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Accounting Disclosures of Provisions for Decommissioning Oil and Gas Installations

The Case of Oil and Gas Companies Listed in the UK

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Abstract**—** decommissioning costs of oil and gas assets meet the description of asset and provisions under IAS 37. Therefore, accounting for, and disclosures of, provisions for decommissioning oil and gas provisions are accounted for in accordance to IAS 16 and IAS 37. Hence, they are recognized at the point of an asset installation as part of that asset's historical cost from one side and as a provision in the balance sheet from another side. However, given the long time span between the asset installation point and decommissioning that asset accounting for decommissioning costs is bound by significant complexity and subjective judgments. Due to their sizes decommissioning costs of oil and gas installations have significant cash flow effects. Given the magnitude of decommissioning costs, the disclosure of provisions are critical for stakeholders to understand the impact on future cash flows. This study investigates compliance with the reporting requirement of international accounting standards (IASs) regarding provisions for decommissioning costs and the perceptions of stakeholders on reporting practices. Using both secondary and primary data and utilizing a content analysis approach, we conclude that whilst there are sufficient accounting standards to regulate provisions of decommissioning costs of oil and gas installations there is lack of compliance with disclosure requirements of IASs. Oil and gas companies tend to disclose the minimum amount of information about provisions for decommissioning costs. We find that stakeholders perceive the information provided by the companies as inadequate and require companies to provide more detailed and meaningful information. Our findings have important policy implications for improving the quality of information availed to stakeholders.

Keywords- *Disclosure compliance, International accounting standards, Decommissioning costs provisions, Oil and Gas*

I. INTRODUCTION

In this paper, we examine the disclosure of provisions for decommissioning costs by oil and gas companies listed on the London Stock Exchange (LSE). Oil and gas companies have obligations to dismantle, remove and restore items of property, plant and equipment (PPE) at the end of their offshore and onshore operations and to remediate any environmental damage they may have caused to agreed standards (Standard and Poor's, 2007; PwC, 2008). These obligations are referred to as decommissioning. The decommissioning of oil and gas installations is required under a number of international treaties including the 1958 Geneva Convention on the Continental Shelf, the 1982 United Nations Convention on Law of Sea (UNCLOS) and the 1989 International Maritime Organization (IMO) Guidelines and Standards.[1]

The magnitude of decommissioning costs in the oil and gas industry are substantially large, running into billions of dollars (Osmundsen and Tveterås, 2003; Standard and Poor's, 2007). For example, according to Standard and Poor's (2007) and Rogers and Atkins (2015), the actual liability obligations for decommissioning are approximately equal to half of the total debt of the oil and gas industry. In the context of the UK, the Oil and Gas Authority (2017) estimates decommissioning costs for the North Sea fields at £59.7 billion. Given that the decommissioning activities are undertaken at the end of the productive capacity of an oil and gas field's life cycle (Falconer and Wicks, 2016), it is apposite that these huge costs have to be adequately provided for from the beginning of the installation stage of the oil and gas assets (Khurana et al., 2001; Rogers and Atkins, 2015). Inadequacy provisioning of decommissioning funding could have substantial consequences

[1] Internationally, decommissioning obligations were first introduced by the 1958 Geneva Convention on the Continental Shelf (Moller, 2016), and ratified in May 1964 (Antonas and Hammerson, 2016). The UK signed the London Convention in December 1972; this Convention imposes a prohibition against dumping at sea, therefore it is relevant to decommissioning (Abdo, 2017). In July 2007, the UK acceded to the 1982 United Nation Convention on the Law of the Sea (UNCLOS). The UK is a party to the guidelines and standards for removal of offshore installations on the continental shelf that was adopted by the International Maritime Organisation (IMO) in October 1989. Furthermore, the UK was one of 16 contracting parties to the 1992 OSPAR Convention which governs the protection of the marine environment of the North-East Atlantic (Bureau Veritas, 2011: 25). Oil and gas companies listed in the UK are subject to these obligations which are mandatory by regional, national and international legal and regulatory frameworks.

for the cash flows, overall sustainability of financial position and potentially survival of the company. To this extent, the reporting of the provisions for decommissioning costs must be of substantial interests to shareholders, investors and other stakeholders. The disclosure of this information should not only be critical for making investment decisions, but also for understanding the sustainability of the financial positions of oil and gas companies by other stakeholders (Standard and Poor's, 2007). For the investors, reporting these provisions facilitates better understanding of the adequacy of funding for decommissioning costs of oil and gas installation and the implications for the company's future cash flows. It also aid investors compare the viability of companies across industries, thus enhancing their investment decisions.

