Title: Production sharing or concession agreement: Which is optimal for the exploitation of Ugandan oil and gas resources?

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Aim: The aim of the study is to ascertain whether the existing fiscal arrangement is appropriate for the exploitation of Ugandan oil and gas resources when compared to concession agreement.

Objectives:

1. To examine whether the current oil and gas exploitation arrangement gives maximum economic rent when compared with concession agreement.

2. To examine whether the current oil and gas exploitation arrangement guarantees more sustainable economic development for Uganda when compared with concession agreement.

3. To ascertain whether the existing oil and gas resource exploitation arrangements provide for the institution of good governance of Ugandan oil and gas sector.

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ROBERT GORDON UNIVERSITY ABERDEEN

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Production sharing or concession agreement: Which is optimal for the exploitation of Ugandan oil and gas resources?

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ABSTRACT

Exploitation of oil and gas by different countries is governed by fiscal arrangements classified into concessionary and contractual arrangements. The concessionary arrangements are divided into traditional and modern concessions. Also the contractual arrangements are categorised into production sharing and service agreements.

The study aimed at ascertaining whether the current Production Sharing Agreement (PSA) is appropriate for the exploitation of Ugandan oil and gas resources when compared to the Nigerian joint venture (JV). The study compared the economic rent received under the two arrangements, examined the arrangement which guarantees sustainable economic development and provides for institution of good governance. This research was underpinned by the interpretative and exploratory paradigm which holds that people can make their own conclusions about the world. It also adopted the qualitative comparative case study approach where, the researcher sees the social world in the same way it was perceived by prior authors. Secondary data was used through review of documents approach. This study was also supported by the economic rent and the principal-agent theories. The study found that Ugandan model PSA 2012 with 57.14% optimality in terms of economic rent. This study also found that PSA fosters sustainable economic development and provides for institution of good governance and was optimal for eight

elements out of the thirteen, giving it 66.7% optimality. The Nigerian JV was found to be more optimal for royalties with 20% against the model PSA with only 12.5% of the gross oil and gas revenues. The study recommends that the Ugandan government amends the PSA royalties' terms from 12.5% to at least 15% or 20% like that of the Nigerian joint venture, Also, increase the profit tax for more economic rent. The study recommends further studies on comparison of all fiscal arrangements using all their terms of the fiscal regimes.

Keywords: Fiscal arrangements, Oil and Gas Sector. Production Sharing Agreement (PSA), Modern concession, Economic Rent, Sustainable economic development, Governance, oil and gas, Uganda.

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List of Acronyms

bcf	billion cubic feet
BOPD	Barrels of Oil Per Day
BOU	Bank of Uganda
CSR	Corporate Social Responsibilities
EAs	Exploration Areas
EIA	Energy Information Administration
FDP	Field Development Plans
HOGUL	Heritage Oil and Gas Uganda Limited
HG	Host Country
IIPCO	Independent Indonesia Petroleum Company
IOC	International Oil Companies
JOA	Joint Operating Agreement
JV	Joint Ventures
MEMD	Ministry of Energy and Mineral Development
NDP	National Development Plan
NEITI	Nigeria Extractive Industry Transparency Initiative
NNPC	Nigeria National Petroleum Corporation
NOC	National Oil Companies
NOGP	National Oil and Gas Policy
PAU	Petroleum Authority Uganda
PEPD	Petroleum Exploration and Production Department
PI	Participating Interest
PRT	Petroleum Revenue Tax
PSA	Production Sharing Agreement
RSA	Risk Service Agreements
SPT	Supplemental Petroleum Tax
URA	Uganda Revenue Authority
VAT	Value Added Tax
WTI	West Texas Intermediate

Chapter 1: Introduction

1.0 Background to the Study

The countries that have oil and gas resources wish to exploit them and use revenues that accrue from these resources as a means for attaining sustainable economic development (Bindemann 1999). The Host Governments (HG) in this regard want to achieve various objectives ranging from getting early economic rent, creation of jobs, expertise transfer, preparation of local workforce, commercial opportunities for indigenous suppliers (Pongsiri 2004, Meurs 2008). The exploitation of oil and gas resources entails huge investment, sophisticated technologies and capabilities required to manage the risks involved in their operations (Bindemann 1999).

According to Johnston (2003), most developing countries with oil and gas deposits, are compelled by the lack of the factors mentioned by Bindemann (1999), to issue exploitation rights/licenses to the International Oil Companies (IOCs). These companies possess adequate capital, required expertise and machinery needed to discover and develop the hydrocarbons on behalf of the HG (Kaiser 2007, Tordo 2007). The fiscal arrangements are divided into two; the concessionary arrangements and the contractual arrangements (Johnston 1994, Mazeel 2010, Mian 2010, Zahidi 2010, Theodoridou 2012).

The concessionary arrangement, also known as royalty/tax system, was the first licensing arrangement to be used in 1859 in the United States of America (USA). Under the concessionary arrangement, the IOC is given rights by the HG to explore, develop, own and sale the oil and gas produced (Kaiser 2007, Zahidi 2010). This license is for a particular area/license and for a predetermined period of time. The HG then receives royalties in return, as rent paid by the IOC for accessing oil and gas resources. Equally, the IOC after paying royalties also pays various taxes to the HG based on the revenues from oil and gas produced (Tordo 2007, Blake and Roberts 2006).

There was a change from these traditional concessions to a modern concession also known as a Joint Venture (JV) in 1957. This shift was brought about by the amendments made in the traditional concessions like state participation, Joint Operating Agreement (JOA) (Pongsiri 2004, Al-Emadi 2010). Under the JV, the HG participates in the search for, development and production of hydrocarbons to the extent of the Participating Interest (PI) contributed. This means that, the HG shares the profits and loses accruing from the oil and gas activities to the same extent of PI or contribution made (Al-Emadi 2010, Mmakwe and Ajienka 2009).

The contractual arrangements allow the HG to retain control and ownership through their National Oil Company (NOC) or a responsible ministry for energy and natural resources (Bindemann 1999). The contractual arrangements also permits the IOC to finance the investment, offer the technical expertise needed to produce the oil and gas natural resources (Nichols 2010, Mian 2010, Papatulică 2014). The contractual arrangements are divided into two; the Production Sharing Agreement (PSA) and the service agreements which are further separated into risk service, pure service, and technical service agreements (Mazeel 2010, Nochols 2010, Ravagnani et al. 2012).

Under PSA, the HG mandates the IOC to explore and produce the oil and gas natural resources. The PSA enables the HG to receive income from oil and gas activities; this income may also be called economic rent or government take. This is used to finance the HG national objectives intended to achieve sustainable economic development, given good governance practices (Demirmen 2010). From this perspective, the citizens, policy makers, academicians and other stakeholders are interested in the way the hydrocarbon operations are managed and governed.

The challenging aspects for HGs experienced by oil and gas sector are; how to achieve sustainable economic development and ensure good governance of the natural resources. These are considered challenges

because most countries which are rich in natural resources have not recorded sustainable development as compared to resource poor countries (Sachs and Warner 1995). As Lederman and Maloney (2007) pointed out that when a state is gifted with oil and gas resources and in turn applies good governance and policy frameworks, it may achieve sustainable growth and development.

The study examined numerous features of oil and gas fiscal arrangements concerning economic rent, sustainable economic development and good governance. It also attempted to ascertain whether the existing contractual arrangement for Uganda is relevant and provides for good governance of the resource, in order to guarantee sustainable economic development under the terms and conditions of the agreements Uganda entered into with the IOC.

1.1 Aim and objectives of the Study

The aim of the study was to determine whether the existing fiscal arrangement is appropriate for the exploitation of Ugandan oil and gas resources when compared to the modern concession agreement. And in order to achieve this, the following objectives were set:

i. To examine whether the existing oil and gas exploitation arrangement gives maximum economic rent when compared with concession agreement.
ii. To examine whether the existing oil and gas exploitation arrangement guarantees more sustainable economic development for Uganda when compared with concession agreement.
iii. To determine whether the existing oil and gas resource exploitation arrangement provides for the institution of good governance of Ugandan oil and gas sector.

1.2 Research Questions

i. Does the existing oil and gas exploitation arrangement give Uganda the maximum economic rent from oil and gas resources when compared with modern concession agreement?

ii. Does the existing oil and gas exploitation arrangement guarantee sustainable economic development for Uganda when compared with concession agreement?

iii. Does the current oil and gas resource fiscal arrangement provide institution for good governance for the Ugandan oil and gas sector?

iv. Is the existing fiscal system appropriate for the exploitation of Ugandan oil and gas natural resources?

1.3 Rationale for the study

Uganda as a developing oil and gas producing economy, had a general licensing round in 2002, the IOCs under this original arrangement discovered oil and gas in 2006. Due to this discovery, Uganda conducted the first competitive licensing round on 17th June 2015 at the Montecalm Shoreditch London Tech city Hotel (MEMD 2015). Uganda has put in place Acts, regulations and policies to regulate the oil and gas operations. These include; The National oil and gas policy for Uganda 2008, the Petroleum (Exploration, Development and Production Act 2013, the Public Finance Management Act 2015 among others (PEPD-MEMD 2015).

Obviously Ugandans have high expectations from its oil and gas resources. Some of these expectations include; the increased economic activities in the country, improved living standards of people, more revenue for the government. The citizens expect the government to negotiate an agreement that would offer maximum fiscal benefits from the utilization of the oil and gas resources.

This study subsequently, is expected to;

i. Deliver information to government agencies concerned with designing and signing the new model PSAs.
ii. Guide the companies and authorities charged with the commercial and policy matters concerning the management of the hydrocarbons.

iii. Help researchers in the academic field to bridge the knowledge gap.

Most studies done so far have only looked at PSAs in isolation. The rationale of this study therefore, was to bridge the knowledge gap by comparing the Ugandan model PSA 2012 and the Nigerian modern concession. This was envisaged to determine whether the PSA gives Uganda optimal economic rent. In addition to ascertain if PSAs guarantees sustainable economic development for Uganda and to establish whether, PSA provides the institution for good governance of the Ugandan oil and gas industry.

1.4 Scope of the study

This study is arranged into six chapters. Chapter 1 introduces the study, presents the background to this research, and also presents the aims and how to achieve them, give the rationale for conducting the research. Under chapter 2, examination and evaluation of literature and theoretical evidence provided from literature by previous researchers about fiscal arrangements and their elements. Gaps acknowledged throughout the literature review are discussed with a view of making the foundation of this study. The various terms and elements of concessionary and contractual arrangements are evaluated. Chapter 3, scrutinises Uganda's petroleum fiscal arrangement, discusses the background of oil and gas activities in Uganda, the oil and gas regulatory governance framework. The chapter also examines the existing PSA in terms of; bonuses, royalties, state participation, ring fencing, cost recovery oil split and taxation.

Chapter 4, covers the methodology of the study adopted, beginning with a brief of the philosophy used, the paradigm underpinning the study, a discussion of quantitative and qualitative methods, an evaluation of the case study and comparative research designs. It also looks at sources and nature of data, evaluates validity and reliability of data, reviews data presentation and analysis techniques, then debates the theoretical

frameworks. It also considers applicable ethical considerations and resource requirements.

Chapter 5 compares the Ugandan model PSA 2012 with the Nigerian modern concession to ascertain whether PSA offers maximum economic rent to Uganda. Data collected is presented, starting with the economic assumptions of data, presents the oil price projection, discusses economic rent features, looks at sustainable economic development and governance. In carrying out this comparison, some hypothetical statistics were employed.

Chapter 6 presents the discussion of findings, conclusion and recommendations of the research built on the findings.

Chapter 2: Literature Review

2.0 Introduction

Petroleum fiscal arrangements combined with the taxation structure, guide the operations of, and the relationships concerning, the host governments (HGs) and the International Oil Company (IOC). The chapter scrutinises various fiscal arrangements employed in the oil and gas sector. The chapter then examines the concepts of economic rent, sustainable development and governance, which are the frameworks used in determining the optimal fiscal arrangement for the HG, as defined in the literature.

2.1 Oil and Gas Fiscal Arrangements

The oil and gas fiscal arrangement determines how the HG will be guided in the governance of petroleum exploration, development and production economics (Mazeel 2010). In addition Onyeukwu (2010) pointed out that fiscal arrangements are regarded as tools used to allocate the production or revenue proceeds from oil and gas resources between the HG and the IOC. Proper implementation of the fiscal arrangement components such as bonuses, royalty, profit oil, tax, and local market obligations is vital for optimal return on investment to both parties (Gowharzad and Al-Harthy 2011). However, Gowharzad and Al-Harthy (2011) did not discuss other factors that influence investments apart from fiscal arrangement components.

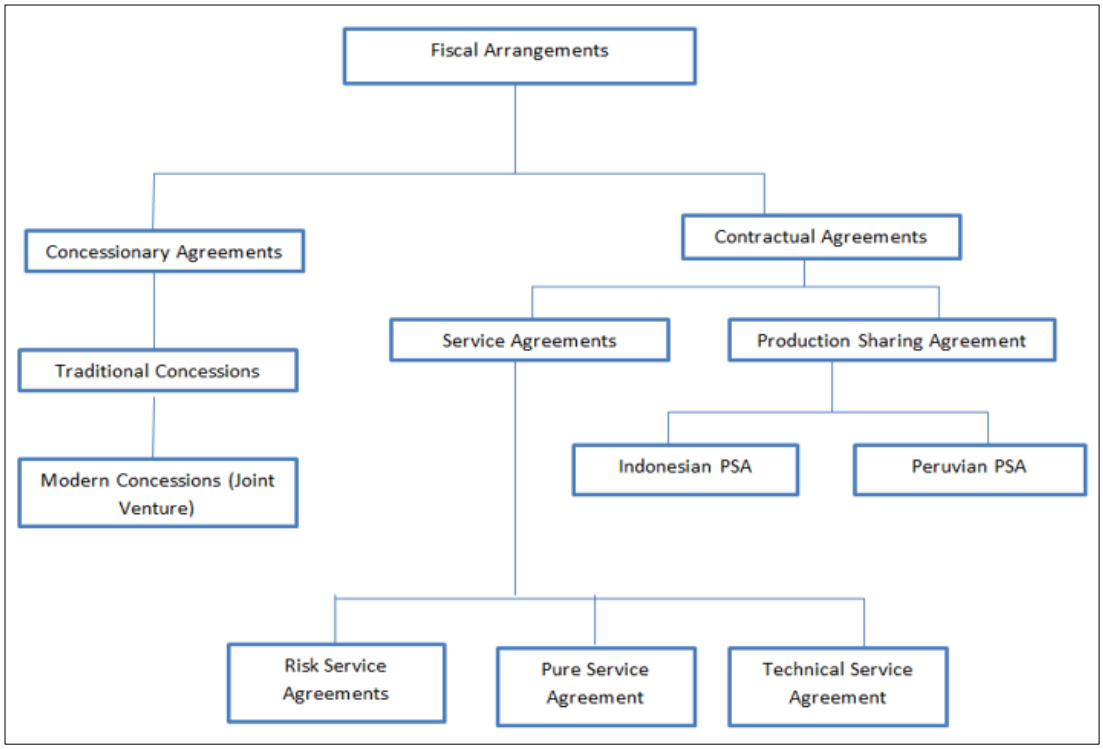
Oil and gas fiscal arrangements are broadly divided into two major categories; the concessionary system or Royalty/Tax system and the contractual arrangement. In contractual arrangements, the HGs remains the owner of oil and gas resources but grants the contractor a license to search for, develop and manage the production of oil and gas. The IOCs endures all risks related to exploration and production of oil and gas natural resources. Similarly, they provide capital and expertise for a percentage of hydrocarbons produced (Pongsiri 2004, Kaiser 2007, and Tordo 2007).

Similarly, IOCs also provide employment for nationals, technology transfer, training of local workforce, business opportunities for local suppliers and local research and development (Meurs 2008). On the other hand, Bindemann (1999) contends that IOCs are also searching for investment opportunities that maximises returns on their investment, which is commensurate to the risks undertaken. Likewise, Ravagnani et al. (2012) maintained that HGs are interested in selecting a fiscal arrangement that could result in an optimal natural resource exploitation and utilisation, and generate maximum economic rent necessary for the country's sustainable economic development. The HG and IOC thus, share a common goal of both maximising returns from the oil and gas resources.

