
Source : Kadafa,2012

Fig 2.Annual Quantity of Oil Spill 1976-2000

Source : Kadafa,2012

Fig.1 provides the bar char while Fig.2 Provides the graphic analysis of annual quantity of oil spill in millions of barrels between the period 1976 to 2000.The data reports rise and fluctuation on the incidence. Between the years 1976 and 1977 it was relatively low it got to its higher peak in 1978 recording 500,000million and dropped to 100,000 in 1979 and rose again to 600,000 in 1980,it further had a sharp drop below 100,000 between 1981 to 1990 and rose above 100,000 in 1991 dropped in 1992 ,1993 rose a beat in 1994 and 1995 and dropped to less than 30,000 from 1995 to 2000.
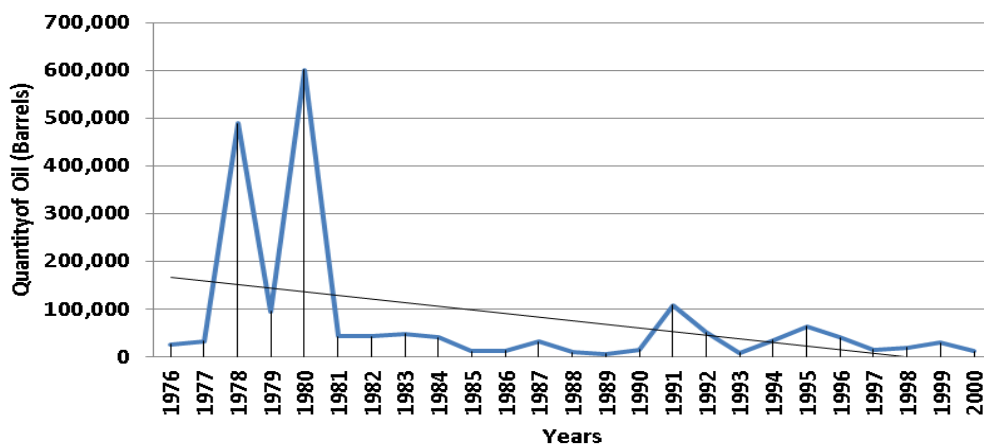
Fig.3. **Trend Annual Quantity of Oil Spill**

Source : Kadafa,2012

Figs.3 Provides a graphic analysis of yearly distribution of trends in annual quantity of oil spill in millions of barrels between the period 1976 to 2000.The data reports rise and fluctuation on the incidence. Between the years 1976 and 1977 it was relatively low, it got to a higher peak in 1978 dropped to 100,000 in 1979 recorded its highest peak of 600,000million in 1980 and dropped to less than 100,000 in 1992 to 2000.
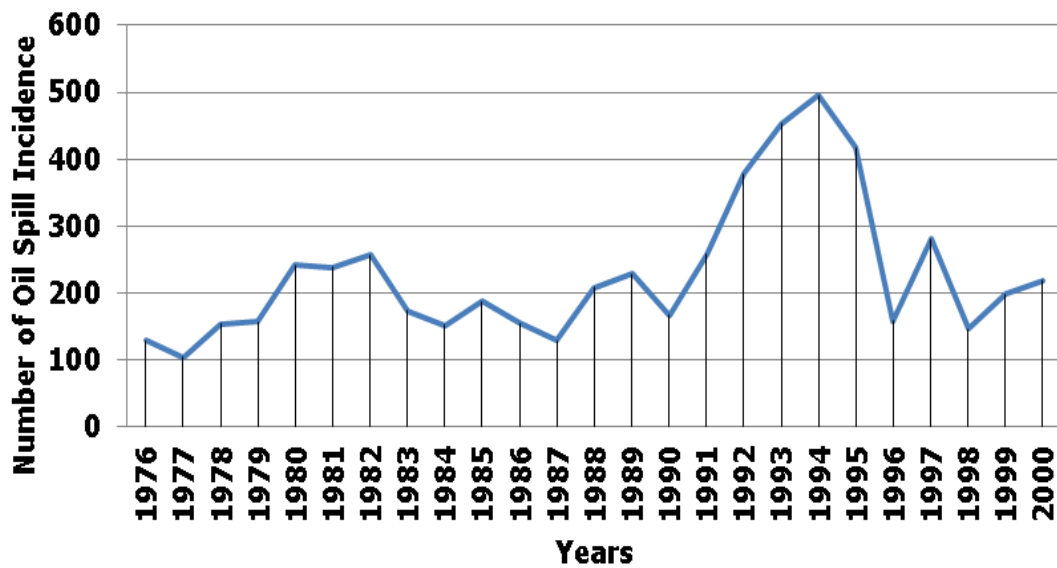
Fig. 4. **Annual Number of Oil Spill Incidence**
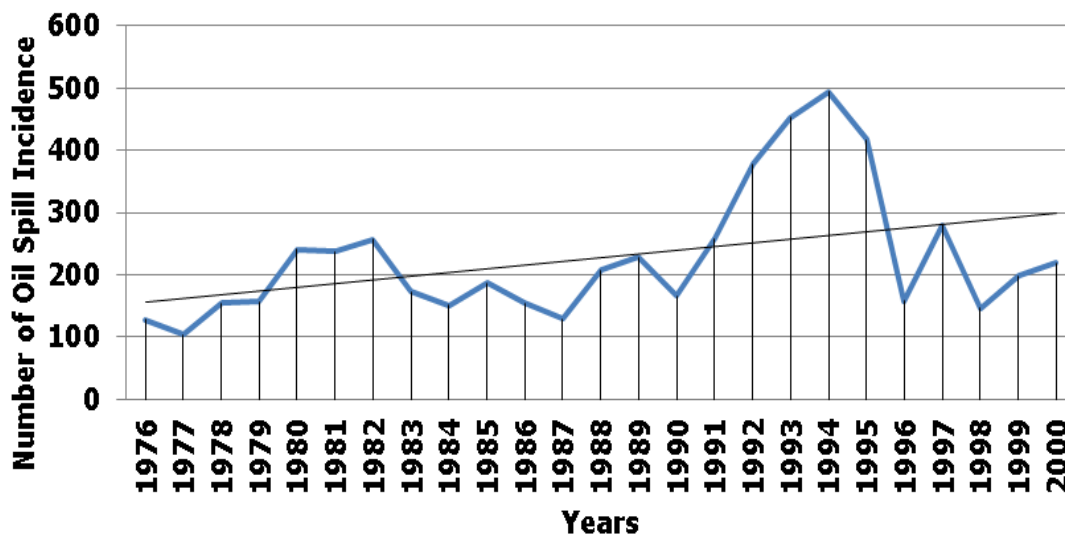
Source : Kadafa,2012