This study is motivated by three main drivers. First, the accounting for decommissioning costs are the significant complexities and uncertainties of timing, amount of these costs and changes to regulatory and tax regimes (Abrahamson, 2014; Rogers and Atkins, 2015; HMRC, 2016). These complexities of estimating of, and accounting for, provisions for decommissioning costs make it extremely difficult for oil and gas companies in terms of the accuracy of the provisions that are made. To this end, the accounting policies of BP (2015: 114) confirm that

The group holds provisions for the future decommissioning of oil and natural gas production facilities and pipelines at the end of their economic lives. The largest decommissioning obligations facing BP relate to the plugging and abandonment of wells and the removal and disposal of oil and natural gas platforms and pipelines around the world. Most of these decommissioning events are many years in the future and the precise requirements that will have to be met when the removal event occurs are uncertain. Decommissioning technologies and costs are constantly changing, as well as political, environmental, safety and public expectations. BP believes that the impact of any reasonably foreseeable change to these provisions on the group's results of operations, financial position or liquidity will not be material.

Further, the existence of these uncertainties and complexities creates a knowledge-based gap (Hooks et al., 2002) and disclosure-expectation gap (Lawal and Russell, 2011) between oil and gas companies and their stakeholders about the provisions for decommissioning costs. These complexities present real challenges for oil and gas companies, and might impede full, fair and timely disclosures of decommissioning costs and their provisions (Khurana et al., 2001). This situation makes the interpretation of provisions for decommissioning costs' disclosures problematic for stakeholders in their decision-making processes (Stuart et al., 2014). Second, there is a lack of studies on the accounting aspects of decommissioning oil and gas installations in general, and disclosure of decommissioning costs in particular. Most studies focusing on the oil and gas sector have tended to focus on disclosure of oil and gas reserves (e.g., Boone, 1998; Mirza and Zimmer, 1999; McChlery et al., 2015), with no studies on disclosure of provisions for decommissioning costs. This is surprising given the magnitude of decommissioning costs involved (as noted earlier). Third, Standard & Poor (2007) survey of Europe's Chemical, Oil & Gas, and Metals & Mining Companies raises concerns about the limited reporting of decommissioning and environmental provisions. The limited reporting of decommissioning makes it difficult to compare companies and to understand the obligations that oil and gas companies are exposed to, and whether adequate funding is available to cover these substantial future funding obligations. A decade since the Standard & Poor's report, there is still no rigorous academic research on reporting decommissioning obligations by oil and gas companies.

Our study attempts to address this gap in the literature investigating the reporting of provisions of decommissioning costs by oil and gas companies. In particular, we address the following three research questions: (1) To what extent have the International Accounting Standards provided a suitable base for accounting for and reporting decommissioning costs of the oil and gas industry? (2) To what extent do oil and gas companies listed in the UK comply with the disclosure requirements of the International Accounting Standards with regard to provisions for decommissioning costs? And (3) What is the perception of UK listed oil and gas companies of the current reporting practice of information about the costs of decommissioning oil and gas installations?

We undertake our study in two phases consistent with our research objectives. First, we conduct a content analysis of annual reports of oil and gas companies listed on the LSE (both the main exchange and the alternative investment market). Our content analysis draws from the requirements of International Accounting Standards (IASs) (i.e., IAS16, IAS37, IFRIC1, IFRC5). We find that oil and gas companies do not fully comply with most of the provisions of IASs. We also found that companies tend to provide the minimum amount of information about decommissioning costs in their annual reports. In the second phase of the study, we draw on perceptions of oil and gas companies and other stakeholders of the quantity and quality of decommissioning related disclosures. In particular, we sought to garner views from interviews as to quantity and quality of the disclosures and whether they view IASs as providing a sufficient vehicle for the accounting for and reporting of decommissioning costs provisions. Our evidence indicates that although there seems to be consensus by regulators, consultants companies, and oil and gas companies on improving the disclosure of information, some oil and gas companies do not believe that because of the complexities involved in the computations of the decommissioning costs provisions, investors might not understand the disclosures. This might explain why oil and gas companies provide very limited information. These findings lead us to conclude that existence of current accounting standards and the level of compliance with these standards do not result in transparency of issues surrounding decommissioning costs.

Our paper makes a number of contributions. We show that there are variations in compliance with decommissioning costs provisions among the listed companies. Second, we provide the first interview evidence of the perceptions of stakeholders regarding the adequacy and quality of accounting issues and reporting practices on decommissioning costs provisions in the oil and gas sector. Third, we show that there is consensus among stakeholders about enhancing disclosure on provisions for decommissioning costs.