Zahidi (2010) argued that developing countries are faced with scarcity of resources and the commitment for the social-economic development of their nationals, this scarcity creates competition among HGs for these investments and foreign technology required for optimal exploitation of their oil and gas resources. Bindemann (1999) also shared the same view but did not consider the fact that these fiscal arrangements are geared towards a win-win situation for both parties, but instead tried to insinuate in most cases, that the terms are always unfavourable to IOCs. This is the reason why IOCs require a comprehensive stability clause in the fiscal arrangement terms when prices are moving in a positive trend to sustain their investments. However, the oil and gas price changes makes the usual 20-40 years of contract duration appear longer for HG to provide the long term stability as required by the IOCs (Onyeukwu 2010).

Farnejad (2009) and Ravagnani et al. (2012) agreed that the IOCs are more interested in the viability of the venture to make a decision of carrying out the investment or not. The fiscal arrangements can be summarised in *Figure 1* below:

Figure 1: Types of Oil and Gas Arrangements



(Source: Adapted from Johnstone 2003)

2.1.1 The Concessionary Arrangement

Under the concessionary arrangement, the IOC is granted exclusive privileges to discover, develop and produce the oil and gas resources in a given exploration area. The concessionary arrangement is divided into; the traditional and modern concessionary arrangements (Ravagnani et al. 2012).

2.1.1.1 Traditional Concessions

Zahidi (2010), asserted that, under the traditional concessionary arrangement the HG gives a license to the IOC to exploit, get tittle for the oil and gas produced at the wellhead. Again allows the contractor to sale oil and gas from a particular license for a defined period. The IOC in some cases may be requested to pay a bonus or a fee to HG upon signing the agreement. The HG is compensated for the extracted hydrocarbons through royalties and taxes paid by the IOC when production begins. Concessionary arrangements are used by countries like UK, Norway, France, Australia, Niger, Morocco and South Africa (Mazeel 2010, Gowharzad and Al-Harthy 2011, Theodoridou 2012).

Tordo (2007) demonstrated that IOCs compensates HG with royalties from the initial production of oil and gas. The IOCs are then permitted to subtract operating costs and investment expenditure from the revenue realised from the sale of oil and gas produced. Papatulică (2014) confirmed that countries like UK, Norway, and Australia removed royalties from their licenses perhaps to inspire new companies. However, Papatulică (2014) assumed that these countries eliminated royalties from their agreements because they wanted to induce new companies to explore for more hydrocarbons to replace the depleted reserves.

Randon (2005) asserted that the concessionary arrangement was easy to comprehend with because the proficiency required to support the progression was not as difficult as compared to that needed in the Production Sharing Agreement (PSA) terms. Which require services of solicitors for interpretation. On the other hand, concessionary arrangements did not give satisfactory information to IOCs in relation to the productivity of the license because they are granted before seismic surveys are done. This increased the exploration risk to the contractor and the risk would cease when commercial reserves are discovered and ready for production.

The IOC remits numerous taxes when production begins and these include revenue levies, special duties, capital gains taxes and income taxes (Kaiser 2007). Several countries try to raise economic rent from oil and gas operations by introducing new taxes. For example, United Kingdom (UK) introduced the petroleum revenue tax (PRT) and Norway announced the supplemental petroleum tax (SPT). Notwithstanding all these new tax regimes, the institution of good governance is vital for the effective administration of oil and gas resources. When these resources are governed well, they can foster sustainable development (Papatulică 2014).

In order for HG to increase economic rent under the concessionary arrangement, HGs sometimes escalate tax rates. This increase demotivates the IOCs from bringing more investments into the country (Schiozer 2012). Tissot (2010) suggested that HGs should pay attention

to simplicity of the fiscal arrangements in order to provide for cost saving for IOCs and to optimise output for the HG. Zahidi (2010) claimed that when low the costs are incurred by contractor, more profits would be recorded and more taxes are paid by the investor to the HG. Additionally, Theodoridou (2012) affirmed that, HGs should draft agreements with an intention of using them to access capital, technology, markets for oil and gas. Furthermore, use them to employ the nationals. It should also give IOCs a chance to use the tax regime to earn an adequate profit from the investment. Most developed economies have embraced the modern concessions / joint ventures (Pongsiri 2004).

2.1.1.2 Modern Concessions (Joint Ventures)

The modern concessionary arrangement, also known as the Joint venture, is when various IOCs come together and set up jointly owned ventures. The joint parties share costs and profits in relation to their Participating Interest (PI) or contribution made towards the venture (Katsioloudes and Isichenko 2007, Pongsiri 2004). The first Joint venture contract came into force in 1957 between Ente Nazionale Idrocarburi (ENI) and Egypt, then with Iran (Al-Emadi 2010). Roberts (2012) claimed that the aim of these oil companies was to maximise the quantities of petroleum resources produced at the least cost possible.

Mazeel (2010) established that joint ventures are a variant contractual arrangement used in concessionary and contractual fiscal arrangements. Joint ventures assume various legal types including partnerships and limited liability corporations (Al-Emadi 2010). On the other hand, Roberts (2012) insists that a partnership is different from a joint venture. For example, a partnership differs because it is a legal entity and each partner has an interest in the joint property. Conversely, a Joint venture is not required to create a legal entity and does not produce financial accounts for statutory purposes. Consequently, each party accounts for its portion of assets and liabilities in own financial statements. The parties are guided by a joint operating agreement which operationalizes the joint venture. An operator is chosen among the parties to manage

and perform the JV activities on behalf of other parties as stated in the operating agreement (Mmakwe and Ajienka 2009).

In addition, Roberts (2012) also asserted that joint ventures offer various benefits to members, including allowing members to free unutilised resources to other projects allowing them to invest in multiple projects at the same time instead of relying on one risky project entirely. Likewise, JVs allow members to share the financial, geological and commercial risks, so that no single member is exposed individually as sometimes these may be billions of dollars. In addition, JVs allow parties to share expertise and skills pooled to the joint venture and parties are cautioned to avoid duplication of these skills. Lastly, JVs help to avoid political risk in that, the HGs find it hard to jeopardise the interests of all parties to the joint venture as contrasted with cases when dealing with a single company.

Correspondingly, Katsioloudes and Isichenko (2007) demonstrated that similarities and differences in corporate cultures of parent IOCs could lead to a more successful project management. This is possible through benchmarking of the best core competencies, disseminating timely and accurate information, getting a quick feedback about the project activities and gaining various synergies. Furthermore, Fey and Beamish (2000) pointed out that selection of the right company to partner with may result into a more meaningful negotiation of agreements, work programs and above all minimise conflicts. Alternatively, the final approval of partners is made by the ministry responsible for oil and gas and energy in most countries. On the contrary, Cosier and Dalton (1990) believed that some little amount of conflict was necessary to foster a healthy decision making process. This small conflict enabled managers to carry out a critical evaluation of the decisions for fear of criticisms from other partners.

Johnston (2003), intimated that HGs participate in joint ventures through their National Oil Companies (NOC) with the majority equity holding. He further argued that HGs are interested in realising maximum economic rent, having control over a particular exploration area, using the services

of local workforce and suppliers to facilitate sustainable economic development. Radon (2005) noted that when a HG holds majority of the PI in a joint venture, the HG becomes responsible for any environmental damage caused during the exploitation of the natural resources. Consequently, this makes it very difficult for the HG to carry out the commercial operations and at the same time be the regulator, monitor and enforce compliance with environmental laws (Roberts 2012).

2.1.2 The Contractual Arrangement

Under the contractual arrangements, the government remains the owner of oil and gas natural resources and awards the IOC with a licence to exploit the oil and gas. The contractual arrangements are separated into PSAs and service agreements. Their major difference hinges on how the IOC gets compensated either in kind or cash form (Johnston 2003). Under production sharing agreements the contractor is compensated in kind for recovery of costs as well as profits (Demirmen 2010).

For service agreements the IOC acquires a portion of profits and not production as the case for PSAs. Service agreements may be either risk service or pure service. Under pure service agreement, the IOC explores and produces the oil and gas for a fee and the HG bears the exploration and development risks. This arrangement is used by capital rich countries that only lack the technology and expertise like the Middle East. Risk service agreements are where the IOC provides the capital and bears all exploration risks and then is paid a fee for the services rendered (Johnston 1994, Mian 2010, Demirmen 2010).

Under the technical service agreement, the IOC is always paid in cash for the rehabilitation, enhancing oil and gas recovery and redeveloping services performed for surviving fields. This reduces the technical and expertise risk for the IOC (Johnston 2003, Zahidi 2010). In most emerging oil and gas economies the profit allocation contractual systems are preferred. These systems have the capacity to deliver timely economic rent required for HGs' sustainable development when compared to other contractual arrangements (Tissot 2010).

The differences between the concessionary arrangements and the PSAs are; the power and control of oil and gas activities, who owns of the reserves and the cost oil limit allowed to the IOC by the HG (Mazeel 2012). Most studies done so far are looking at PSAs in isolation; the rationale of this study intends to bridge the knowledge gap by comparing the PSA and a concession to determine the one that will give Uganda optimal economic rent required for its sustainable development.

2.1.2.1 The Production Sharing Agreements

The first contemporary PSA was signed in Indonesia in 1966 between the national oil company of Indonesia then called Permina and the Independent Indonesia Petroleum Company (IIPCO) (Johnston 2003). Under the PSAs, the HG retains the ownership of oil and gas and allows the IOC to carry out the exploration activities and produce the oil and gas resources (Tordo 2007, Mian 2010). The IOC bears the exploration risks; provides the necessary investment which is essential for exploitation of the hydrocarbons in return for a share of petroleum produced (Bindemann 1999, Onyeukwu 2010).

Mazeel (2010) and Theodoridou (2012) argued that HGs have an edge over IOC in splitting oil and gas production and they end up getting a bigger share needed to meet their sustainable development and other economic needs. After noticing this edge many countries embraced PSAs including India, Malaysia, Gambia, Nigeria (changed from joint ventures), Egypt, Angola, Trinidad and Tobago and Brazil. In situations when the IOC fails to find commercial discoveries of oil and gas, it would not claim any reimbursement from the HG (Bindemann 1999, Tordo 2007). On the other hand, Al-Emadi (2010) noted that commercial discovery is found and oil and gas produced, the contractor gets a share of oil and gas produced as specified in the contract.

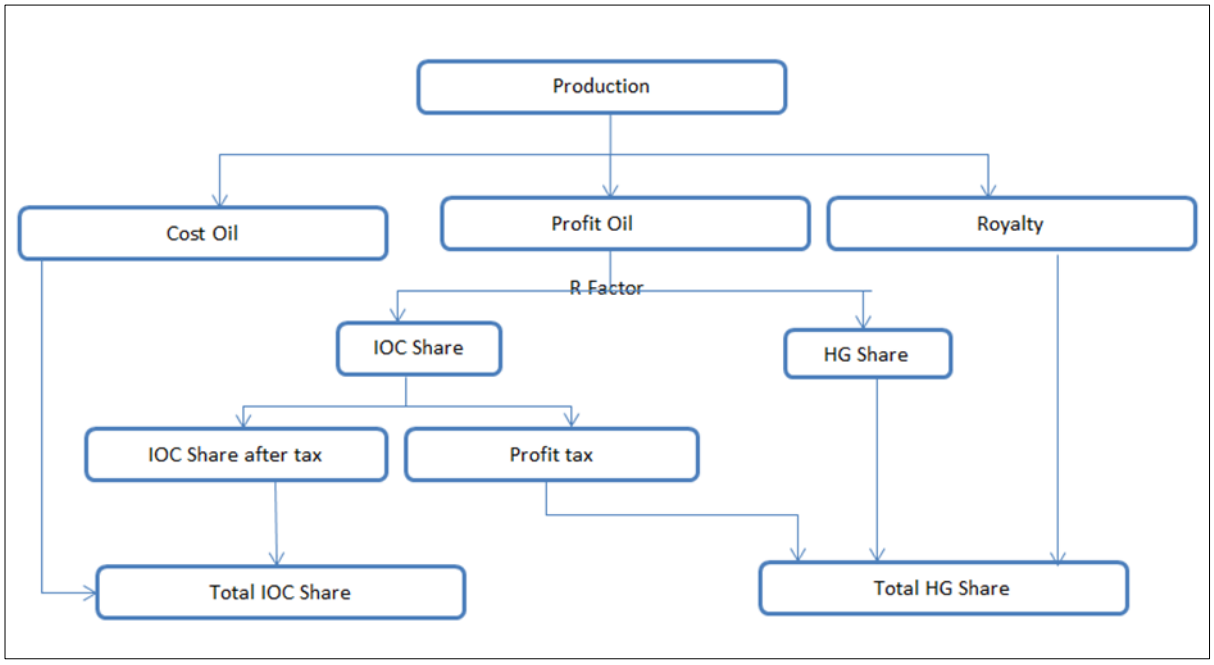
Richards (2003) established that although the allocation ratios are stated in the contracts, disagreements still arise between the HG and the IOC because each party pursues maximum share of revenue. These disagreements are be driven by price volatility when IOCs register losses when prices fall which encourages them overstate costs in order to

recover all costs sustained throughout the exploitation of oil and gas resources. In this regard Zahidii (2010) stated that all this was happening because both the HG and the IOC are all striving to achieve a common objective of maximizing rewards from the exploitation of the petroleum resources. Consequently, the IOC seeks for opportunities that result in an adequate return for the investment risk undertaken while the HG aims at achieving sustainable economic development as stipulated in their national development plans and macro fiscal frameworks (Tordo 2007, Johnston 2008, Onyeukwu 2010).

2.1.2.2 Production Sharing Agreement Terms

Various countries endowed with oil and gas resources design production sharing agreements terms depending on their objectives and their negotiating abilities (Johnston 1994, Bindemann 1999, Mian 2010, and Zahidi 2010). The following sections examine these terms as summarised in the *Figure 2* below.

Figure 2: Production Sharing Agreement Terms



(Source: Bindemann 1999)

2.1.2.3 Signature, Production and Discovery Bonuses.

Signature bonuses are normally paid by the contractor to the HG at the signing of the contract before making any investment (Mazeel 2010).

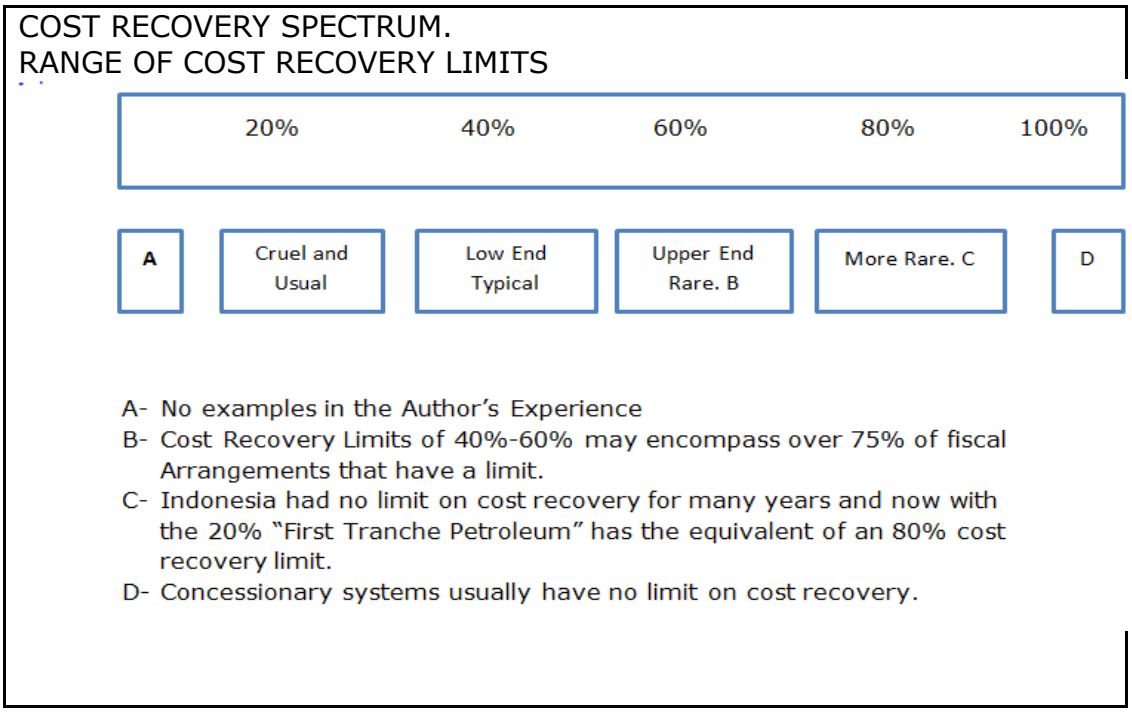
Most HGs in developing economies require signature bonuses because they guarantee early economic rent with minimal management controls (Zahidi 2010). On the other hand, they increase operational costs for the contractor and as a result contractors may be discouraged from further investments in that country (Tissot 2010). Production bonuses are paid to the HG when agreed production levels are achieved by the contractor. There may be other key milestones like new commercial discovery and this may necessitate a discovery bonus (Wadood 2006).