Fig 5.Trend Annual Number of Oil Spill Incidence

Source : Kadafa,2012

 Fig 4   Provides a graphic analysis of data on annual number of oil spill incidence yearly in hundreds between the period 1976 to 2000.The data reports rise and fluctuation on the incidence. However it shows that between the years 1976 and 1982 there was a progressive increase in number from 100 to 205 and a sharp drop in 1983 and 1984 and little rise to 199 in 1985 and decrease to 196 in 1986 and 195 in 1987, it rose to 200 and 202 respectively in 1988 and 1989 dropped to 107 in 1990 and 205 in 1991,405 in 1993,500in 1994,it reduced to 400 in 1995 and 107 in 1996.The number rose to 208 in 1997 dropped to 107 in 1998,increased to 200 in 1999 and 201 in 2000.

Table 1: Time Series Analysis of Oil Spill in the Niger-Delta

Year	No. of Spill	Quantity Spilled(in barrels)	Quantity Recovered (in barrels)	Quantity Loss to the Environment(in barrels)
1976	128	26157	7135	19021.5
1977	104	32879.25	1703.01	31176.75
1978	154	489294.75	391445	97849.75
1979	157	94117.13	63481.2	630635.93
1980	241	600.511.02	42416.83	558094.2
1981	238	42722.5	5470.2	37252.3
1982	257	42841	2171.4	40669.6
1983	173	48351.3	6355.9	41995.4
1984	151	40209	1644.8	38564.2
1985	187	11876	1719.3	10157.3
1986	155	12905	522	12358
1987	129	31866	25757	25757
1988	208	9172	1955	7207
1989	228	5956	2153	3803
1990	166	14150.35	2785.96	12057.8
1991	258	108367.01	2785.96	105912.05
1992	378	51187.9	1476.7	49711.2
1993	453	8105.32	2937.08	6632.11
1994	495	35123.71	2335.93	32787.78
1995	417	63677.17	3110.02	60568.15
1996	158	39903667	1183807	38716.87
Total	**4647**	**2369470**	**549060.38**	**1820410.5**
Source: Uyigue and Agho, 2007				