The remaining of this papers is organized as follows. Section II discusses the regulation and accounting for provisions for decommissioning costs, with particular emphasis on disclosure. The related literature is reviewed in section III and in section IV, the research design is presented. Section V presents and discusses the findings. Finally, in section VI the concluding remarks are provided.

II. Regulation and Accounting for Decommissioning in the Oil and Gas Sector

The oil and gas industry is international in nature and therefore subject to international regulations and laws which require the sector to decommission assets at the end of their production life. The international regulations, however, do not deal with accounting and reporting issues relating to decommissioning, including accounting provisions and information disclosure. The accounting and reporting of decommissioning costs provisions are dealt with under different countries' accounting standards or international accounting standards. In the UK, beginning with the reporting year 2005, all listed companies are required to comply with the measurement and disclosure requirements of international accounting standards (IAS/IFRS). Under IAS/IFRS GAAP, the accounting treatment and disclosure of decommissioning costs is dealt with under IAS16 (Property, Plant and Equipment: PPE) and IAS37 (Provisions, Contingent Liabilities and Contingent Assets). IAS16 requires the costs of dismantling and removing a PPE item and restoration of the site on which it is located to be included in the initial cost of that PPE upon recognition (IAS16, 2001, para 16). The standard furthermore requires that the total cost of the asset, including the decommissioning provision, be depreciated over the useful life of that asset. IAS37 (2014: online) defines a provision as 'a liability of uncertain timing or amount' and has to be recognized when an obligation exists to perform the clean-up. For oil and gas decommissioning, the obligation is created at the time the asset that is, the oil and gas field installation, is put in place (Gravgård, 2007). Thus, decommissioning costs of oil and gas installations meet the requirements and description of both IAS16 and IAS37. Therefore the disclosure of provisions for decommissioning costs by listed companies has to comply with the requirements of international accounting standards, particularly IAS16 and IAS37.

III. Literature Review

The objective of financial reporting is *"to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity"* (IASB, 2015, para 1.2). The provision of the information, particularly on the nature and amounts of economic resources of, and claims against, the entity (i.e., company) helps users understand the financial position of the company. Consequently, the IASB sets forth its goal as to develop high quality standards that require the disclosure of transparent and comparable information. This is only possible if the accounting reporting system is also of appropriate quality to ensure enforcement of and compliance with the standards (Ball et al., 2003; Barth et al., 2008). Prior studies of compliance with IAS find substantial non-compliance with IAS (see Cairns, 1999; Street and Gray, 2001; Glaum et al., 2003; Glaum and Street, 2003). However, these studies were undertaken in environments where IAS/IFRS were not mandatory. In the UK, compliance with the IAS/IFRS for listed companies is mandatory, so that the expectation is that compliance will be high. We, therefore, investigate compliance with IAS/IFRS in the UK focusing on reporting of provisions for decommissioning costs in the oil and gas sector, an issue that has yet to be examined in the literature.

Studies on accounting disclosures by oil and gas companies are limited and focus on oil and gas reserves disclosures (e.g., Cooper et al, 1979; Dharan, 1984; Lys, 1986; Boone, 1998; Berry and Wright, 2001; Berry et al., 2004; McChlery et al., 2015; Odo et al., 2016). In the context of decommissioning costs, studies have steered more towards engineering (Ahiaga-Dagbui et al., 2017), managerial (Ekins et al., 2006), legal and technicality of decommissioning oil and gas fields (Day, 2008; Fowler et al., 2014; Chandler et al., 2017); legal and regulatory perspectives of decommissioning obligations (Aldersey-Williams, 2008). Others have tackled nuclear related decommissioning issues (Mingst, 1980; Boatsman et al., 2000; Khurana et al., 2001); disclosure expectation gap (Lawal and Russell, 2011), and economy of decommissioning (Stoke, 2014).

We have only come across two studies investigating the disclosure of decommissioning costs by oil and gas companies. Russell et al (1998) studied the state of accounting for the cost of abandoning North Sea oil and gas fields and showed that UK oil and gas companies exercised high level of compliance with the regulations governing accounting for the cost of abandoning North Sea oil and gas fields as embedded in SORP. They, however, show that voluntary disclosure was limited. This study is outdated having examined compliance prior to the mandating of IAS/IFRSs for all listed companies listed on European Stock Exchanges, including the LSE. Thus, the findings are not necessarily relevant to the current mandatory disclosure regime of listed companies. The most recent study by Rogers and Atkins (2015) investigated compliance of 146 US listed oil and gas companies with Assets Retirement Obligations (AROs) disclosure requirements of Statement of Financial Accounting Standard 143 and the requirements of the Securities and Exchange Commission (SEC). They concluded that there is a poor adherence by oil and gas companies to the AROs disclosure requirements.