2.1.2.4 Cost Oil

Cost recovery (cost oil) when the IOC recoups the operating and capital expenditures incurred during the exploitation of oil and gas before sharing the production between the HG and IOC (Nichols 2010). The PSA puts a boundary on how much can be recovered for given financial year. The balance above the recovery limit would be moved over to the following period (Wadood 2006). Costs that are allowed for recovery purposes include operating costs and capital costs (Johnston 1998, Ravagnani et al 2012).

Meurs (2008) argued that the purpose of placing the upper limit on cost recovery is to defend HGs particularly in emerging economies from corrupt managers. For example if costs are permitted in surplus, the IOC would only take the approved percentage of cost recovery and balance could be mismanaged. However, limiting the cost recovery at a defined ratio is no longer vigorous to HG because governments prefer cost recovery limits that fluctuate with price changes. This system is chosen when prices go down, the recovery boundaries are greater when prices upsurge and the recovery limits are reduced to enable the HG to earn stable income from royalties.

Figure 3: Cost Recovery Spectrum



(Source: Adapted From Johnston 1994)

The PSAs normally specify the costs and the order in which they are recoverable. Unrecovered costs for the previous year are considered first, and then current costs if they were incurred in the process of exploring for oil and gas (Nichols 2010).

2.1.2.4.1 Royalty

Johnston (2003) claimed that royalty are paid from the initial oil production and then paid to HG by the IOC. This is the compensation for the exploitation privileges of natural resources extended to the contractor. Royalties are a fixed proportion of production but can vary basing on sliding scale of production either daily or monthly (Nichols 2010). Royalties guarantees that the government obtains its share of revenue regardless of whether the IOC earns a profit out the venture or not. Generally royalties are between 8-15% of total revenues (Mian 2002 as quoted in Ravagnani et al. 2012).

Tordo (2007) argued that royalties offers early economic rent; they are also easy to forecast and manage as rent paid by the IOC for the exploitation of the natural resources. Therefore, royalties should not be included in IOC's cost recovery because the essence of paying the

resource owner for accessing the natural resources would be lost when the contractor recovers this cost. When the exploration activities are not profitable or when the fields are marginal, royalties would be a disincentive for additional investments in the project (Randon 2005).

2.1.2.4.2 Profit Oil and Taxation

Bindemann (1999), Johnston (2007) and Ravagnani et al. (2012) contended profit oil is the balance when the royalties and cost oil are deducted from gross revenue. This balance is apportioned between the HG and IOC as per the agreement; the portion of the IOC is taxed at the rate approved in the agreement.

Ravagnani et al. (2012) established that in modern PSAs; the global average is typically between 60-65% for the HG. The profit oil share permits the HG to gain a tailor made set of economic rent without altering the whole fiscal system that is unresponsive to price changes. From the IOC's perception venture risk decreases when sliding scales are employed and this flexibility could motivate marginal field development (Tordo 2007, Theodoridou 2012). Bindemann (1999) affirmed that HG share is comprised of royalty, government share, and profit tax (refer to *Figure 2*).

2.1.2.4.3 Budgets and Work programs

The IOC is obliged to avail budgets, work programs and development plans for sanctioning by the HG, the contracts are for a specified period ordinarily between 25 to 35 years encompassing exploration, development and production periods in which certain amount of work should be carried out at for a given amount of investment (Kaiser and Pulsipher 2004). The contractor would stop production when the extension is not sanctioned by HG.

Randon (2005) claimed that IOCs prepare the work programs which are murky by hiding their intentions into technical considerations. It intended to slow down projects they consider expensive and execute those they consider to be cheaper and profitable. HGs should specify the circumstances under which a task could be delayed in the contracts.

Bindemann (1999), Pongsiri (2004), Nichols (2010) abridged the benefits a PSA delivers to the HG which includes; the delivery of risk capital, economic rent, royalties, bonuses, taxes and local content benefits.

Ravagnani (2012) explained that Brazil changed from concessionary arrangement to PSA in a bid to realise more economic returns which would change the social-economic wellbeing of its citizens. In the same way, Madaki (2006) indicated that Nigeria changed from Joint Venture arrangement and adopted PSA, with a hope that the country would fetch more economic rent under PSA as compared to Joint Ventures.

Mazeel (2010) affirmed that PSAs allowed the facilities and installations made by the contractor converts government property on commissioning or when the costs incurred by the IOC are fully recovered. This excludes leased property and facilities. However, the key question is; who meets the costs during decommissioning of these installations, facilities or equipment? Is it the HG or the contractor?

2.1.2.4.4 The Service Agreement Arrangement

Service agreements are another form of contractual arrangement where the HG engages the contractor for the provision of technical knowhow, services and facilities (Al-Emadi 2010). Johnston (2003) reported that all the oil and gas produced is owned by the HG and the contractor is paid a fee for the services provided. In addition, Al-Emadi (2010) established that service agreements are classified into Risk Service Agreements (RSA), Pure Service Agreements and Technical Assistance Agreement.

2.1.2.4.5 Risk Service Arrangement

Under the risk service arrangement, the IOC is reimbursed in cash or in kind or paid a fee for their services as a way of recovering their costs. This system is employed by countries like Iran, Kuwait, Iraq, and Mexico (Johnston 1994, Tordo 2007, Al-Emadi 2010).

The contractor bears all the exploration and production risks and when no commercial discovery is found, the contractor as the case in the PSA has no claim against the HG. Unlike PSAs, under the RSA, the contractor has no control and ownership of the natural resources, even though they

bear exploration and production risks. They are paid a fee for their services. Gudmestad et al. (2010) discussed that the contractor agrees to partake in the sharing of exploration and production risks by tagging their pay on the success of the venture. In short, when a commercial discovery is made, the contractor is allowed to recover all costs from production revenue and then a service fee is paid from the resultant net revenue.

2.1.2.4.6 Pure Service Agreements

Pure service agreements impose no exploration and production risk to the contractor and in this regard, their services are paid for irrespective of a commercial discovery or a dry hole (Mazeel 2010). These agreements are mostly used in the Middle East by countries like Saudi Arabia and Oman. This is mainly because this region has a very low discovery risk. These countries also have the necessary capital. However, they lack the technical knowhow and expertise needed for drilling, development and production services. The pure service and risk service agreements are similar when it comes to lack of control and ownership of petroleum resources. On the other hand, they differ by the levels of risk undertaken during the exploration and development of oil and gas resources (Demirmen 2010).

2.1.2.4.7 Technical Assistance Agreement

Technical assistance agreement is an arrangement where the contractor is engaged to redevelop or carry out major rehabilitation or to enhance recovery of the petroleum resources for a specified fee based on the production profile (Al-Emadi 2010, Mazeel 2010). For example, when the future production is enhanced beyond the normal rate, then the excess is attributed to contractor technical assistance. This increment may be shared between the contractor and HG. On the other hand, if the production decreases below the agreed rate, then all production may be taken by the HG due to failure by the contractor to enhance production as per the contract (Al-Emadi 2010).

To the contrary, Muers (2008) believed that there is relationship between the payment for services and the quality of advice given. Johnston

(2003) revealed that normally HGs design fiscal arrangements that may maximise the economic rent from the exploitation of their petroleum resources.

2.2 Economic Rent

Economic rent is the surplus between the revenue generated from production of oil and gas resources and the corresponding extraction costs. These costs are composed of exploration, development, operating costs and the contractors' share of profits. HGs always attempt to record maximum possible economic rent under the PSA through; bonuses, royalties, cost recovery, government share of profit oil or gas and taxation (Johnston 2003). Under the concessionary arrangement the HG captures economic rent through royalties, allows the IOC fiscal deductions and then through taxes paid by the contactor (Mmakwe and Ajienka 2009).

Johnston (2004) reported that there were other benefits in addition to economic rent, for example provision of employment and associated benefits, transfer of skills, good governance practices introduced by the IOCs and Corporate Social Responsibilities (CSR) made with in communities around the exploitation areas.

As part of their CSR, Tullow Uganda Ltd and Heritage oil and gas Uganda Ltd constructed health centres around Bulisa and Hoima districts where exploration is taking place. The fundamental point is to design a fiscal arrangement with terms and conditions that makes exploration and development feasible to all parties. Also, a contract that provides for restructuring of the terms enables the HG to attain maximum economic rent and also which provides the IOC with an adequate return on investment (Johnston 2003).

Riseborough (2015) asserted that oil and gas exploitation would play a dominant role in the earnings of Uganda in addition to provision of employment opportunities and boosting the energy service sector players.

The HG should allow accelerated recovery of cost in order to bring closer the payback period to enable the investor to recoup the investment. In the same effort, the Ugandan Ministry of Finance and economic planning in its 2015/2016 budget, scrapped off the Value Added Tax (VAT) on all petroleum products and all companies dealing in petroleum activities were exempted from VAT (Kasaija 2015).

Similarly, Kemp (1987) found out that the fiscal arrangement that entails the acceptance of a higher share of risks by the HG indicates that, the country may be able to collect more economic rent as compared to those that push all the risks to the IOC. On the contrary, Pongsiri (2004) disagreed with this position and reasoned that the IOC normally bears all the exploration and production risks because they get a return in form of a share of oil and gas produced to compensate for its costs.

Muers (2008) revealed that although some differences may occur in terms of economic rent received by the HG as a result of the type of fiscal regime used countries end up with the same statistics. These differences are not embedded in the fiscal arrangement but merely linked to the structure of the arrangement. Tordo (2007) and Mian (2010) share the same view that the HG may get the same statistics for economic rent and the IOCs realise the same revenue irrespective of the fiscal arrangement used. In summary, although there is no preferred fiscal arrangement by contractors, the one adopted should be able to generate maximum returns.

This leaves a question to be answered; if the fiscal regime type does not affect economic rent then, what determines whether a country gets maximum economic rent or not?.

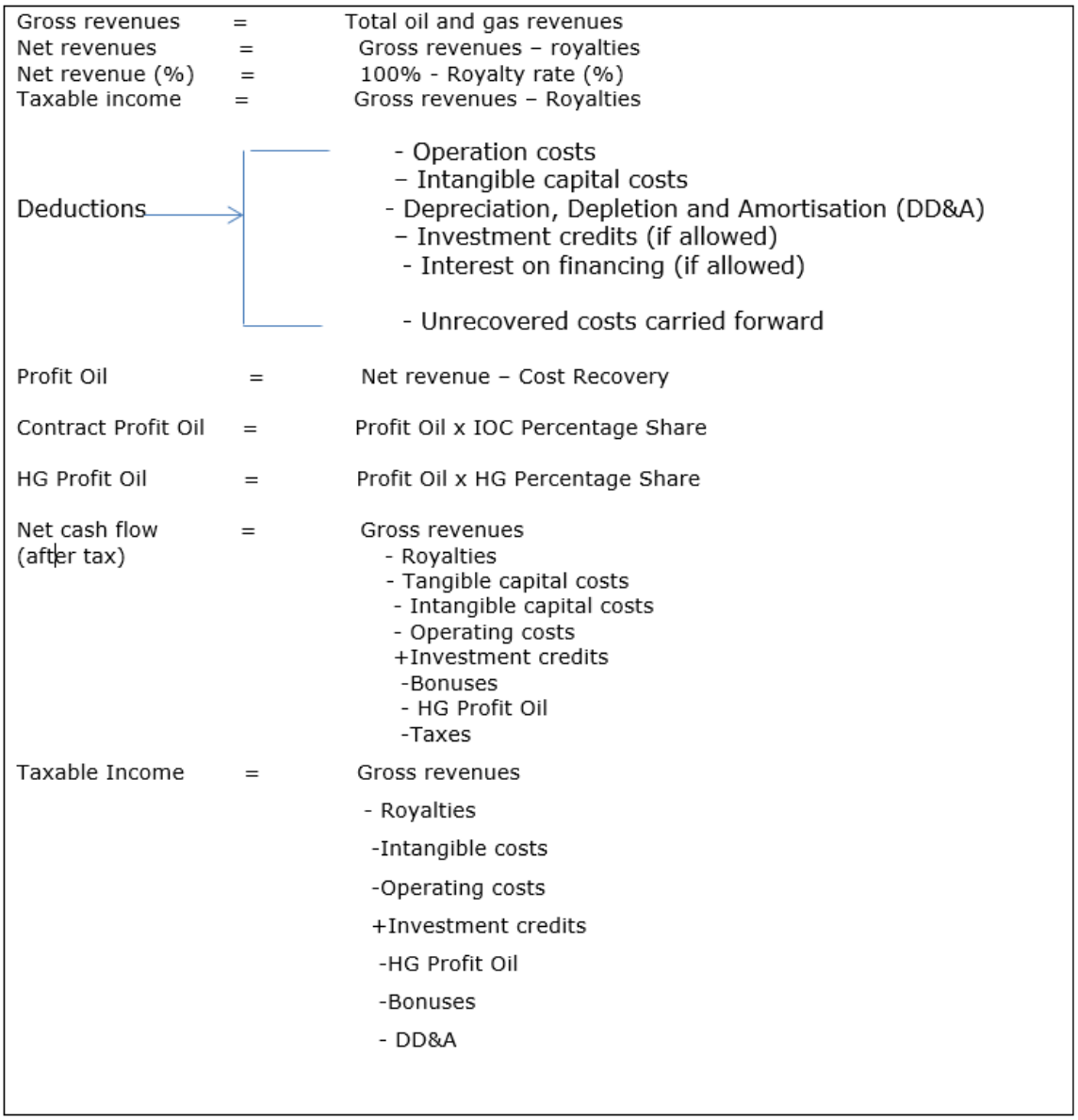
As a result, the HG will prefer a regime that offers an early economic rent in form of bonuses, fees, royalties and taxes while providing an adequate return on the contractors' investment (Sunley et al 2003). Muers (2008) further argued that HGs will achieve greatest value possible if agreements encourage IOCs to achieve the optimal level of oil and gas production at the minimum cost. In addition, it should also foster

maximum pace of development while conserving the environment for sustainable development.