Table 2: Ranking of Major Environmental Problems in the Niger-Delta

Problem Type	Problem Subset	Priority Ranking
Natural Environment	Coaster/River bank erosion	Moderate
	Flooding	High
	Sedimentation/Silt	Moderate
	Substance	Low
	Exotic (water hyacinth)	Low
Development Related	Land degradation/Soil fertility Loss	High
	Agricultural decline/ shortened fallow	High
	Delta forest loss(Mangrove)	High
	Biodiversity depletion	High
	Fishery Decline	High
	Oil spillage	High
	Gas flaring	Moderate
	Sewage and waste water	High
	Other Chemical	Moderate

Source: Okon & Egbon, 1999

Table 3.   Flow Stations Constructed in Ogoni by Commissioning Year

Flow Station	Commissioning Year	Remarks
Bomu (K-Dere) -1	1958	Legacy infrastructure
Bomu (K-Dere) -2	Not available	Destroyed during Biafran War
Ebubu	1959	Legacy infrastructure
Bodo West	1963	Decommissioned
Korokoro	1965	Legacy infrastructure; 5 spills reported by SPDC
Yorla	1973	Legacy infrastructure; 3 spills reported by SPDC
Onne	Not available	Decommissioned

Source : UNEP,2011

According to information supplied by Shell, the flow stations in Ogoni were constructed between 1958 and 1973 .(UNEP,2011).

5.   ANALYSIS OF THE STUDY

This study is consistent with similar data provided by UNEP(2011) on issues of environmental unsustainability and degradation in the Niger Delta.. Shell continues to be a leading oil multinational in the region .In Ogoni, two key companies with operational facilities   are Shell, which manages the upstream activities, (exploration, production) and the Nigerian National Petroleum Company, (NNPC)which deals with the downstream activities(processing and distribution) (UNEP,2011).

Shell's technical installations in Ogoni comprise oil wells, flow lines, flow stations, manifolds (junctions of pipes) and a number of trunk lines that pass through the region. According to Shell the oil wells are capped and currently not producing. As a consequence, flow lines, flow stations and some of the manifolds are also not operational (UNEP,2011).

Statistical analysis carried out for oil spillage quantities and incidence between 1976-2000, showed decrease in oil spillage quantity and increase in oil spillage incidence. These results were based on figures the oil companies submit to the government and one would not expect them to represent the actual figures. Reliable data could not be obtained for the most recent spills, more extensive evaluation is required. An estimated 9 million- 13 million (1.5 million tons) of oil has been spilled into the Niger Delta ecosystem over the past 50 years; 50 times the estimated volume spilled in Exxon Valdez oil spill in Alaska 1989 (Kadafa, 2012).

SPDC since 1989 recorded an average of 221 spills per year in its operational area involving 7,350 barrels annually. From 1976-1996 a total of 4647 oil spill incidences spilling approximately 2,369,470 barrels of oil into the environment of which 1,820,410.5 (77%) were not recovered. Most of these oil spill incidences in the Niger Delta occur on land, swamp and the offshore environment (Kadafa, 2012). NNPC estimates 2,300 cubic meters of oil has spilled in 300 separate incidences annually between 1976-1996 (Kadafa, 2012).

In 2001 the western operations of SPDC recorded a total of 115 incidences of oil spills in which 5,187.14 barrels of oil were spilled and 734,053 barrels of the spilt oil representing 14.2% were recovered(SPDC,1995). In January 1998, 40,000 barrels of crude oil was spilled by Mobil in Eket but the largest spill in Nigeria was the offshore well blowout in January 1980 with a spill of approximately 200,000 barrels of oil into the Atlantic Ocean from an oil facility which damaged 340 hectares of mangrove forest (Kadafa, 2012).

The question is what KM strategic process could be applied to enable the oil multinationals reduce environmental degradation and direct their resource exploitation toward a more environmental friendly and sustainable manner?. The answer readily available is a green KM strategy.

6.   POLICY RECOMMENDATIONS

The findings of the present study shed light on the need for novel policy discourse on CSR, which if adopted can explain the importance of corporate resource sustainability. The present research has uncovered the policy relevance of KM in corporate sustainability. It is hoped that the research findings can aid policy makers and firms   to adopt a green corporate social responsibility(GCSR).This model as suggested should be an integral part of the overall corporate strategic

planning that facilitates good management of a firm based on the logic of *purpose* which depicts the picture of *corporate objective* and *future* for a firm.

Corporate managers and top executives in recent times are confronted with challenges of developing novel aptitude for environmental management. Peter Drucker (2006) argued that he had never come across a single "natural": an executive who was born effective. That all the effective ones have had to learn to be effective…practice effectiveness till it becomes part of them.