Our work builds on and extends these two related studies to examine the reporting of decommissioning costs provisions of oil and gas companies listed on the LSE and comprising both UK and international companies in two ways. First, we seek to understand the extent to which the listed companies comply with IAS/IFRS disclosure requirements concerning provisions of decommissioning costs. Given the magnitude of these costs and the potential implications they have on a company's future cash flows, it is apposite to understand compliance with these disclosures. Decommissioning costs, not being a revenue expenditure, can be seen to represent a negative and significant cash outflow which could therefore affect share prices and the market value of oil and gas companies adversely. Hence, decommissioning costs are similar to '*burial costs'*. Consequently, in order to provide a clearer picture of companies' performance and cash flow positions, and to help decision-making, disclosing information about provisions for decommissioning costs can be of benefit to shareholders and potential investors. Second, whereas previous studies have focused on analyzing annual report disclosures, we extend these studies by examining the perception of stakeholders (i.e., companies, regulators, consultants, auditors) on the need for disclosure, adequacy of disclosure regulations and barriers for disclosure. This approach has not been used in the literature. Investigating the perception of stakeholders is important to aid understanding of the reasons why oil and gas companies engage in specific disclosure practices as well as understand the views of regulators and other relevant stakeholders on the quality of the disclosures. This would help enhance disclosure policy.

IV. Research Design

A. Methodological Approach

To answer our research objectives, we took a two-staged approach. The first stage analyse annual reports of 68 companies to explore compliance with the IAS. This approach involved the use of content analysis method, which has been extensively used in previous disclosure studies (e.g., Beck and Toms, 2009; Abdo and Al Drugi, 2012; Al Drugi and Abdo, 2014). To apply the content analysis approach, we first developed a checklist of disclosures as required by IAS2, 16, 21; 37 and IFRIC 1 and 5. Compliance scores were developed using dichotomous scoring approach where an item is scored 1 if disclosed and 0 otherwise. This involved a researcher reading through the annual report of a company to identify if the items are disclosed. We then constructed a disclosure index for each company by dividing the company's compliance score with the total possible score. In the second stage, we carried out 13 semi-structured interviews in order to gather perceptions of oil companies and other stakeholders on the current reporting practices of decommissioning costs provisions. The interview guide contained with four main issues: accounting for provisions of decommissioning costs; compliance and cost of non-compliance with disclosure requirements; challenges of preparing provisions for decommissioning costs and the perceptions of the current reporting practices. The interviews were transcribed and analysed using NVivo version 11.4.1. The analysis involved coding the interviews under a number of themes—these themes were reviewed occasionally to make sure that the analysis captures perceptions of oil companies and other stakeholders of reporting decommissioning costs of oil and gas installations.

B. Sampling

The sample of companies are drawn from both the main LSE and Alternative Investment Market (AIM). We identified 12 oil and gas companies from the main exchange and 110 companies from the AIM. We eliminated three companies from the main exchange because they are not exploration and production companies, and 11 companies from AIM because they were either dormant or not engaged in oil or gas production. Together, this gave us a potential sample of 108 oil and gas exploration and production companies. From this, we eliminated a further 40 companies because they were at the start-up stage with no revenues and no provisions to disclose. The resultant sample for the study is 68 companies (see Table 1).

Table 1: Sampled Companies

Total Number of sampled companies			108
Excluded for no revenues and no provisions			-40
Number of Sampled Companies			68
Criteria	Stock	Location	GAAP
FTSE100	9		
AIM	59		
UKCS		17	
Africa		7	
Europe		5	
Russia		7	
South America		3	
USA		7	
India		5	
Central Asia and Caspian		3	
The Caribean		1	
Mediterranean basin		1	
Rest of the World		12	
UK GAAP			30
EU GAAP			22
Canadian GAAP			4
Other GAAPs			12
Totals	68	68	68
Companies with complete data			68

As can be seen from Table 1, the sample includes companies from different countries, thus representing a wide diversity in scale and geographical location of operations.

To build a sample of interviewees, we wrote to the listed oil and gas companies asking them to take part in our study. We also contacted Oil&Gas Authority (OGA), Department of Energy and Climate Change (DECC), Oil and Gas Industry, academics, independent consultants and an auditor. In total, we conducted 13 stakeholders agreed to participate in the semi-structured interviews. Of these, five were conducted with chief accountants and/or finance officers working for oil and gas companies listed in the UK, 2 with civil servants from the OGA, 1 with civil servants in the DECC, 1 with auditors who audit accounts of oil and gas companies, 2 with independent oil and gas consultants who have 30 years of experience each in the oil and gas business in general and in decommissioning business in particular, and 2 with academics who teach oil and gas accounting in reputable UK higher education institutions. Table 2 presents the list of interviewees and the length of each interviews. The variety of the interviewees' positions allowed gathering rich and quality data about perceptions of different stakeholders of reporting decommissioning costs of oil and gas structures.