2.2.1 Determination of Net Cash Flow under PSA

This is built on the assumption that some of the costs are instantaneously deducted in full while others may be depreciated over the useful life of the agreement. The basic equivalences for the PSA cash flows are accessible in the *Figure 4* below;

Figure 4: Determination of Net Revenue, Profit Oil, Net Cash Flow and Taxable Income under the PSA arrangement

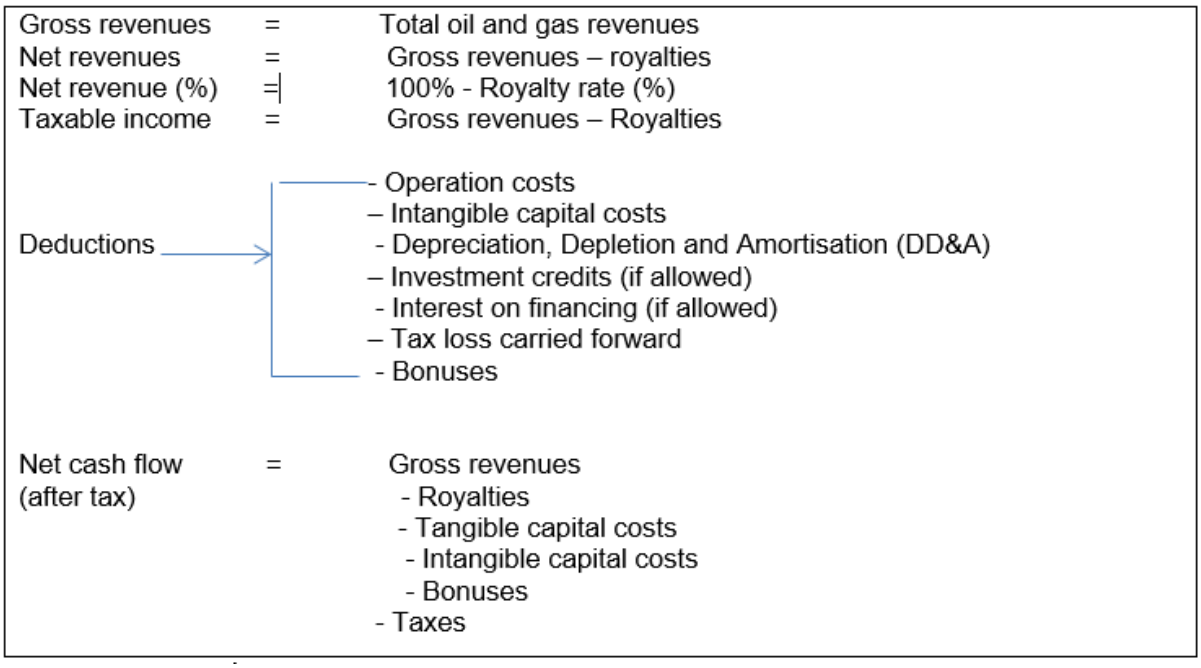


(Source: Johnston 2003, Mazeel 2010)

2.2.2 Determination of Net Cash Flow under Modern Concessions

Figure 5 below presents the elementary calculations for net cash flow under the modern concessionary or royalty/ tax fiscal arrangement.

Figure 5: Elementary calculations for net cash flow under concessionary or royalty/ tax fiscal arrangement



(Source: Mazeel 2010)

2.3 Sustainable Economic Development

Sustainable development is achieved when a country is able to meet the requirements of the present generation without compromising the ability of future generations to satisfy their needs (Barbier 2007). Consequently, the welfare of all generations does not reduce when the natural and economic resources are well governed and managed. Vincent (1997) during his research of resource depletion and economic sustainability in Malaysia found out that Malaysia managed to attain sustainable development despite the depletion of its resources. This success is attributed to the consistency in optimal use of the economic rents generated by the natural resources. However, this is in disagreement

with Sachs and Warner (1995) who believed that countries endowed with natural resources always register less sustainable development when compared to poor resource countries.

In an attempt to compare the impact of the resource depletion and the level of sustainable economic development attained, there is a major measurement problem of depreciation of reserves which gives different figures for each region. As a result, figures obtained by different host governments are questionable. Isehunwa and Uzoalor (2011) noted that if favourable linkages like good governance policies, good political environment are missing, the HG may not attract IOC and its natural resources would not be exploited. Hence, it may become difficult to attain sustainable economic development.

In the case of Uganda, the National Development Plan (NDP) 2040 had a vision of making the oil and gas sector a spring board for the sustainable economic development of the country. The fundamental issue is to harmonise the interests of both parties that is the HG and IOCs. These favourable linkages helps the two parties to perform their duties as stipulated in the agreement for optimal exploitation of the petroleum resources. In contrast, Mmakwe and Ajienka (2009) concluded that the differences between the Fiscal arrangements are based on terms of the arrangement but not on the concepts and ideas with in the regimes.

2.4 Governance of Oil and Gas Resources

Governance is the process by which groups of people set the rules, standards and working environments required to enable them realise their intended objectives (Florini and Sovacool 2009). Tordo (2007) discussed that the presence of good fiscal arrangements may not be enough for HGs to achieve their objectives like optimal economic rent without good governance.

A good framework of governance increases the benefits from the extraction of oil and gas resources. It also leads to even revenue sharing among parties and regions. Good governance enables transparency where the local population becomes aware of the concerted development

strategies that preserves the environment and minimises conflicts (Taylor and Smith 2007). Governance can be enhanced by building capacity of all stakeholders including civil society and empowering the rule of law. Although IOCs can benefit from good governance practices, they always keep a stance due to the fear of involving themselves in the HG's political process.

Most IOCs therefore, are reluctant to participate directly in governance initiatives because they suffer from the political consequences individually. For example, in 2001 when BP published what it had so far paid to the Angolan government, it was threatened with termination of the contract and expulsion from the country (Frynas 2010, Inkpen and Moffet 2011).

When IOC work towards achieving the HG's corporate/ national objectives, it indirectly participates in a political process without causing conflict of interest. From this perspective, BP has gone ahead to work with the Azerbaijan government by giving expert advice on how to manage their oil fund and revenues. BP is also operating a large scale development intervention in Azerbaijan with World Bank as their partners in a transparent manner (Frynas 2010).

Transparency improves the communication and information flow between the IOC and the HG; it can also be accessed by a wider audience. The information accessibility improves the management of revenues by creating effective revenue funds. It also strengthens the government's legitimacy, reputation and credibility among the international investing community and makes it accountable (Frynas 2010).

Transparency stimulates accountability for oil and gas activities, by providing information revealing whether the agent is effective or not in executing the agreed roles and terms of the contract. This type of accountability is intended to prevent the abuse of power and rights extended to the contractor by the HG. Likewise, accountability is again expected to help in ascertaining whether the agents' operations are geared towards the achievement of the national objectives. Accountability is also a way of measuring the outcome of the IOC's

operations in relation to approved work programmes (Genasci and Pray 2014).

Good governance is not the responsibility of the IOCs as it is not referred to anywhere in the Contracts. The IOCs can indirectly influence governance through corporate social responsibilities like training and employing qualifying Ugandans and in the process they transfer the governance skills to the locals. Haufler (2010) demonstrated that when the HG implements good prudent governance policies for the revenues realised from oil and gas resources, then sustainable economic development would be achieved.

2.5 Chapter Summary

The chapter has evaluated the oil and gas fiscal arrangements; the modern concessions and also discusses the contractual arrangements including PSAs, and service contracts. The concepts of economic rent, sustainable development and governance of oil and gas resources are also evaluated. Literature indicates that PSAs are adopted by most emerging oil economies especially in Africa and Asia (Bindemann 1999). Additionally, Muers (2008) concluded that economic rent does not depend on the type of the fiscal arrangement but is determined by the arrangement structure and design.

In addition, sustainable development can also be achieved if the HG prudently and optimally utilises the economic rent received from the exploitation of natural resources given good governance policies.

Chapter 3: Overview of Uganda's Oil and Gas Industry and Nigerian Joint Ventures

3.0 Introduction

This chapter explains and gives the synopsis of Uganda's oil and gas industry. The chapter illustrates Uganda regulatory governance framework and how it guides oil and gas exploration activities. This is also done through proper enforcement of the PSA terms as discussed in the chapter. The chapter also examines the background to oil and gas in detail, the regulatory framework, Uganda's existing fiscal arrangement and its key terms.

3.1 Background to the Ugandan Oil and Gas Industry

The first work on the historical background to the Uganda's petroleum industry was done by Bernard (2012) and Anthony (2013). They reported about the location of the Albertine graben which is the major region with the highest oil and gas prospects situated in the north-western part of Uganda.

Uganda's first efforts to evaluate the potential and presence of oil and gas were made by a government geologist Wayland James in the 1920s. Wayland managed to document some traces of oil and gas in Butiaba areas in 1938 but no evaluation of the commerciality of the reserves was done. These efforts were halted in late 1939 due to world war effects, but resumed later in early 1980s by acquiring 9,578 line kilometres (km) of aeromagnetic data for the graben. In 1986, a policy direction for the oil and gas industry was issued by government. This mostly emphasised the monitoring of compliance levels by the IOCs (PEPD-MEMD 2015).

The Ugandan government through its Ministry of Energy and Mineral Development (MEMD) signed the first PSA with Petrofina Exploration Uganda In 1991. The signing of the first PSA led to the creation of the Petroleum Exploration and Production Department (PEPD) in the same year to monitor the compliance of the IOCs. The petroleum exploration and production regulation was introduced in 1993 to guide the

department in its role. Under this law, Petrofina Exploration Uganda contravened the PSA terms by not carrying out any major exploitation work and its license was not renewed after two years (PEPD-MEMD 2015).

In an effort to promote investment in the oil and gas industry, the Albertine graben was divided into nine blocks. Heritage Oil and Gas Uganda Limited (HOGUL) was granted block 3A license in 1997. By the end of 2001, HOGUL had explored 228.39 line km of seismic data. In the same year, a Hardman resource (now Tullow Uganda Operations pty limited) was also granted a license to explore block 2. In July 2004, a joint venture was formed between Heritage and Energy Africa and this was given exploration rights for block 1. The JV acquired 2-D seismic data for the entire Kaiso-Tonya and Buhuka-Bugoma area.

The first discovery well called Mputa-1 was drilled in 2005 by HOGUL and Energy Africa and encountered the first oil in 2006. Since then 116 deep wells have been drilled (36 well are exploration and 80 well are appraisal well) (refer to *Appendix 1: Factsheet of Wells Drilled in the Albertine Graben*). Out of the 116 wells drilled 106 wells had commercial reserves and this accounts for an 85% success rate. The Albertine graben is made of 21 oil and gas fields (PEPD-MEMD 2015).

By the time of this study, all these wells presented in *Appendix 1: Factsheet of Wells Drilled in the Albertine Graben* combined are estimated to possess over 6.5 billion barrels of stock of oil initially in place out of which 1.4 billion barrels are recoverable. The country also is estimated to have 499 billion cubic feet of gas in the Albertine graben (PEPD-MEMD 2015). Only 40% of the Albertine graben has so far been explored, it is more likely that the country possess more potential for the hydrocarbons. The country expects to produce 60,000 barrels per day in 2016 and the refinery is expected to have this capacity initially, when the production increases to 120,000 BOPD the refinery capacity will also be changed to accommodate this production per day (MEMD 2015).

3.2 Uganda's Oil & Gas Regulatory Governance Framework

The ownership and control of oil and gas resources whether on land, under the ground or under water is vested in the state by the constitution of Uganda (1995) on behalf of the citizens. Due to the discovery of oil and gas in 2006, the cabinet approved the National oil and gas policy (NOGP) in 2008 to guide the exploitation, development and utilisation of the petroleum resources (Abigaba 2014). The NOGP's main goal is to ensure that Uganda's oil and gas resources are used to eradicate poverty among Ugandans and to bring about sustainable economic development for the country. It also aims at creating efficiency in licensing, production, refining and above all ensuring national participation in the oil and gas sector while preserving the environment and biodiversity (PEPD-MEMD 2015).

In 2012, the oil and gas management policy was also approved to steer the management, monitoring and supervision of the oil activities in the country.

The Petroleum (exploration, development and production) Act 2013 (PEPD Act) became operational in 2013 to manage the oil and gas exploration, development and production activities within the country. The PEPD Act introduced the National Oil Company to cater for the country's oil and gas commercial interests. It also introduced the Petroleum Authority Uganda (PAU) to cater for the country's oil and gas regulatory framework (MEMD 2015).

In 2013, the petroleum (refining, conversion, transmission and mid-stream storage) Act 2013 was also introduce to guide the refining transportation and storage activities of oil and gas with in Uganda (PEPD-MEMD 2015).

The Revenue Management Act came into force on 23rd February 2015 to facilitate the proper management of revenue from oil and gas resources. This Act provides that the government shall establish a petroleum fund where all revenues that accrue to government are to be deposited. The revenue management act stresses that all withdraws from the fund are

to be approved by the appropriation Act and a warrant signed by the auditor general (PEPD-MEMD 2015).

The act emphasises that petroleum revenue is for infrastructure and development projects undertaken by government only and not be used to finance recurrent government expenditure. This is an indication that the fund is intended to drive sustainable economic development for the country. In this regard, any withdraws from the petroleum fund are supposed to be deposited to the petroleum revenue investment reserve from where, the funds will be re-invested internationally to avoid distorting the macro-economic stability of the country (PEPD-MEMD 2015).

3.3 Uganda's Existing Fiscal Arrangement

Uganda adopted the production sharing agreements just like many developing oil and gas economies. PSAs guide the operations of, and the relationships between, a host country (HG) and the international oil companies (IOCs) especially during negotiations. The Ugandan government designed a new production sharing agreement model in 2012. This model addressed the gaps in the 1999 PSA and 2006 PSA models as cited by Anthony (2013) during his analysis of Uganda's petroleum fiscal systems. The earlier PSAs as demonstrated in *Appendix 2: Status of Licensing in the Albertine Graben* (the status of licensing), were negotiated on the basis of direct negotiation between the interested company and the government represented by ministry of energy and mineral development. After confirming that over 6.5 billion barrels are in place, Uganda's bargaining power increased and started to organise for bidding rounds which was not the case before. On the 17th June 2015 the first competitive licensing round for six blocks (accessible in *Appendix 3: Blocks for the first Licensing Round of Uganda*) was held and the Ugandan government has shortlisted 17 IOCs. The winners will sign a model PSA 2012(MEMD 2015).

The following sections examine the 2012 model PSA main features;

3.3.1 Bonuses

Signature bonus is a non-recoverable single lump sum paid by the IOC to HG. For the case of Uganda, upon signing of the agreement, the IOC pays USD 300,000. Likewise when a commercial discovery is made the IOC pays to government USD 2,000,000 as discovery bonus (Openoil 2015).

3.3.2 Royalty and Additional Royalties

The IOC pays to government the following royalty rates depending on the gross total daily production measured in barrels of oil per day (BOPD) for every block or exploration area. The production is the total output of crude oil and gas less water and other sediments produced and re-injected into the reservoir. The rates are as visible in *Table 1* below.

Table 1: Royalty and additional Royalties paid by the IOCs

Gross Total Production (BOPD)	Royalty
< 2,500	5%
2,500 - 5,000	7.5%
5,000 - 7,500	10%
> 7,500	12.5%

(Source: Uganda model PSA 2012)

The royalties are received on a monthly basis in kind or cash (US dollars). The additional royalty is recovered on cumulative oil and gas in million barrels as shown in *Table 2* below;

Table 2: Additional royalty is recovered on cumulative oil and gas

Cumulative Petroleum(Million Barrels)	Additional Royalty
< 50	2.5%
50 – 100	5%
100 – 150	7.5%
150 – 250	10%
250 – 350	12.5%
> 350	15%

(Source: Uganda model PSA 2012)

The IOC pays additional royalties on the gas sold either on local market or for export (sales gas) as shown in *Table 3* below;

Table 3: Additional royalties paid on gas sold (Sales gas)

Sales Gas	Additional Royalty
< 300 bcf	2.5%
300bcf - 600 bcf	5%
600bcf -900 bcf	7.5%
900bcf -1.5 trillion cubic feet (tcf)	10%
1.5(tcf) - 2(tcf)	12.5%
> 2 (tcf)	15%

(Source: Uganda model PSA 2012)

3.3.3 State Participation

The government of Uganda may opt to participate in the joint venture with the IOCs for no more than 15%. The PSA model 2012 necessitates that the IOC to carry government up to when production starts. The government would meet its share of joint venture taxes (Openoil 2015).

3.3.4 Ring Fencing

Ring fencing will apply for recovery of costs where the IOC has more than one license; the Model PSA does not consider consolidation of all costs incurred by the contractor from different licenses. It requires calculation of costs on a license by license basis hence making sure that the IOC bares all the exploration risks for every license separately (Nichols 2010).

3.3.5 Cost Recovery

The IOC shall recover exploration, development, production and operating expenses related to oil and gas exploration activities at 60% of gross oil production and 70% for gas after deducting royalties and additional royalties. The model PSA requires the IOC to carry forward into the future years all unrecovered costs up to a point when full recovery is made (Openoil 2015).