Lechner,(2009:1) identified seven pillars of green corporate social responsibility (GCSR)namely; Strategy; People, Information., Product, Information, Technology, Property and Business Operations. Corporate greening is central to contemporary corporate strategic models (CSMs). These activities are not merely environmentally responsible: they can also drive cost savings–another universal corporate mandate.

According to Lechner (2009) to develop policies that are both good for the planet and good for business, corporate leaders must consider questions such as:

• Are all aspects of our business, including operations, IT and product lifecycle management, efficient and protective of the environment?

• As part of our overall strategy to increase business efficiency, are we considering that environmental stewardship and energy consumption are new business barometers?

• Does our organization maintain a public commitment to meaningful and achievable goals, with transparency in reporting progress in meeting those goals?

• Are we taking a leadership position in driving energy conservation and environmental stewardship through the value chain and across our industry?

• Do we have a strategy that supports reducing costs, lowering complexity, and increasing operating and energy efficiency?

• Are we looking for ways to improve IT operations to generate more computing performance without increasing power consumption?

• Are we experiencing social and regulatory pressure and responding with verifiable energy conservation initiatives that proactively address energy and climate challenges?

• Are we pursuing the development of energy and environmental strategies and policies to improve business and brand position?(Lechner 2009:1).

Hart,(1997) contends that today many companies have accepted their responsibilities to do no harm to the environment. And that products and production processes are becoming cleaner, and where such change is under way, the environment is on the mend. The prognosis according to Hart(1997)is that in the industrialized nations, more and more companies are "going green" as they realize that they can reduce pollution and increase profits simultaneously. What has remained critical and contentious is the envisaged long term results.

Nonaka &Takeuchi (1995) had cautioned that a successful KM program permits actors both to convert internalized tacit knowledge into explicit codified knowledge in order to share it, and to internalize and make personally meaningful codified knowledge they have retrieved from the system. Therefore collaborative environments can be used for both creation and transfer of knowledge.

Alternative model which builds on green management capability is proposed as follows;

Sustainability Portfolio: Firms should develop a portfolio of their commitment to sustainable production. Hart(1997), asked if there is an overarching vision of sustainability that gives direction to the company's activities? And the extent the company has progressed through the three stages of environmental strategy-from pollution prevention to product stewardship to clean technology.

Eco Efficiency: Eco-efficiency is achieved by the delivery of competitively-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-

cycle to a level in line with the earth's carrying capacity. It is concerned with creating more value with less impact. "Before the 1992 Earth Summit in Rio de Janeiro, business was asked to develop its contribution, both in word and deed to sustainable development. Business responded in Changing Course, Schmidheiny with the BCSD, wrote the book *Eco Efficiency*, aimed to change the perception of industry as being part of the problem of environmental degradation to the reality of its becoming part – a key part – of the solution for sustainability and global development"(Schmidheiny,2000)

Eco-labeling: Firms should adopt a form of environmental performance certification primarily based on life cycle consideration (Davidson and Hatt, et al;2005).This voluntary method shows how firms are committed to protection of life in course of production or similar business transactions.

*Green Technology***:** KM is a growth industry moving from IT, people, culture, environment etc. The ongoing ICT revolution must be reframed as a matter of ecological justice to demonstrate commitment to greening. Firms in the developing economies can't afford to follow the industrialized societies to pursue "minimal green technology." Green technology is environment friendly.

*Product/Environmental Stewardship***:** Accounting for the processes of production facilitates sustainability. The evolution from product to environmental stewardship is now happening in multinational companies such as Du Pont, Moanto , Xerox, ABB, Philips, and Sonny. For example as part of a large sustainability strategy dubbed; A Growing Partnership with Nature ,Dupont's agricultural products business developed a new type of herbicide that has helped farmers around the world reduce their annual use of chemicals by more than 45million pounds (Hart,1997) .Firms should account for the state of environment .

7.   CONCLUSION

Greening is the strategy that appears from the research presented in this paper which seeks to establish how resource extraction of multinationals could be reframed through sustainability drivers. Green corporate social responsibility (GCSR) has a wide gap between principle and practice among multi-national corporations.(MNCs). This as we argue has been largely an elusive and contestable strand of corporate strategy.

Yet it is undoubtedly imperative for companies in the knowledge economy era to reassert novel understanding of environ-mental resource use. This is a fundamental role this paper seeks to establish as KM provides a divergent knowledge driven module, environmental sustainability should be a fundamental driver for corporate performance and assessment.