Table 2: Descriptive account of the interviews

Interview	Organization	Number of Interviewees	Code	Duration of Interview	Date of Interview	Mode of Interview
1	DECC	2	GOV 1a GOV 1b	28 minutes	16.05.2016	Telephone
2	Oil and Gas Authority	1	GOV 2	30 minutes	13.05.2016	Telephone
3		1	GOV 3	22 minutes	23.05.2016	Telephone
4	Oil and Gas Industry	1	O&GI 1	37 minutes	21.06.2016	Telephone
5		2	O&GI 2a O&GI 2b	32 minutes	10.06.2016	Telephone
6		1	O&GI 3	52 minutes	16.05.2016	Telephone
7		1	O&GI 4	60 minutes	05.05.2016	Telephone
8		1	O&GI5	40 minutes	20.05.2016	Face-to-face
9	Academic	1	ACC1	25 minutes	16.05.2016	Telephone
10		1	ACC2	25 minutes	03.06.2016	Telephone
11	Independent Consultant	1	CONS1	31 minutes	15.06.2016	Telephone
12		1	CONS2	50 minutes	25.05.2016	Face-to-face
13	Auditor	2	AUD 1a AUD 1b	30 minutes	16.06.2016	Telephone

V. Data Analysis and Discussion

A. Findings from content analysis of annual reports

Our initial analysis of companies' disclosures of decommissioning provisions reveals a disparity of results. To gain insight into the importance given by oil and gas companies to disclosing information related to decommissioning their assets, we started by counting how many times the word 'decommissioning' has been mentioned in the annual reports. The count ranges from one word (Tomco Energy), two words (Reliance Industries) to as high as 66 time (Enquest) and 60 times (BP). This simple analysis indicates the level of disclosures by a number of oil and gas companies listed in the UK.

Companies used different terms and terminologies to refer to provision for decommissioning costs. whilst the majority used the term 'decommissioning provision' a number of them used other terms, for example Egdon Resources plc and Royal Dutch Shell both used 'decommissioning and reinstatement provisions', Antrim Energy INC used 'decommissioning obligations'; Rockhopper Exploration used 'abandonment decommissioning'; Nostrum Oil and Gas used abandonment and site restoration provision, and Reliance Industries used 'dismantling and abandonment'.

The content analysis of companies' annual reports starts with providing an understanding of the firms' disclosure practices as measured from the self-constructed compliance index. The results are presented in Table 3, Panels A and B.

Table 1: Results of Statistical Analysis

Panel A: Overall Disclosure Score Analysis					
		Mean	**Std- Dev**	**Min**	**Max**
Overall disclosure index		.629	.228	0.00	1.00
Item Number	Index Code				
1	2.2	.912	.286	0.00	1.00
2	2.2	.824	.384	0.00	1.00
3	2.3	.059	.237	0.00	1.00
4	2.4	.853	.357	0.00	1.00
5	2.4	.529	.503	0.00	1.00
6	2.6	.662	.477	0.00	1.00
7	2.7	.926	.263	0.00	1.00
8	2.8	.765	.427	0.00	1.00
9	2.9	.750	.436	0.00	1.00
10	2.10	.691	.465	0.00	1.00
11	2.11	.691	.465	0.00	1.00
12	2.12	.706	.459	0.00	1.00
13	2.13	.544	.502	0.00	1.00
14	2.14	.059	.237	0.00	1.00
15	2.15	.838	.371	0.00	1.00
16	2.16	.294	.459	0.00	1.00
17	2.17	.824	.384	0.00	1.00
18	2.18	.809	.396	0.00	1.00
19	2.19	.779	.418	0.00	1.00
20	2.20	.059	.237	0.00	1.00

Panel B: Distribution of Overall Disclosure Scores		
Score range	**No. of firms**	**%**
0 to under 50%	13	19.1
50% to under 60%	6	8.8
60% to under 70%	14	20.6
70% to under 80%	17	25.0
80% to 100%	18	26.5
Totals	**68**	**100**

Panel A reports the overall disclosure scores as well as the scores by individual disclosure items. Panel B presents an analysis of the distribution of the overall disclosure scores to help gain a clearer picture of the degree of compliance with the international accounting standards relating to decommissioning. As Table 3 (Panel A) indicates, the mean disclosure score ranges from 0 to 1, with a mean disclosure score of 0.629. This suggests that on average, oil and gas firms listed in the UK disclose 62.9% of the information required by the IAS and the SORP, thus firms are not fully complying with the requirements. There are firms in the sample who are not reporting any information relating to decommissioning costs.