3.3.6 Oil Split (Production Sharing)

As discussed in section *2.1.2.4.2*, the model PSA provides that, the balance of oil after recovering costs is split between the HG and the IOC based on incremental production. Johnston (2003) asserted that this was in line with the industry best practice, where the split is based on cumulative production. The Model gives the oil split rate as below;

Table 4: Oil Split Rates

Production (BOPD)	HG Share	IOC Share
< 5,000	46%	54%
5,000 - 10,000	48.5%	51.5%
10,000 - 20,000	53.5%	46.5%
20,000 - 30,000	58.5%	41.5%
30,000 - 40,000	63.5%	36.5%
> 40,000	68.5%	31.5%

(Source: Uganda model PSA 2012)

3.3.7 Taxation

All central government, district and other local administrator's taxes and duties are paid by the IOC in accordance with the Ugandan domestic laws 2015. The corporation tax is paid at a rate of 30% (URA 2015).

Other major terms include; Minimum work programmes, Pipeline transportation, Domestic requirements, Training and employment of Ugandans, Arbitration Accounting and Auditing and the confidentiality clause that limits the wider stakeholders from accessing information about petroleum agreements.

3.4 Overview of Nigerian Joint Ventures

3.4.1 Background

The exploitation activities for oil and gas resources in Nigeria started in the late 1938. Shell D'Arcy made the first commercial discovery in 1956 in Oloibiri and Afam. Following these discoveries, a number of IOCs joined the Nigerian oil and gas industry under the concession arrangement (Ameh 2006). According to Mmakwe and Ajienka (2009), Nigeria changed from traditional concessions to JVs in 1969 for onshore activities. Due to huge investment and expertise required for offshore oil and gas activities, Nigeria in 1973 shifted from JVs for offshore activities to PSAs. Currently, Nigeria operates two fiscal arrangements; the JVs and the PSAs (Ameh 2006, Lawal 2009).

3.4.2 Nigerian Joint Venture Arrangement

Under the JV arrangement, the NNPC on behalf of the federal government contributes towards oil and gas ventures according to their PI. In most JVs, it is set at 60 percent. The IOCs pay a royalty of 20 percent to government for onshore activities (Iledare 2004). The JV arrangements are guided by the joint operating agreements (JOAs). The JOA specifies the PI of each party, also used as a basis for determining each party's share of costs, profits and losses accruing from the oil and gas operations.

The Nigerian JVs registered some weaknesses like; late payment of government share of cash-calls to the JV operator. The biased sharing of revenues and costs and reduced government control of oil and gas resources (Al-Attar and Alomair 2005).

3.4.3 Nigerian Petroleum Regulatory Framework

The petroleum Act 1969 was operationalized by the Petroleum (Drilling and Production) Regulations also made in 1969. The petroleum Act 1969 introduced changes to concession arrangement. It introduced the oil exploration license, oil prospecting license and oil mining lease. The NNPC Act was enacted in 1973. The NNPC Act closed the traditional concessions and gave birth to participation agreements (Ameh 2006).

The federal environmental protection (FEPA) Act 1988 was put in place to protect the marine environment (Abutudu and Garuba 2011).

The PSA is also a form of participation agreement. The first PSA was signed between NNPC and Ashland in July 1973. Under this agreement, Ashland (IOC), provided the finances and expertise required for the exploration activities. The first and second offshore licensing rounds were performed in 1993 and 2000 respectively. PSAs were embraced for offshore activities because of the advantages including; provision bigger part of the capital needed for exploration by the IOC, more control of operation by the HG of oil and gas operations. (Al-Attar and Alomair 2005)

Chapter 4: Research Methodology

4.0 Introduction

This chapter examines the research philosophy, paradigm, and methodology used for the study. It aimed at describing the techniques and methods employed to gather and evaluate information and data relevant to this study and related literature. The chapter begins with detailed examination of the philosophies and paradigms on which the research was based. It continues to discuss the methods used in the evaluation and analysis of the fiscal arrangements employed in the oil and gas industry. The method and methodology adopted was informed by the gap and research questions the study intended to bridge and answer respectively.

4.1 Philosophy and Paradigm of the Study

A philosophy consists of ontology which are the assumptions made towards reality and its nature. In addition, the ontological assumption helped the researcher to embrace the idea of various realities (Creswell 2013, Corbin and Strauss 2014, Bryman and Bell 2015). Philosophy also includes epistemology that demonstrates how the person undertaking the study happens to understand what he or she knows.

In the same way, the philosophy of axiology assumes the roles that values play during the process of conducting the research. As a result, the researcher includes own views in relation to those of the participants (Creswell 2013). Reality tends to be subjective depending on the individual carrying out the research. Equally the researcher provides evidence in form of themes and quotes of the participants or prior researchers, and this study is based on this kind of evidence.

A paradigm is a set of assumptions that reflect a unique stance that could assist a researcher in directing how the study would be conducted depending on the assumptions the researcher holds about the world (Collis and Hussey 2013). In the same manner, Creswell (2007)

established that a paradigm is the researchers' own view about the world or a set of beliefs that informs the way the study will be conducted. Creswell (2013) cautioned that these assumptions can influence the way inquiries are conducted.

There are two diverse paradigms; the interpretivism and positivism, the later believes that the objective of information is to define a phenomenon under investigation. Positivism also assumes that the object of research is independent of the researcher and knowledge is got through gathering of data which may give a basis of laws (Bryman 2013). On the other hand, positivists believes that events can be programmed, forecasted and do not occur by chance hence giving birth to quantitative methods (Abdullahi et al 2013). The positivism is characterised by being logical, reductionist and deterministic with an emphasis on cause and effect orientation (Phillips and Burbules 2000, Creswell 2007).

The post- positivist takes inquiries as a logical step by step process and believes in various points of views instead of relying on one reality. They use a number of data analysis levels and computer programs for checking the validity of the data (Creswell 2007). The major short coming of this worldview is that it may not be easy to preserve the independence of the researcher due to multiple views of the participants. Marilyn and Chad (2000) and Livesey (2006) shared the same view that researchers should also be independent as the facts out the research should be independent. This means that researchers with the same view should come up with the same conclusion if they conduct their research exactly in the same manner.

The interpretive paradigm holds that people can make their own conclusions about the world as they perform their routine activities and that reality cannot happen once. Reality always depends on the experiences and opinions of different people hence qualitative methods (Saunders et al 2012). Collis and Hussey (2013) also believed that social realism is in the mind of the researcher since he is guided by his views about the world. Creswell (2013) noted that different views and meanings exist and the researcher should not look for the complexity of

these views but to narrow them down to categories or ideas with the same meanings and then rely on participants' general views of the event. The study is underpinned by the interpretive paradigm.

4.2 Qualitative and Quantitative Methodologies

According to the worldviews discussed above, research can be conducted using three different methods; the qualitative method, the quantitative method and mixed method which incorporates some elements of qualitative and quantitative methods (Creswell 2014). The qualitative research is informed by the interpretivist worldview or paradigm, where the researcher sees the social world in the same way it is perceived by the participants and also conducts the study basing on personal understanding of the world (Bryman 2012, Creswell 2013). As a result, qualitative method is underpinned by the inductive orientation where theory generated is considered as an outcome of the research being undertaken (Miles, Huberman and Saldaña 2013).

Qualitative research method also subscribes to the constructionism ontological orientation where the researcher considers the social world as being external to the social actors or participants (Bryman 2012, Blaikie 2009, Bryman and Bell 2015). Amaratunga et al (2002) concluded that qualitative strategy mostly emphasises the observation of events, use of words and texts to describe reality and participants in their natural situations. Under qualitative research, the researcher uses ethnographic methods like interviews, existing literature and observation to express realism of situations (Amaratunga et al 2002, Corbin and Strauss 2014).

Qualitative research has the ability to change processes over time, and methods of gathering data it uses. It appears more natural as opposed to artificial dealing with figures by quantitative method (Yates 2004 as quoted in Abdullahi et al 2013). Qualitative research has the capability to fine-tune new concepts and matters as they emerge hence, contributing to generation of theories. In addition, qualitative research guides the researcher in using logic to understand the environment surrounding the research topic by applying experience when interviewing respondents (Patton 2005).

Qualitative research finds answers to questions which improve conditions of people and bring social justice (Corbin and Strauss 2014). Qualitative method has the ability to appreciate the significance that society attaches to realities like good governance and corporate social responsibility (Reynolds et al 2011 as cited in Abdullahi et al. 2013). Also qualitative research helps to understand and appreciate the context in which actions and major decisions are made, this context enables people to explain why they act the way they do (Myers 2013).

On the other hand, Qualitative method may take a lot of time and resources like money where large samples of data are involved as compared to quantitative method which save time and money (Amaratunga et al. 2002).

In the same way, qualitative research tends to be subjective, in that the findings depend on the researcher's views regarding those issues only he or she considers significant. There are problems of generalisation when the findings are taken to be representative when one or two cases considered out of the many (Bryman and Bell 2015). Quantitative research is construed as a method that emphasises measuring and counting numbers during data collection and its analysis. Similarly, it involves the gathering of facts and studying how different sets of data are interrelated by using scientific methods to draw quantified conclusions.

Quantitative research embraces a deductive orientation or approach where by it is believed that theory guides the researcher when conducting the research (Bryman and Cramer 2009, Blaikie 2009, and Creswell 2013). In addition, quantitative research uses data collection methods like structured interviews, self-administered questionnaires, observations, secondary data analysis and content analysis of documents. Therefore, quantitative methods can either be descriptive or experimental in nature (Creswell 2013, Abdullahi et al 2013).

Quantitative research is useful because it examines big chunks of data in a shorter time as compared to other research methods. Also, it leads to generalised findings when data is based on a sufficient size of the

random sample. In the same way, quantitative research is considered to be independent of the researcher. Correspondingly, quantitative research involves validation and testing of theories that are already constructed about how a given object occurs (Johnston 2004).

Amaratunga et al. (2002) claimed that the quantitative method makes policy making difficult because of its concentration on what is and what has existed in the past. Under the quantitative methodology, it is difficult to point out the consequences of assumptions made during the designing of terms and conditions of the fiscal arrangements. In addition, unreliable data can negatively impact on the outcome and quality of the study hence, the need for scientific analytical skills (Bryman and Cramer 2009).

Equally, quantitative research does not distinguish between individuals and the social institutions within the world of nature (Creswell 2013). This means that people have the capacity to interpret the surroundings around them unlike the objects under study which cannot do a self-reflection or to interpret the world around them (Bryman 2012). For that reason, the process of quantitative measurement tends to be artificial. For example, the relationship between the measures generated by the researcher and the concepts to be revealed are assumptions just not reality.

Disparately, quantitative research places reliance on the instruments and this process hinders the connection between the research and the normal daily life. For instance, when using questionnaires and structured interviews the researcher may not be sure whether the respondent has the necessary knowledge to answer the questions (Bryman and Bell 2015). In the same approach, quantitative method of research may facilitate quick fixing of variables where the researcher has little or no contact with individuals and the field (Silverman 2006).

The mixed method is a combination of qualitative and quantitative studies, this methodology tolerates the advantages and disadvantages of each method simultaneously (Denzin and Lincolin 2009). The mixed method provides diverse understanding of study problems (Creswell

2013). Subsequently, the mixed method helps in bringing ideas from different techniques giving a better picture of what is happening around the subject of study (Myers 2013).

Blaikie (2009), claimed that the quantitative methodology yields data by reducing the original data to just numbers after removing or ignoring the content imbedded in the data. After manipulating these numbers, they are then interpreted by adding a context to them in order to bring them back to the social world. From this perspective, the researcher is of a view that most of the data available for the study is in a qualitative nature, it is only after some work is done on it that it can be regarded as quantitative data. So the study was guided by the qualitative comparative case study methodology or approach of research to achieve the objectives that were set, that is:

i. To examine whether the existing oil and gas exploitation arrangement gives maximum economic rent when compared with concession agreement.
ii. To examine whether the existing oil and gas exploitation arrangement guarantees more sustainable economic development for Uganda when compared with concession agreement.
iii. To ascertain whether the existing oil and gas resource exploitation arrangement provides for the good governance of Ugandan oil and gas sector.

The study was based on assumptions of simulations of cost and revenue variables, prices of oil and gas, and production volumes. Likewise, the study used discounted cash flows in addition to economic modelling stipulated in the 2012 Ugandan production sharing model. Qualitative information was used to compare Ugandan model PSA terms and the Nigerian JV terms. These were grouped in themes of economic rent elements, sustainable economic development and governance (Chih Lin 1998).

4.3 Case Study and Comparative Research Designs

Case studies and comparative research methods are qualitative designs where by the researcher explores an in depth the program, activity, and processes by coming up with cases. These cases may be comparative and are activity and time bound. They assist in collecting data using various procedures over a specified time period (Creswell 2013). In a similar way, Bryman (2012) revealed that, this design involves a detailed exploration of particular cases which may be an organisation, system or community. Case studies emphasises the intensive evaluation of a particular setup, for instance, the fiscal arrangement.

A case study design helps the researcher to get an in-depth understanding of key features of the adopted case. In this respect, it may be fiscal arrangements for oil and gas activities by providing a holistic view about the optimal arrangement (Yin 2013). A case study also allows the researcher to analyse a contemporary case in its natural setting. This gives an accurate description of the social phenomena and the data collection methods are informed by the research questions using an inductive approach. Furthermore, case studies also help in modelling and perfecting the generalizable perceptions (Bryman 2012). Case studies are preferred when studying about entities whose actions affect a wider scope of stakeholders both with financial and non-financial concerns (Lawal 2009). From this viewpoint, the researcher formed a view that petroleum sector of Uganda denotes the case study and the fiscal arrangements constituted the propositions.

Case studies allow the use of secondary and primary data, using both qualitative and quantitative techniques. The mixed method helps the researcher to come up with generalised, consistent and satisfactory information for the study (Yin 2003). A case study facilitates the researcher in the conducting of a review of documents and getting the authors' opinion about fiscal systems and at the same time use validated information (Marczyk et al. 2005). However, case studies are faced with a limitation when it comes to rendering judgement about the representativeness of a chosen case.

In addition to difficulties in determining average variables, the comparative advantage of case studies provide a solution by availing frequencies that may be used to determine an average of the variables (Bennett 2004). The Population of the research is composed of the fiscal arrangements and the sample includes the PSA and concessions as the research elements arrived at by using purposive and judgemental sampling techniques. This is based on the view that the current fiscal arrangement can only be compared to a modern concession given the context of Uganda as a developing oil economy.

The Comparative Design involves the study of two different cases by using identical methods. The comparative design implies that the researcher understands the social phenomenon when they are in comparison with two or more different cases. It also takes the form of a multiple case study approach. Under the comparable case study, the researcher can establish the common and distinguishing factors, the success and failures of each case (Bryman 2012). This study was supported by the comparative analysis of the Ugandan model PSA 2012 and the Nigerian modern concession.

4.4 Justification for Benchmarking Nigerian Joint Ventures

The Nigeria joint venture was used as a benchmark to the model PSA 2012 because Nigeria started with modern concession and later turned to PSA (Iledare 2005). Also, NNPC faced challenges of failure to pay their cash-calls required to fund the JV activities in order to increase Nigeria's oil and gas reserves (Mmakwe and Ajienja 2009). Furthermore, in Nigeria, JVs are used for only on-shore oil and gas activities. Likewise, Uganda so far, is exploring only for on-shore oil and gas resources.

Nigeria just like Uganda is in Africa and these two countries share almost the same economic and social conditions and comparing their systems is seen to be feasible. Additionally, Nigeria is one of the biggest oil and gas producers in Africa, even though, the oil and gas sector is not governed as expected. Countries like Uganda can learn from Nigeria's experience while avoiding the mistakes committed.

4.5 Sources and Nature of Data

Research is conducted using two major sources of data: primary and the secondary data. The primary sources of data are where the researcher originally collects data by interviewing people, using questionnaires, experiments and observation. Alternatively, the researcher uses secondary data which is already in existence like documents, agreements, regulations, policy documents, text books, government publications, presentations, journals, websites and newspapers (Hox and Boeije 2005, Denzin and Lincolin 2009). Using primary data was considered time consuming for this research given the scope to be covered. The researcher therefore, adopted the secondary sources of data collection.