Increasing scrutiny and reports in this study demonstrates growing environmental degradation inmost oil bearing communities as explicated in the seminal data provided by the UNEP report on Ogoni community. This is open to further research and policy discourse as more information in this regard could provide more precise analysis and verifiability. Our study has added impetus to an ongoing debate on institutionalization of corporate dematerialism ,eco labeling, triple bottom line, eco –efficiency among several others. Our study calls for robust and resourceful corporate re-engineering to propagate a useful balance between corporate organizations, the environment where the resource derive and human beings that inhabit the environment.

Nevertheless, some authors stress that ceasing to acquire these raw materials in the zone as in Ogoni our case analysis, is not always the easiest solution and that certification systems tend to require long periods of preparation and execution while the media and NGOs exert heavy pressure against companies(Mitchell, and Garret, 2009).Periodic assessment and measurement tolls are necessary as key indicators to understand the direction natural resource exploitation by organizations tilts by providing common standards and repeatedly assessing the commonality and distinctiveness of such standards

Our study is useful in a number of ways both to the KM and development scholarship and policy makers seeking for both local and global environmental sustainability awareness. And specifically for companies conscious of enormous challenges of unsustainable environmental consumption.

Methodologically it has explored a wide range of conceptual propositions and seminal studies and advances these debates to a wider explication of environmental sustainability and KM nexus with linkage to green corporate social responsibility (GCSR). The study and its analysis focused within a specific period to distinctively capture what has happened in the study area. Such an approach is pristine and extant in understanding critical issues and concerns raised on environmental sustainability challenges among the poor Niger Delta region. Evidently our data shows some level of marginalization and neglect of the region by the federal government (UNDP, 2006; UNEP,2011).

Corroborating existing studies, it is evident that environmental challenges in the Niger Delta have been enormous, this has a number of implications for all stakeholders including the government ,the international community, policy makers, NGOs and the local communities.

Whereas a number of existing studies have suggested the need for the federal government to take up novel turn in transforming the region, we advocate for an inclusive and participatory approach where the community based organization (CBOs),NGOs, women, youth groups could build novel alliances and chart a more reactionary cause. The study suggests a collective action as a key strategy to check both the activities of the multinationals and the seemingly levity of the federal government in this direction.

These results and debates are consistent with Hennchen, (2010:233) who found that there' is a paradox in Nigeria. Shell's CSR efforts are counter -productive because, on the one hand, they build hospitals and schools, but, on the other, they are not doing enough to counteract the negative impact their core business has on the environment" .Similarly, UNEP,(2011) shows that it could take 25 to 30 years to clean up the pollution that has accumulated over 50 years of oil operations in the Niger Delta.

The study had demonstrated how Ogoni people effectively shut down the operations of Shell in their locality , providing them a basis for more, but very costly struggles. Obi (2001:62)recounts that   "it did show other oil producing communities, that Shell, the biggest, oldest and most visible oil multinational in the delta could be de-mystified".As their agitation and the clamor for clean up on the oil spill on the land by Shell intensifies, it attracts global attention and policy discourse.

Beyond shutting down SPDC operation they should deploy collective action to ensure the implementation of clean up according to UNEP report . Ogoni's could form green movements to institutionalize resource sustainability and ecological justice which could attract value-adding international investors that could contribute to Nigeria's society, economy and the Ogoni community in a resource sustainable manner.

 There is little doubt that in the main we cannot address corporate organizations including multi- national corporations (MNCs) without considering the relevance of greening. Prandi and Lozano,(2010); Amadi, et al;(2014), demonstrated that companies can contribute to environmental sustainability objectives not by directly engaging in their business and maximizing profits but also by including environmental issues into their corporate priorities.

In order to ensure this contribution, international cooperation should regard companies as something more than suppliers of goods and services, and instead include corporate social responsibility incentives in their contracting systems, in their credit programmes for the private sector, and in their support of codes of conduct and quality systems (Prandi and Lozano,2010).

Another relevant issue in this study which is open to further research involves the need to re-examine the content of Memorandum of Understanding (MoU) entered by the federal government and the oil multinationals to determine how it protects the environmental security of the host communities including peoples means of livelihood.

In light of this dynamic and as our analysis demonstrates, there is urgency of policy discourse on actual remedial strategies on environmental pollution and degradation challenges such actual environmental outcomes, will provide some veritable direction in ameliorating environmental insecurity and degradation.

For the corporation that this study examined and similar MNOCs, it is proper to adopt strategic overhaul of their community relations and more critical environmental resource extraction policies. The post EITI resource extraction has not fared any better. While perhaps multinationals include greening as it is now the practice in their corporate objectives, actualization of such objectives have been a far cry. There are specifically no indicators to show such commitments.

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