To gain some additional insights in these disclosure scores, Panel B provides an analysis based on the distribution of the overall score reported in Panel A. As Panel B reveals, 19.1% of the firms provide less than 50% of the required information, with only 26.5% providing more than 80% of the information. This demonstrates that compliance with the disclosure requirements of IAS and SORP on decommissioning is low. Thus it can be argued that investors are not well informed about the extent to which the firms are exposed to decommissioning commitments and the implications of such exposures are therefore unclear.

To further understand the extent of disclosure compliance, Panel A also presents the descriptive statistics for the individual disclosure items. We also compared disclosure between AIM listed and Main LSE listed firms. We find no significant differences for many of the items and for overall disclosure, although the firms on the main exchange tend to provide slightly greater disclosure. On the whole, it appears that listed firms are not fully complying with the requirements, and this raises concerns about adherence to the disclosure requirements of the IASs in terms of provisions for decommissioning costs and the implications this might have for decision-making by investors and other interested parties.

B. Findings from interviews with stakeholders

The above analysis of disclosure compliance indicates partial and varied compliance with IAS reporting requirements relevant to provisions for decommissioning costs by oil and gas companies. In the context of these observations, we then conducted our interviews with stakeholders. In this section, we provide an analysis and discussion of the results from the interview data under three important relevant issues.

1. Accounting for Provisions of Decommissioning Costs

The first part of the interview explore accounting issues related to provisions for decommissioning costs. In particular, we interviewed participants on their understanding of the accounting standards dealing with, and the accounting treatment of, decommissioning costs provisions. To understand these issues. We first asked about their views on the adequacy of existing accounting standards to deal with accounting issues relating to decommissioning costs. The interviewees' perception is that the existing accounting standards, in particular IAS16 and IAS37 provide a good basis for accounting for decommissioning costs (O&GI1; O&GI2a; AUD1a&1b). However, they point out that the availability of accounting standards does not mean an easy task for oil and gas companies in reporting provisions for decommissioning costs for a number of factors—the complex nature of decommissioning, the significant estimates it involves and the different terminologies being used in decommissioning business (O&GI3; O&GI4; O&GI5). When asked about these complexities, the GOV3 and O&GI1 pointed that similar to other company assets, provisions for decommissioning costs are estimated at the beginning of an oil and gas project and amended as the project progresses. Such adjustment were considered necessary by interviewees to take account of changes to assumptions, which in reality do periodically change. One interviewee, AUD1a, pointed out that these adjustments may cause significant problems as in some cases they may result in the value of decommissioning liability exceeding the carrying value of the asset, particularly when the fields' lives come close to decommissioning.

With regard to estimation of decommissioning costs, interviewees GOV3, O&GI1, O&GI3 and O&GI4 all agree that the provisions for decommissioning costs are mainly based on subjective estimates but use accounting techniques to finalize decommissioning figures in the financial statements. However, GOV3 reckons that estimating decommissioning costs is a complicated process and might lead to inaccuracies. The inaccuracy of estimates of provisions for decommissioning costs may have a real knock-on-effect as if actual decommissioning costs exceed provisions made in the balance sheet than the income statement would have to bear the difference (AUD1b; O&GI3).

This point supports the need for accurate, fair and transparent disclosures of provisions for decommissioning costs by oil and gas companies to aid investors make appropriate judgments on the adequacy of the provisions. Failure to provide adequate disclosure on decommissioning costs provision might lead to investors being hurt. For example, an investor acquiring shares in the company just before the decommissioning process has started might find themselves in losses in the event that the decommissioning costs substantially exceed the provisions.

Interviewees also raised problems relating to accounting for decommissioning costs arguing that despite the existence of guidance and standards. They suggested that accounting for both provisions for decommissioning costs and actual expenditure on decommissioning is not straightforward (O&GI3). Other interviewees expressed a problem in understanding decommissioning terminologies and activities in order to translate these into figures in the financial statements of an oil and gas company (O&GI5).