The secondary sources of data facilitated the researcher to get easy access to PSA and JV agreements, peer reviewed journals, presentations, text books. In addition to petroleum related websites, records of the Ugandan petroleum exploration and production department (PEPD), NNPC and NEITI records. This helped the researcher to save time and cost. Secondary sources also offered the researcher a chance of using better quality data (Bryman 2013). Secondary data simplified analysis and comparison of themes under the PSA and JVs. These were economic rent, sustainable economic development and governance. Collecting primary data was considered time consuming. Secondary data sources availed more time for data analysis and discussion. It also allowed the researcher to prepare and familiarise with the techniques to be used in the analysis of data (Bryman 2012).

These documents were used because they were peer reviewed and their authenticity was deemed unquestionable, since the technocrats in the industry always use them. These secondary sources enabled the researcher to understand the mind, words and language used by the authors in relation to this study (Creswell 2014). Secondary sources of data were considered to be credible evidence referred to, taken to be free from distortions and their margin of error was assumed to be minimal. They could be conveniently accessed by the researcher at the

appropriate time hence, an unobtrusive information source (Bryman 2012, Creswell 2013). Indeed they contained data on which prior researchers had already expressed their opinions and attention (Merriam 1998).

On the other hand, secondary analysis took lot of time for researcher to get familiar with the complex computation of cash-flows under the two arrangements. The researcher had less or no control over the quality of secondary data where by some key variables would be missing in some computations (Bryman and Bell 2015). Some kind of data may not be easily accessed like some confidential oil and gas agreements and revenue figures which presents the risk of inaccurate information. This could be mitigated by the use of validity and reliability checks.

4.6 Validity and Reliability

During the study, researcher checked whether the findings were accurate by examining the trustworthiness, information authenticity and data credibility. The researcher likewise, checked the reliability by ascertaining whether the approach adopted was consistent across different studies carried out by different researchers. Triangulating the different sources and evidence justified the accuracy of the data (Creswell 2013 and Bryman 2012). The comments of researcher about the interpretation of the findings were guided by his background, review of prior studies and their opinions and documents. This helped in describing the different perspectives of the topic which made the findings more realistic.

4.7 Data Presentation and Analysis Techniques

Given the type and nature of the data used in this study, descriptive and comparative tools were used in presenting and analysing the data collected. Descriptive statistical tools are those methods used to describe, summarise and to display data using tables, graphs and charts (Collis and Hussey 2013). These tables and graphs reviewed and compared the Ugandan model PSA 2012 major terms with the Nigerian JVs. From these, the researcher came up with findings, drew conclusions from them and made recommendations. From these techniques and the

information derived from the Ugandan model PSA 2012 and the Nigerian JVs were linked to the economic rent and principal-agent theories. The PSA and JV were the propositions used by the study. This information was also compared with other cases to get a comprehensive use of the theories.

During this study, the researcher compared the cash flows under the Nigerian Joint Venture agreement and under the Ugandan model PSA 2012. This was done by determining the gross revenues, net revenues, taxable incomes and net cash flows under both arrangements, and then compared them to determine the more appropriate and optimal arrangement for the exploitation of Ugandan oil and gas.

The comparison and analysis were undertaken in terms of economic rent, sustainability and governance of oil and gas industry in Uganda under the existing PSA model and Under the Nigerian modern concession. Examination of documents was widely employed when analysing textual data and it was considered appropriate for the analysis of governance reports and required disclosures by HGs and IOCs (Bala 2011).

The IOC accounts to the HG by disclosing governance policies and techniques used from which HGs can benchmark the best practices of governance. These records and documents help NOCs in improving their accountability obligations to the general public (stakeholders). When the national development objectives as spelt out in the national development plans are achieved, this marks the roadmap to sustainable economic development. The overall aim of the study was reasoned from this point of view by the researcher.

The context from which this analysis was conducted are; principal-agent relationship, economic rent and stakeholder theory.

4.8 Theoretical Frameworks

The economic rent theory is adopted by the study. This theory explains how the oil and gas production revenue is allocated among the contractors (IOCs) and the owners of the resources (HG). Economic rent in the oil and gas industry is the difference between production revenue

and the corresponding extraction costs such as exploration, development, operational costs and the share of profit for the oil and gas sector. As illustrated in chapter 2 (refer to section *2.2*), the HG captures economic rent through bonuses, royalties, production sharing, levies and various taxes. Rent in this regard, refers to the surplus between revenue and extraction cost. This makes the economic rent theory a consistent choice when it comes to profit maximisation conduct of the HG and the IOC (Johnston 1994, 2003).

Pongsiri (2004) claimed that the HGs want to maximise economic benefits from oil and gas by designing appropriate fiscal arrangements that are optimal as required by the economic rent theory. Furthermore, the economic rent theory helps HGs to utilise the excess revenue generated to create investments that provide jobs, and markets for the outputs from petroleum. These activities are the spring-board for economic sustainable development.

Equally, the principal and agent theory is used, whereby the HG as the owner of the hydrocarbons is the principal and the IOC in possession of capital, technology and expertise is the agent. The IOC (agent) is technical in the field and tends to have more information pertaining to the oil and gas sector as compared to the HG (principal) hence, information asymmetry (Waterman and Meir 1998). To avoid information asymmetry, the principal (HG) designs a contract that gives incentives to the agents (IOCs) in assuming their responsibilities.

The contracts are designed that way, because the parties differ in their interests and the principal has an edge in influencing the actions of the agent towards the achievement of the principal's objectives. When these responsibilities are executed as agreed, the HGs are able to optimise their objectives and welfare (Pongsiri 2004). The agreement gives the HG a duty to demand for accountability at certain periods of the year. Likewise, it necessitates the contractor to have a duty to provide accountability as required by the agreement terms (Lawal 2009).

The principal-agent relationship demands also for accountability of good governance and sustainability by the HG from the agent who was

entrusted with the responsibility of exploiting oil and gas by the license (Lawal 2009). The researcher formed a view that, the principal benefits from benchmarking the agents' better governance policies and best practices. This helps the HG to manage revenues from the oil and gas better in order to achieve sustainable economic development required for the country.

The stakeholder theory emanates from the principal-agent roles of executing the terms and conditions prescribed in the contract. The principal and the agent are expected to report to the larger stakeholder which is the public. The IOC submits their accountabilities to the ministry responsible for oil and gas. The audit supreme institution reviews them together with the ministry records and report to parliament. After the audit process is completed, then, parliament makes these reports available to all stakeholders (the public) revealing whether the oil and gas resources are governed well or not.

This study used majorly, the economic rent theory because it was considered appropriate for examining whether the HG could capture maximum take in form of bonuses, royalties, government participation, cost recovery and profit oil share. From this perspective, the study examined whether the existing fiscal arrangement was appropriate for optimal exploitation of Ugandan oil and gas resources when compared to a modern concession agreement.

4.9 Ethical Considerations and Resource Requirements

During the research process, the researcher anticipated some ethical issues that would arise and made plans to address them as the process went on. These issues are discussed below; the researcher filled and submitted the student research ethical review form and obtained approval to continue with the research as required the university (Lincoln 2009).

When the research started there was a possibility of putting participants under pressure to sign consent forms for the researcher to helping in the collection of data. The researcher also would explain the purpose of the

study to participants and make it clear that this is a voluntary exercise, making it their choice to participate or to decline. This was mitigated by underpinning the study on secondary data sources by examining documents (Creswell 2013).

When collecting data, the researcher could disrupt activities and physical settings at the research site. This was mitigated by informing the participants early enough when any form of disruption was anticipated during data collection. For example appropriate preparations were made by librarians when searching for copies of PSAs and JVs which needed checking the archives (Mertens and Ginsberg 2009).

During data analysis, there was a probable ethical issue of going native where by the researcher subscribes and embraces the HG's schools of thought. This is always done by discussing only findings that impact only positively about the participants and unfavourable findings are left out. This was managed by objective reporting (Salmons 2010). During reporting, there is a risk of falsifying evidence and findings, making the integrity of information and data doubted. The researcher subjected the findings to validity and reliability checks thus, honest reporting (Lincoln 2009).

Throughout the research process, some individuals prefer their names, positions and organisations to remain anonymised. Pseudonyms may be used to safeguard the identities, organisations and individuals. The researcher adopted review of documents which did not include interviews (Creswell 2013). Furthermore, some information is regarded as confidential like agreements, minutes and some internal memos. The researcher alleviated this by keeping the information confidential and used some hypothetical figures. The researcher sought for authority in order to obtain the necessary information, used and stored data in an ethical and appropriate way required.

The major resources used by the researcher included; a laptop, funds for scanning and printing the literature, stationery and transport fees to the

research sites. These resources enabled the researcher in carrying out a plausible study.

4.10 Chapter Summary

The chapter presents and evaluates the study philosophy, paradigm and methodologies. The study used a qualitative method and subscribes to the interpretivist worldview or paradigm. The study also was supported by the case study and comparative designs using comparative descriptive tools and examination of documents techniques. The chapter further discusses the classification, nature and sources of data. Data presentation and the techniques of analysing the data were also discussed. It goes on to evaluate the theoretical frameworks and the economic rent and the principal-agent theories were adopted by the study. In addition, the research looked at the ethical considerations and resource requirements. The next chapter discusses data presentation and analysis.

Chapter 5: Data Presentation and Analysis

5.0 Introduction

This chapter presents the summary and analysis of the major fiscal terms of both the Ugandan model PSA 2012 and the Nigerian joint ventures. The evaluation and analysis were done using some hypothetical figures. The chapter starts with data presentation and analysis, gives economic assumptions of data. It also indicates the oil prices projection, then avail data for elements of economic rent, sustainable economic development and good regulatory governance.

5.1 Data Presentation and Analysis

Descriptive numerical figures were used in presenting the data gathered. This was done through the examination and analysis of secondary documents. The information was gathered from journals, minutes, Ugandan model PSA 2012, ministry of energy and mineral development website, Nigerian modern concession, NEITI reports, applicable laws and regulations. The comparative analysis of the major elements of the Ugandan model PSA 2012 and the Nigerian modern concession was performed as presented by *Table 5*. The purpose of the comparison was to establish the optimal fiscal arrangement in terms of economic rent, sustainable economic development and governance in the Ugandan oil and gas sector. The examination of documents was chosen because of its ability to evaluate both qualitative and quantitative records and documents, about economic rent, sustainable economic development and governance.

Table 5: Major fiscal terms of the Ugandan model PSA 2012 and the Nigerian JV

Major fiscal terms	Ugandan model PSA 2012	The 1991 Nigerian JV agreement between NNPC and ELF(Nigeria) ltd
Bonuses	Article 9 provides for signature bonus of $3millon and discovery bonus of $2millions.	JV agreement is silent about bonuses
Royalties	Article 10 allows sliding scale for production above 7,500BOPD the royalty rate is 12.5%	Article 7.2 offers for 20% for onshore oil and 7% for gas.
State participation	Article 11 states that HG may participate not exceeding 15%. The IOC can carry the HG through production costs	Article 6.2.1(C)mandates NNPC own 60% and IOCs 40%
Cost recovery	Article 12 allows the IOC to recover 60% of oil production as cost oil and 70% for gas for each year. The balance is carried forward for subsequent years.	Not provided for.
Production sharing	Article 13 shows a sliding scale. Below 5,000 BOPD the HG takes 46% and the IOC 54%.production above 40,000 BOPD the HG takes 68.5% and the IOC 31.5%	Share according to PI which is 60% for NNPC and 40% for IOCs. Article 6.2.1(C).
Taxation	The Ugandan Income tax Act paragraph 2 of part IX of third schedule requires the IOC pay corporation tax at a rate of 30% in respect of a petroleum license	Article 7.1, the operator pays 85% of taxable income. Then charges the parties according to their PI.
Local Supplies	Article 20 urges IOCS to give preference to Uganda products and services.	Section 5.5.2 mandates the operator to give preference to Nigerian products.
Training and employment of citizens	Article 21 requires the IOC to train and employ qualified Ugandans and pay$37,500 per 6 months and $200,000 per year.	Under Article 10, the IOC trains NNPC staff only.
Environment management	Article 25 necessitates the IOC to take remedial action for any environmental damage caused as a result of oil and gas operations.	No provision for remedial measures.
Regulatory Framework	Article 33 agrees the PSA to be interpreted and governed by laws of Uganda	Article 15 says that the concession will be governed by the laws of the federal republic of Nigeria.
Accountability and transparency	Article 8 wants the maintenance of proper records. Article 5 gives the advisory committee power to approve costs.	Section 6 requires the operator to submit regular reports.

(Source: Uganda model PSA 2012 and Nigerian JV between NNPC and ELF (Nigeria) Ltd 1991)

5.2 Economic Assumptions of Data

The comparison of oil and gas fiscal arrangements encompass getting data concerning variables like; the production volumes, exploration and production costs and expenditure categories, crude oil prices, taxes and other regulatory changes (Tordo 2007). The consistency of these economic assumptions ensured the accuracy of the conclusions arrived at after the comparison of the two systems. The study relied on these economic assumptions and the estimates for the daily production volumes, exploration and production costs, operating expenditures and prices. Assumptions were made because Uganda currently is at the development stage evaluating the Field Development Plans (FDP) submitted by IOCs to government for verification.

The country has not yet started production but the sharing ratios and taxation rates are stipulated in the model PSA 2012. However, the FDP for China National Offshore Oil Corporation (CNOOC) has already been approved. CNOOC seems ready to start production when the storage facilities and the refinery get completed. *Table 6* presents the estimated data of the variables used for this study. The estimated production equates to the Ugandan refinery production capacity of 60,000 barrels of per day expected to start in 2016 (MEMD-PEPD 2015).

Table 6: Field data

Oil Production	Barrels of Oil per day (BOPD)	60,000 increasing by 10,000 per year.
Oil production	Number of Years	5
Capital expenditure	$ millions	4,200
Operating Expenditure	$ millions	6250

(Source: Daniel et al. 2008)

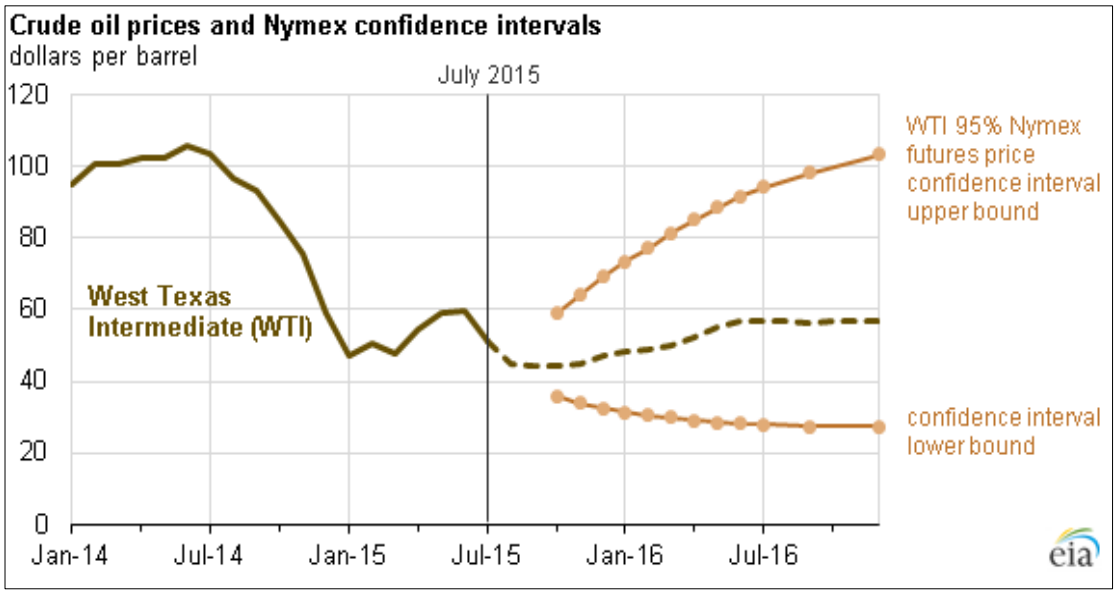
The decommissioning costs are assumed to be provided for on a year by year basis until the end of the useful life of the project.