This situation implies an existence of a difficulty in accounting for decommissioning costs mainly down to unclear guidance on the application of the accounting standards in the context of decommissioning. This difficult in the application of the IAS16 and IAS37 to decommissioning costs was also raised by interviewees O&GI1, O&GI2a, and O&GI3 who suggested that the accounting standards are not easy to be read and understood, and interpretations of these standards is necessary. For example, *The IFRS can't encompass every single possible item, we still need interpretation and that judgement to pick up the various parts of guidance that you see, and reach your reasoned conclusion, which then you would test the acceptance (Interviewee O&GI3)*

Such a statement demonstrates that standard accounting setters need to provide clearer and more robust guidance on the application of IAS16 and IAS37 in accounting for oil and gas decommissioning costs provision. These difficulties in the application of the accounting standards might result in different accounting treatments being applied in accounting for decommissioning costs provisions across companies thus defeating the attempt to harmonize accounting practices across different oil and gas reporting entities.

2. Compliance and cost of non- Compliance with Disclosure Requirements

Following our analysis of disclosure in annual reports, we raised the issues on non-compliance with requirements of the IASs by oil and gas companies. The interviewees, particularly those from the oil and gas companies (for example, O&GI1 and O&GI3) agree that compliance is not substantially high and understand that on-compliance with disclosure requirements is problematic for users as they cannot generate a clearer picture of the financial obligations and make appropriate decisions. Furthermore, the interviewees are aware of the consequences of non-compliance, thus Interviewee O&GI 5 notes:

It's very costly, very long, embarrassing for the board, and you're misleading shareholders. So it shows a level of incompetence. And these things can become public if you have to restate your accounts because of a mistake. It could be embarrassing for the company, for the auditors

Despite these views, the question is why then are the oil and gas companies not complying or providing useful information. A number of challenges have been noted by interviewees as to blame for the limited compliance with reporting requirements. These include the lack of guidance on, and different interpretation of, accounting standards relate to decommissioning costs; the significant uncertainties associated with how oil and gas assets are going to be decommissioned, including the difficulties by which the provisions for decommissioning costs are determined. In this context, the interviewees pointed to the fact that it takes many years before the assets are decommissioned, and in the interim, the law and accounting standards of decommissioning might change (CONS1).

These challenges present significant difficulties relating to for example, defining the point of cessation of production (CoP) (GOV2); defining the timing for decommissioning (O&GI1); identifying who will undertake the decommissioning process on behalf of the oil and gas company; defining the marginal oil price (O&GI3); changes in regulations and taxation (CONS1; GOV1); instability of the exchange rate, technology, the actual cost of decommissioning and availability of finance to undertake decommissioning (CONS2; GOV1); changes of fields' ownerships, subjectivity and uncertainty that affects budgeting for decommissioning. Consequently, these factors impact the accounting for, and reporting of, provisions for decommissioning costs, resulting in oil and gas companies not have the confidence to provide meaningful accounting disclosures of provisions for decommissioning costs. Furthermore, a regulator interviewee, GOV2 and oil and gas company interviewee, O&GI2b, suggest companies may not be willing to disclose more information for fear of the adverse effects on their share prices as a result of showing higher decommissioning liabilities on their balance sheets.

Other interviewees, for example, O&GI2a, raised concerns about divulging confidential information such as information on cessation of production (CoP) year of any particular field as this is linked to many things such as people jobs, cash outflow, company value, and to be precise it is linked to the future of the company. Interviewee O&GI4 also suggested that information on provisions for decommissioning costs can be part of companies' strategic secrets. O&GI 2a claims:

Information about decommissioning, it can be strategic information, and companies don't want to disclose these too, in the public domain, and make it available for competitors

The concerns about releasing confidential information that may hurt the company are also expressed in prior literature such as Babbington et al (2008), Beattie and Smith (2012) and McChlery et al., 2015. However, whilst this seems a strong basis for companies to withhold information on their decommissioning liabilities, it raises a question about shareholders', and other stakeholders', rights to complete information to help their decisions.

O&GI1 questioned the rationale for disclosing more than what is required unless they see a clear benefit of doing so. Another interviewee pointed to the fact that shareholders are not bothered about disclosures of decommissioning costs provisions in annual reports because they do not understand the disclosures. Therefore, there is no point of making such disclosures (O&GI1 and O&GI2a). This is problematic and requires the intervention of regulators to ensure that companies provide relevant information, otherwise stakeholders are defined the information on the pretext that they do not use or understand the information provided.

3. Perceptions of the Current Reporting Practices

We also sought the views of interviewees on current reporting practices for decommissioning costs provisions. In particular, we asked questions concerning the importance of the disclosures to stakeholders and the adequacy of the disclosures. Interviewees agree that that due to the significance and detrimental financial effects of decommissioning costs, disclosure of provisions for decommissioning costs is key for stakeholders. Russel et al (1998) and Rogers and Atkins (2015) have also emphasized this point. Interviewees agree that due to their impact on companies' cash flow detailed information about provisions for decommissioning costs should be reported in companies' annual reports (ACC2; O&GI3 and O&GI5). Such disclosures would allow stakeholders to understand their impact on companies' cash flow (O&GI5) and to assess liabilities of reporting companies (ACC2).