Oil Price Projection

The researcher adopted West Texas Intermediate (WTI) crude oil prices for five years since 2012 to 2016 as shown by the United States energy

information administration (EIA) short-term outlook for August 2015. As demonstrated in *Figure 6* and *Table 7* below respectively:

Figure 6: Oil Price projection



(Source: http://www.eia.gov/todayinenergy/detail.cfm?id=22572#)

Table 7: Oil Price Projection

	2012	2013	2014	2015	2016
WTI Crude Oil $/ barrel	85.5	97.97	93.17	49.62	54.42
Brent Crude Oil $/barrel	108.9	108.56	98.89	54.540	99.42

(Source: http://www.eia.gov/forecasts/steo/report/prices.cfm)

5.3 Economic Rent

Generally, the motive of the HG for participating in the oil and gas activities is to maximise the economic rent as part of their take from oil and gas production revenues. Although, there are other related benefits for example access to technology, capital, knowhow and market (Johnston 2003, Iledare 2004, Mmakwe and Ajienka 2007). This implies that the HGs are interested in an adequate return for the state and the industry. Also to provide terms that would permit the IOC to get a return commensurate to their investment. The economic rent is derived from the difference between the oil and gas production revenue and the costs incurred in generating that revenue. In most cases, HGs strive to achieve

this without changing the performance of the investment (Johnston 1994, Onaiwu 2007).

The Ugandan model PSA 2012 highlights the major elements that leads to the optimisation of economic rent as bonuses, royalties, government participation, cost recovery and profit oil splits as discussed in chapter 2 section *2.1.2.4.2* and chapter 3. The Nigerian modern concession also gives priority to royalties, bonuses, corporate income tax and government participation as the key elements necessary to achieve maximum economic rent from oil and gas operations. These elements presented by table 5 are examined and analysed in detail for both fiscal arrangements. As deliberated in chapter 2, section *2.2.1* and *2.2.2*, the researcher computed the cash-flows that accrue to the HG and the IOC under the PSA and under the modern concessions arrangements as indicated by the *Table 8* and *Table 9*.

Table 8: Cash-flows that accrue to the HG and the IOC under the PSA

APPENDIX						Royalty								Tax Rate	
PSA CASH FLOW FORECAST						0.125				0.2			0.315	0.3	
YEAR	OIL PRODUCTION (MBBLS)	OIL PRICE ($/BBL)	GROSS REVENUE ($M)	12.5% ROYALTY ($M)	NET REVENUE ($M)	INTANGIBLE ASSET ($M)	CAPEX ($M)	OPEX ($M)	Bonus ($m)	DD&A ($M)	IOC cost oil (M)	Pofit Oil ($M)	IOC Profit Oil ($M) 31.5%	TAX LOSS ($M)	Income Tax ($M)	HG NET CASH FLOW($M)
2010	0	120	0	0	0	0	1,400	0	**2.3**	0	0	0	0	0	0	2.3
2011	0	60	0	0	0	0	800	0	0	0	0	0	0	0	0	0
2012	219	85.5	18,725	2,340.56	16,383.94	1,400	2,000	1,600	0	840	3,840	14,885	4,688.62	0	4,688.62	17,225.06
2013	255.5	97.97	25,031	3,128.92	21,902.42	700	0	1,500	0	840	3,040	21,991	6,927.27	0	6,927.27	25,120.25
2014	292	93.17	27,206	3,400.71	23,804.94	500	0	1,100	0	840	2,440	24,766	7,801.18	0	7,801.18	28,166.35
2015	328.5	49.62	16,300	2,037.52	14,262.65	0	0	1,050	0	840	1,890	14,410	4,539.20	0	4,539.20	16,447.69
2016	365	54.42	19,863	2,482.91	17,380.39	0	0	1,000	0	840	1,840	18,023	5,677.34	0	5,677.34	20,506.21

(Source: Author's computation)

Table 9: Cash-flows that accrue to the HG and the IOC under the JV

APPENDIX						Royalty							Tax Rate	
MODERN CONCESSION CASH FLOW FORECAST						0.2		0.2					0.85	
YEAR	**OIL PRODUCTION (MBBL)**	**OIL PRICE ($/BBL)**	**GROSS REVENUE ($M)**	**20% ROYALTY ($M)**	**NET REVENUE ($M)**	**INTANGIBLE ASSET($M)**	**CAPEX ($M)**	**OPEX ($M)**	**DD&A ($M)**	**TOTAL DEDUCTIONS($M)**	**TAX LOSS ($M)**	**TAXABLE INCOME ($M)**	**CORPORATION TAX($M)**	**NET CASH FLOW($M)**
2010	0	120	0	0	0	1,400	1,400	0	0	0	0	0	0	0
2011	0	60	0	0	0	700	800	0	0	0	0	0	0	0
2012	219	85.5	18,725	3,745	14,980	500	2,000	1,600	840	2,940	-	12,040	10,234	13,979
2013	255.5	97.97	25,031	5,006	20,025	-	-	1,500	840	2,340	-	17,685	15,032	20,039
2014	292	93.17	27,206	5,441	21,765	-	-	1,100	840	1,940	-	19,825	16,851	**22,292**
2015	328.5	49.62	16,300	3,260	13,040	-	-	1,050	840	1,890		11,150	9,478	12,738
2016	365	54.42	19,863.30	3,972.66	15,890.64			1,000	840	1,840		14,050.64	11,943.04	15,915.70
			0	0	0				0	-		0	0	0

(Source: Author's computation)

The data assembled and evaluated in respect of seven elements of economic rent, which included bonuses, royalties, state participation, cost recovery, profit oil, taxation and progressivity. The evaluation established that, the Ugandan model PSA provided maximum economic rent for five elements out of the seven elements. This rendered the PSA more appropriate and optimal with 71.4 % for economic rent as compared to the modern concession with 28.6% (refer to *Table 10*).

Table 10: Economic rent elements for the HG under PSA and under modern concessions for seven years (refer to *Table 8* and *Table 9*)

Economic Rent Element	PSA (revenue for 7 years)	JV(revenue for 7 years)
Bonuses	2,300,000	0
Royalties Paid to HG	13,390,620,000	21,425,000,000
State Participation	15%	60%
Cost Recovery/ deductions	13,050,000,000	10,950,000,000 (deductions)
Profit Oil	64,441,390,000	0
Taxation	29,633,610,000	63,537,000,000
Progressivity	107,467,860,000	84,963,700,000

(Source: Authors compilation)

5.3.1 Bonuses

The Ugandan model PSA 2012, as already discussed in Chapter 3 sub-sections *3.3.1*, indicated a signature bonus of USD 300,000 in respect of Kanywataba prospect. This was paid by Tullow Uganda Operations Pty limited (TUOP). This amount was paid for all other exploration areas (EAs) apart from EA 1 for which TUOP paid USD 200,000, implying that the signature bonus could be negotiable.

The Ugandan model PSA 2012, also provided for a discovery bonus of USD 2,000,000 upon the declaration of any discovery of oil and gas with in a given exploration area. However, the PSA is silent about the production bonus. These bonuses enabled Uganda to generate early revenues, and could also be used to guard against the exploration risk. The front loading of this bonus payment, forces the IOC to speed up the exploration work program in order to reduce the payback period for their

investment. The bonus payments are considered as development costs that are tax deductible for the purposes of calculating the taxable profits of the contactor but are not cost recoverable.

Article 7 of the Nigerian joint operating agreement 1985 between the Nigeria National Petroleum Corporation (NNPC) and ELF (Nigeria) Limited, shows all payments to be made by the contractor to government. These payments do not include bonuses for onshore oil and gas operations. In contrast, Al-Attar and Alomair (2005) revealed that Nigerian onshore JVs required the IOC to pay a signature bonus of $5,000,000 on signing the agreement; however, the researcher did not come across any collaborative evidence for these onshore bonuses. To this end, the Ugandan model PSA 2012 appears more optimal in terms of bonuses as a source of early economic rent when compared to the Nigerian modern concession.

5.3.2 Royalties Paid to HG

Royalties are payments made by the IOC to the HG in form of a financial compensation for the right to explore for oil and gas resources by the contractor. Royalties are not cost recoverable, and are paid before other exploitation costs are deducted (Ravagnani et al. 2012). The royalties based on the production volume enables the HG to realise early revenues throughout the production life of the exploration area. Royalties are actually easy to determine and administer when compared to profit related taxes (Tordo 2007). However, royalties may distort the investment decision to be made by the IOC because they increase the sunk cost necessary for the investment (Meurs 2008).

Excess royalties discourages future investment, as the final decision depends on the positivity of the net present value of the investment and yet royalties are not cost recoverable. Royalties may also render the marginally attractive fields uneconomical and later fields may be pre-maturely abandoned (Bindemann 1999). Royalties also provide no allowance for the required return on capital invested as they are received in kind or in cash on a monthly basis depending on the HG's preference. The Ugandan model PSA 2012 requires the IOC to pay royalties for each

exploration area based on the gross daily total production in barrels of oil per day (BOPD). Uganda charges 12.5% for production above 40,000 barrels per day as shown in *Table 1*, *Table 2* and *Table 3*. (Refer to section *3.3.2*)

The Nigerian JV agreements for onshore oil and gas activities provides for royalties of 20% in respect of onshore oil produced and 7% for onshore gas production (Al-Attar and Alomair 2005). This study compared the onshore royalties and ignored the offshore royalties which were based on sliding scale established on the water depth. This was done in order to compare like with the like (onshore with onshore), because Uganda has only onshore oil and gas operations. Therefore, the modern concessions appear to capture more economic rent to government in form of the 20% oil royalties as compared to the Ugandan model PSA 2012 with royalties of 12.5%. The modern concession seems more optimal in terms of oil royalties. For gas produced above 600 billion cubic feet (bcf), the Model PSA 2012 looks more optimal with 15% of gross production as royalty payment when compared to the modern concession with 7% royalty payment (Al-Attar and Alomair 2005).

From the net cash-flow to the HG computation, the modern concession earns royalties of $21,425,000,000 for a period of five years whereas, the PSA realises only $13,390,620,000 for the same period as revealed by *Table 11*.

Table 11: Royalties - PSA vs. Modern Concession

Years	Oil Production (MBBL)	Oil Price ($/BBL)	Gross Revenue($M)	Modern Concession Oil Royalties 20%($M)	PSA Oil Royalties 12.5%($M)
2012	219	85.5	18,725	3,745	2,340.56
2013	255.5	97.97	25,031	5,006	3,128.92
2014	292	93.17	27,206	5,441	3,400.71
2015	328.5	49.62	16,300	3,260	2,037.52
2016	365	54.42	19,863.30	3,972.66	2,482.91
			Total	21,424.66	13,390.62

(Source: Author's computation)

5.3.3 State Participation

The Ugandan PSA model 2012 showed that, the Ugandan government or its nominee, the National Oil Company (NOC) may elect to enter into a JV with the IOC when production starts. This JV agreement should allow not more than 15% state participation. The model PSA further mandates the contractor to agree to carry the HG through the development and production costs. The contractor is allowed to recover these costs and then the HG meets own share of taxes out of the joint venture.

The 1991 JV agreement between NNPC and ELF gave the government through NNPC 60% and the contractor (ELF) 40% PI in the concession, the assets and working capital. In the same way, the Nigeria Extractive Industry Transparency Initiative (NEITI) report 2011 illustrated that all other joint ventures also allocate 40% PI to IOCs as illustrated by *Table 12*.

Table 12: Participating interest of IOCs as allocated by Joint Ventures

Joint Venture	Government PI		IOC PI	
NAOC	NNPC	60%	Phillips Oil Company Nigeria Ltd.	20%
			Nigerian Agip Oil Company Ltd.	20%
TEPNG	NNPC	60%	Total Exploration and Production Nigeria Ltd.	40%
MPNU	NNPC	60%	Mobil Producing Nigeria	40%
POOC	NNPC	60%	Pan Ocean Oil Company Ltd.	40%
CNL	NNPC	60%	Chevron Nigeria Ltd.	40%

(Source: NEITI Report 2006-2008 by Afemikhe certified Auditors.)

The Ugandan Model PSA 2012 seems more optimal and appropriate to Uganda. This is because if the government chose not to participate, it would push the entire exploration and development risk to the IOC. On the other hand, when government participates, it contributes 15% and the IOC meets exploration and development costs and recovers them from the gross production. In contrast, under the Nigerian joint ventures, NNPC contributed 60% implying that it also shared in the risks to the same tune. Nigeria sometimes failed to raise its share of PI (Al-Attar and Alomair 2005).

This failure or the delay by Nigerian government through (NNPC) to submit their contribution slows the progress of the JV work programmes. It also delays the economic rent in form of royalties which would go to government, yet the net effect remains the same. Instead the government pays out cash calls obligations to the operator as per the Joint Operating Agreement (JOA). For example, in 2008, the NNPC contributed N291.83 billion and $2.51 billion, in 2007 $2.62 billion and N293.75billion (NEITI Report 2006-2008). This helped the IOC in that both parties contributed towards the oil and gas operations to the extent of their PI which reduced the cost and exploration risk of the IOC.

5.3.4 Cost Recovery

The Ugandan model PSA 2012 allowed the IOC to recover all exploration, development, production costs and operating expenditures of up to 60% of gross production of oil and up to 70% of the gross gas production. The recovered costs must have been incurred in relation to Ugandan oil and gas operations during the financial year. As already discussed in chapter 3 section *3.3.5*, the unrecovered costs and expenditures are carried forward to subsequent years. The model PSA 2012 applied ring-fencing around every single block, and this meant that costs are recovered on a block by block basis.

The Nigerian joint operating agreement 1991 between NNPC and ELF (Nigeria) Limited states that contractors recover oil and gas operational costs out of the share of oil and gas allocated to them. The two systems differ in cost recovery aspect. Mmakwe and Ajienka (2009) also noted that cost recovery is the true distinction between PSAs and modern concessions with respect to all mechanisms of the two arrangements. From this perspective, the modern concessions appears optimal in respect to cost recovery because the contractor and government both recover their exploitation, development and production costs based on their PI. Under the PSA, this reduces the profit oil due to the HG.

5.3.5 Profit Oil

The Ugandan model PSA 2012 described profit oil or gas as the net revenue that remains after deducting royalty payments and costs

recovered during the period under review. This profit oil/gas would then be shared between the Ugandan government and the IOC in proportions specified in the agreement. The contractor's share would constitute the taxable income.

The Ugandan model PSA 2012 article 13.1, based profit oil/gas on total daily production sliding scale. Uganda receives a maximum of 68.5%. Likewise, the IOC also gets a maximum of 54%. The current sharing of profit oil is presented in *Table 4*. *Table 13* demonstrates how the profit oil would be apportioned between the IOC and the HG under the PSA.

Table 13: Profit oil share for the HG under PSA and under modern concessions

Years	PSA Profit Oil ($M)	PSA IOC Profit Oil ($M) 31.5%	PSA HG Profit Oil($M) 68.5%
2010	0	0	0
2011	0	0	0
2012	14,885	4,688.62	10,196
2013	21,991	6,927.27	15,063.73
2014	24,766	7,801.18	16,964.82
2015	14,410	4,539.20	9,870.8
2016	18,023	5,677.34	12,345.66
Total	94,075	29,633.61	64,441.01

(Source: Author's computation)

The profit oil provision does not apply in the Nigerian modern concessions. It can therefore, be concluded that the model PSA is deemed optimal and appropriate for the exploitation of Ugandan oil and gas resources as it avails early economic rent to Uganda.

5.3.6 Income Tax

As discussed in chapter 3 section *3.3.7* the Uganda model PSA 2012 requires that all the obligatory taxes and duties be paid by the IOC in accordance with the Ugandan domestic laws 2015. The Ugandan Income tax Act paragraph 2 of part IX of third schedule requires the IOC to pay corporation tax at a rate of 30% in respect of a petroleum license (URA 2015).

Article 7 of the Nigerian joint operating agreement 1985 between NNPC and ELF (Nigeria) Limited and the PWC tax guide 2013, required the operator to pay the taxes for onshore at a rate of 85% under the modern concession. The operator would then charge the joint account according to the PI of each party. However, the NNPC was exempted from some payments by the Nigerian National Petroleum Corporation act 1977.

5.3.7 Progressivity of the Fiscal arrangement

A progressive fiscal arrangement provides the HG with a share of economic rent or revenues from a given license which corresponds with the profitability of the oil and gas activities of the license. In addition to considering the IOCs' share of profit oil under varying oil and gas prices, the HGs are generally after an arrangement that offers maximum economic rent without compromising investments under different price levels (Mian 2010). Prices presented in *Table 8* were used in the computation of HG cash-flows under the two fiscal arrangements.