Interestingly, whilst an academic and consultants from our interviewees, ACC1 and CONS2, see that more details needs to be disclosed about provisions for decommissioning costs, a finance manager from the oil and gas industry, O&GI2a, sees that disclosures should only *'be if there's anything particularly material'*. However, CONS2 criticizes the current disclosure practice as it is minimal and does not provide clear picture on decommissioning liabilities. CONS1, CONS2, O&GI4, and GOV2 all assert that one numerical figure of disclosure in the annual report does not convey where the entity is operating, how many assets decommissioning provisions are being carried for and how many assets being decommissioned. This disclosure practice, according to interviewees, is not helping stakeholders to build a clear image of oil and gas companies' activities and cash flow (O&GI4).

Given this diversity in views about the level of details of disclosures, and guided by the opinion of interviewees CONS2 and O&GI4 that the current disclosers seem not to provide sufficient information on decommissioning liabilities we can conclude that there exist both knowledge-based gap and disclosure expectation gap between companies and stakeholders (see Lawal and Russel, 2011 and Hooks et al., 2002). These gaps can be minimized by providing more detailed, transparent and adequate information on provisions for decommissioning costs in companies' annual reports and accounts and other means of reporting and disclosures such as companies' websites and press release conferences.

Interviewees AUD1a, CONS1, O&GI4 and GOV2 all agree about the importance of disclosing detailed information about decommissioning costs to stakeholders. In the same line of argument, interviewee GOV1 sees that stakeholders' need, in addition to financial data, information on the timing of decommissioning *'at what stage does an asset move out of an operating base and into decommissioning'*. However, due to their sensitivities, O&GI1 argues that companies may not disclose timing and discount rates used to calculate decommissioning costs.

O&GI2a claims that oil companies are disclosing what they are required to disclose and there is no need to disclose extra information 'There's nothing that says that we have to give any more information than we already do'. This is an opinion that seems to contradict Johansen and Plenborg (2013) who see that information of the sort of decommissioning provisions and obligations although highly demanded among users are not being disclosed sufficiently enough.

VI. Conclusion

Our analysis reveals that there is a rich body of accounting standards and regulations that govern accounting for provisions for decommissioning costs. However, accounting for decommissioning costs is a complicated process and involves great deal of subjective engineering and accounting estimates. This results in lack of unified practices among oil companies.

Our analysis shows that oil and gas companies listed in the UK show different level of compliance with the decommissioning related disclosure requirements. Although a number of oil and gas companies seems to be complying with the disclosure requirements of IASs, the amount of numeric and narrative information provided is minimal. Detailed information related to decommissioning obligations, provisions and expenditure are required by stakeholders. These information are about timing, amount, changes to the decommissioning estimates, underpinning reasons for such changes, timing of cash outflows and discount rate used. A breakdown of the decommissioning obligations into geographical areas and individual fields is a needed.

Our analysis shows that decreases in oil prices, changes in regulations and uncertainty surrounding decommissioning obligations are the main reasons for not disclosing detailed information of decommissioning obligations. Similarly, oil and gas companies consider CoP and discount rates strategic secrets. Therefore, it may not be deemed commercially wise to disclose such information to the public and hence make competitors aware of such a strategic pieces of information.

Oil and gas companies' perception of the disclosure practice of provisions for decommissioning costs is that enough information is being disclosed and there is no need to disclose more information. Furthermore, they believe that information about provision for decommissioning costs are not of interest to stakeholders and therefore there is no need to disclose any more information. This perception is withholding sufficient information from being disclosed and therefore needs to be changed in a way to match stakeholders' needs of sufficient and transparent information.

Our analysis heights a number of key issues: complexities surrounding reporting provisions for decommissioning costs, lack of coherence compliance with the disclosure requirements of the IASs and perceptions of oil and gas companies of disclosing more information. These key issues motivate us to conclude that existence of current accounting standards and the level of compliance with these standards do not result in transparency of issues surrounding decommissioning costs.

This study, although being the first of its kind, faces a number of limitations. One although our sample is an improvement to prior studies, it is not substantial large and future studies can improve on sample size. The number of companies included in the content analysis is limited to those that are listed in the UK and have decommissioning liabilities. Further studies on the users' satisfaction of the current disclosure practices of provisions for decommissioning oil and gas assets and demand for further disclosers is worth undertaking.

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