During the assumed period of seven years, the PSA generated $22,504.16 million above the revenue generated by the modern concession as given by *Table 14*.

Table 14: Net cash flow for the HG under PSA and under modern concessions

Year	Production (MBBL)	Prices($/BBL)	PSA HG NET CASHFLOW ($M)	JV HG NET CASHFLOW ($M)	EXCESS REVENUE BY PSA ($M)
2010	0	120	2.3	0	2.3
2011	0	60	0	0	0
2012	219	85.5	17,225.06	13,979	3,246.06
2013	255.5	97.97	25,120.25	20,039	5,081.25
2014	292	93.17	28,166.35	22,292	5,874.35
2015	328.5	49.62	16,447.69	12,738	3,709.69
2016	365	54.42	20,506.21	15,915.70	4,590.51
		Total	**107,467.86**	**84,963.7**	**22,504.16**

(Source: Author's computation)

5.4 Sustainable Economic Development

This part of the analysis was based on the examination of the relevant documents about sustainable development factors and their descriptive indicators. These factors included environmental management, social and economic indicators like utilisation of Ugandan goods and services in the oil and gas industry, employment and training of Ugandan citizens in oil and gas related disciplines.

5.4.1 Environmental management

Article 25 of the Ugandan model PSA 2012 provided that when the IOC during the conduct of oil and gas operations endangers the environment, people or property, the company must take appropriate action to remedy the damage caused. The agreement also suggested that the IOC should always use advanced techniques in order to avoid damages to environment as a result of their oil and gas operations. In case environmental damage is caused and some remedy is required, the contractor would stop all the operations in this exploration area until the damage caused is made good. The model PSA mandated the National Environment Management Authority (NEMA) to carry out regular periodical environment audits and inspections in order to preserve the environment.

Section 2 subsection 2.6 of the Nigerian joint operating agreement 1991 between NNPC and ELF (Nigeria) Limited provided only for costs incurred when repairing the damaged and lost property as a result of fire, floods and accident. The Nigerian modern concession agreement was silent about the damage that might have been caused to the environment, yet the Ugandan model PSA 2012 provided for remedy of any environmental damage.

5.4.2 Utilisation of Local Goods and Services by the Industry

The IOC is mandated under the Ugandan model PSA 2012 Article 20.1 and PEPD Act section 125(1) to give preference to goods and services produced or available in Uganda. The contractor would only solicit for products outside Uganda only when such products are not available in

Uganda or when foreign companies have better quality and terms. It further provided that the tender procedures used by the contractor for the acquisition of the required products should give the local suppliers an edge to compete favourably for that bid.

Table 15 validates that out of the total purchases by the 3 IOCs amounting to USD 1,171,800,000 for the period 2010-13, only USD 329,900,000 representing 28% of the total purchases was paid to Ugandan suppliers of goods and services yet they constituted 73% of the total approved suppliers. This low percentage of 28% may be attributed to the delay by the government to approve the Production licences. According to IOCs, Ugandan companies needed to develop the capacity to supply high quality products required in the industry.

Table 15: Usage of Ugandan products by the IOCs

IOC	**Supplier Origin**	**2010(USD)**	**2011(USD)**	**2012(USD)**	**2013(USD)**	**Total (USD)**
TUOP	Ugandan Suppliers	32,780,318	62,168,449	67,842,261	23,530,000	186,321,028
	International company	99,171,458	203,439,576	139,974,188	8,300,000	450,885222
	IOC registered in Uganda	-	-	-	54,560,000	54,560,000
CNOOC	Ugandan suppliers	-	-	21,859,831	11,869,118	33,728,949
	International company	-	-	35,870,169	26,494,547	62,364,716
	IOC registered in Uganda	-	-	7,525,590	-	7,525,590
TEP	Ugandan suppliers	-	-	38,800,000	71,040,000	109,840,000
	International company	-	-	8,000,000	14,600,000	22,600,000
	IOC registered in Uganda	-	-	61,500,000	182,500,000	244,000,000
Total Spent		131,951,776	265,608,025	381,372,039	392,893,665	1,171,825,505
Total paid to Ugandan Suppliers		32,780,318	62,168,449	128,502,092	106,439,118	329,889,997

(Source: OAG report on National Content in Oil and Gas Sector 2015.)

In the same effort, the Nigerian Joint venture under section 5 subsection 5.5.2 mandated the operator to give preference to Nigerian indigenous companies for subcontracts provided they possessed the required capability and skills. The operator was also under obligation to notify NNPC that the local company was competent.

5.4.3 Employment and Training of Citizens

In a bid to build capacity in the oil and gas industry, the Ugandan model PSA 2012 Article 21.1 obligated the IOC to train and provide jobs to qualified Ugandans for oil and gas operations. The agreement also required the IOCs to ensure that their sub-contractors also train and employ Ugandans. It was believed that as the project progressed internal and external skills and competencies would be acquired. The IOCs are then under duty to replace these expatriates with the qualified Ugandans.

The contractor would be allowed to employ foreigners only in the absence of suitable qualified Ugandans for such positions. Likewise, as required by PEPD Act 2013 sec 125 4(b), government departments and ministries related to oil and gas sector would nominate at least three staff every year for training abroad and the IOCs pay tuition funds directly to these training institutions. The IOCs in the same way are obliged to deposit USD 37,000 every six months for the entire period exploration for oil and gas takes and also deposit USD 200,000 per year following the granting of the production license.

The three major oil companies operating the licenses as demonstrated in *Appendix 2: Status of Licensing in the Albertine Graben* have trained over 180 government officials working in oil and gas related departments for various post graduate courses (PEPD MEMD- 2015). The IOCs have also sponsored 51 nationals for post graduate courses through scholarships and 82 undergraduates from the local areas where exploration is taking place (OAG 2015).

Table 16 displays the number of Ugandans recruited by the IOCs increased from 69% in 2012 to 80% by the end of 2014.

Table 16: Nationals employed by the IOCs

IOC	Nationals Employed			Expatriates			Total Employees		
	2012	2013	2014	2012	2013	2014	2012	2013	2014
TEP	98	123	125	97	121	41	195	244	166
TOUP	168	169	135	16	13	8	184	182	143
CNOOC	57	78	87	34	42	36	91	120	123
Total	323	370	347	147	176	85	470	546	342

(Source: OAG report on National Content in Oil and Gas Sector 2015.)

Table 17 indicates that for the period 2012-2014, the 3 IOCs paid a total of 2,535,403,501 shillings to all categories of Ugandan nationals employed by their companies.

Table 17: Salaries paid to Ugandans by 3 IOCs

IOC	December 2012		December 2013		December 2014	
	Ugandans	Amount (UGX)	Ugandans	Amount (UGX)	Ugandans	Amount (UGX)
TEP	98	397,620,000	124	586,556,093	129	661,151,723
TOUP	168	1,063,494,469	169	1,686,961,848	134	1,557,423,106
CNOOC	57	183,306,451	77	270,212,000	87	316,828,672
Total	323	1,644,420,920	370	2,543,729,941	350	2,535,403,501

(Source: OAG report on National Content in Oil and Gas Sector 2015.)

The payments facilitated the development of individuals, their societies and the country as a whole, hence, sustainable economic development. Close scrutiny of the Nigerian joint venture agreement Article 10 required the operator to train only NNPC personnel as opposed to the general Nigerian citizens. From this perspective, the PSA appears more

appropriate and optimal because it gives all Ugandan nationals equal opportunity to be trained by the IOC as time goes on.

5.5 Governance

Chapter 3 sections *3.2* reviewed the relevant regulatory governance used in obtaining government take in form of economic rent components. *Table 18* presents the **regulatory framework** used to govern the Ugandan oil and gas operations. The model PSA article 8.1 provided the criteria used to measure good governance through the provision of timely **accountability** in form updated records that are **transparent** when disclosing information to various stakeholders.

5.5.1 Regulatory Framework

Article 31 section 31.1 of the model PSA 2012 indicates that the agreement is implemented, governed and interpreted in accordance with the laws of Uganda.

Table 18: Regulatory framework used to govern the Ugandan oil and gas operations

Petroleum Law	Objectives
The Petroleum (Exploration, Development and Production)(PEPD) Act 2013	The Act intends to regulate oil and gas exploitation, development and Production. It also provides for the establishment of the national oil company (NOC) to cater for the Ugandan commercial interests and the Petroleum Authority to spearhead operational and the regulatory frameworks. The act also guides the competitive licensing rounds. It is also used when stopping oil and gas activities and during decommissioning of the infrastructure.
The Petroleum(Refining, Conversion, transmission and Midstream Storage) Act 2013	This act guides the monitoring and coordinating of midstream activities. It also enforces structure construction, ownership, safety and environment regulations and

	decommissioning.
The Public Finance Management Act 2015	This act guides the oil and gas fiscal and macro-economic structure, budgeting regulates oil fund management, investment, accounting and auditing.
Nation oil and gas policy for Uganda 2008	The policy looks at efficient management of oil and associated revenues, guide exploration, development, production, utilisation and commercialisation
The Petroleum Exploration, Development and Production (Sale of data) Regulation 2014	This operationalizes the PEPD Act 2013 and manages the sale of data.

(Source: PEPD-MEMD 2015)

5.5.2 Accountability

The principal (HG)–Agent (IOC) relationship discussed in the literature under Chapter 4 section *4.8*, offers the foundation for the accountability general framework of the oil and gas operations. The Principal has rights to request the agent to give an account and reasons why operations were conducted in such a manner. This accountability may take a contractual perspective or a communal context (Lawal 2009). The model PSA 2012 takes the contractual accountability form where the IOC is required to make formal documentation explaining and defining the actions, data and HG expectations. Alternatively, the communal accountability is where the IOC accounts and explains to the wider society (community) especially regarding environmental management.

Article 8.1 of the Ugandan model PSA 2012, requires the IOC to prepare, keep and maintain records of oil and gas operations pertaining to every exploration area, also to maintain accounting records that conforms to the industry best practices and standards. In order to account to the general public, Article 31 of the model PSA 2012 gave powers to the auditor general to audit these records with in 24 calendar months and

report to parliament (the wider stakeholders). The Ugandan parliament makes laws and regulations that govern the oil and gas activities.

5.5.3 Transparency

The rise of transparency in the governance of oil and gas resources would minimise the secrecy always exercised in the implementation of most fiscal systems of developing countries (Lawal 2009, Alstine et al. 2014). Article 5 sec 5.3.1 of the model PSA 2012 gave powers to the advisory committee to approve all work programmes and budgets for oil and gas exploitation. This committee consists of four members, two are appointed by Ugandan government and two by the IOC. This implies that all programmes, budgets and any amendments are done in a transparent manner.

As already seen in chapter 2 section *2.4*, transparency fosters trust in the contractor and the HG by the various stakeholders. Alstine et al. (2014) noted that transparent disclosure of oil and gas operations information would facilitate the minimisation of corrupt tendencies and the probable conflicts. If operations were carried out in a transparent way, definitely the environment would also be preserved. In order to enforce effective transparency stakeholders should understand what is due to them and how it should reported.

From this perspective, enforcing transparency would require sensitising and educating various stakeholders about the information expected to be disclosed. This necessitates the carrying out capacity building for all various stakeholders through workshops, consultative meeting and other educational programmes. The sensitisation should be done by the IOCs through radio, television talk-shows and capacity building workshops especially for communities neighbouring the exploration areas.

5.6 Conclusion

In conclusion, the chapter offered the applicable data and a comparative analysis of the Ugandan model PSA 2012 elements and those of the Nigerian modern concession. These were in terms of economic rent, sustainable economic development and governance. In terms of

economic rent the chapter compared bonuses, royalties, state participation, cost recovery, profit oil and taxation for the two fiscal arrangements. The analysis of sustainable economic development was based on environment management, utilisation of local products and employment and training of citizens. Finally, governance was also discussed in terms of legal framework, accountability and transparency. The next chapter summarises the study, discusses findings, conclusions and Recommendations.

Chapter 6: Summary, Findings, Conclusion and Recommendations

6.0 Introduction

This Chapter presents the summary of the dissertation, the findings. It further highlights the conclusions drawn from the findings and then shows the recommendations to Ugandan government to consider when designing new or amending the existing PSAs and concludes the study.

6.1 Summary of the Dissertation

Oil and gas operations in Uganda were started by Wayland James in the 1920s. Wayland managed to document some traces of oil and gas in Butiaba areas in 1938. However, the evaluation of the commerciality of the reserves was not done. Exploration efforts were halted in late 1939 due to the First World War effects, but resumed later in early 1980s. Uganda adopted the PSA arrangement, and the first PSA was signed between the Ugandan government and Petrofina Exploration Uganda in 1991.

The first commercial discovery was registered in 2006 and to date 116 deep wells have been drilled out of which 106 wells encountered oil and/or gas, this gave a success rate of 85%. Currently, Uganda is estimated to have over 6.5 billion barrels of oil equivalent in place, out this, 1.4 billion barrels are recoverable. Uganda expects to produce 60,000 barrels of oil per day starting in 2016. It has just conducted the first competitive licensing round in June 2015. Therefore, Ugandans expect their government to design a PSA that would bring in more economic rent, foster sustainable economic development and deliver the foundation for good governance.

This study therefore, aimed at establishing whether the existing fiscal arrangement is appropriate for the exploitation of Ugandan oil and gas resources when compared to concession agreement. In order to achieve this, it compared the Ugandan model PSA 2012 and the Nigerian modern concession of 1991. These arrangements are evaluated in terms

economic rent, sustainable economic development and the existence of an institution of good governance. Uganda does not have a JV arrangement but the Nigerian JVs were chosen for benchmarking because: Nigeria started with modern concession and later turned to PSA, The NNPC's failure to pay their cash-calls, Nigerian JVs are used for only on-shore oil and gas activities like Uganda, and Nigeria is one of the biggest oil and gas producers in Africa. Although, the Nigerian oil and gas sector may not have been governed as expected, Uganda can learn from its experiences and avoid the mistakes Nigeria made.

The concessionary arrangement is where the IOC is given rights by the HG to explore, develop, own and sale the oil and gas produced from a particular area/license for a predetermined period of time. The HG then receives royalties in return, as rent paid by the IOC for accessing oil and gas resources. The modern concessionary arrangement, also known as the Joint venture is an arrangement where, various IOCs come together and set up jointly owned ventures. The joint parties share costs and profits in relation to their PI or contribution made towards the venture. Under the PSAs, the HG, the owner of the natural resources, grants rights to the IOC to exploit the oil and gas resources and endures the risks. The IOC as well provides the necessary capital, technology and the expertise required for the investment in return for a share of oil and gas produced.

The research was underpinned by the interpretative and exploratory paradigm which holds that people can make their own conclusions about the world. Interpretivism assumes that reality depends on the experiences and opinions of different people. From this perspective, the study adopted the qualitative comparative case study approach where, the researcher sees the social world in the same way it was perceived by prior authors. Similarly, qualitative method was reinforced by the inductive orientation, where two theories were generated as an outcome of the research undertaken. This allowed the use of secondary data.

The empirical research analysed agreements, petroleum websites, and Uganda's ministry of energy and NEITI reports. Also text books,

documents, journals, regulations were analysed. This research employed the economic rent theory which clarifies how the oil and gas revenue would be allocated among the HG and the IOC. It also used the principal-agent theory where the HG the owner of the natural resources was regarded as the principal and the IOC who was given a license to explore, develop and produce on behalf of the HG as the agent. Due to the structure of data used in the study, descriptive and comparative numerical figures were used to present the data.

6.2 Discussion of Findings

This section presents and analyses the findings from the data on fiscal arrangements and their elements as established in the preceding chapter.

6.2.1 Economic Rent

1. With respect to bonuses, the study found that the model PSA 2012 was appropriate for Uganda because, it enabled Uganda capture an early economic rent amounting to $2,300,000 per licensed exploration area. The Nigerian modern concession did not provide for onshore bonuses. This early economic rent earned by Ugandan government mitigates its exploration risk. Ravagnani et al (2012) also concluded that HGs are not as much diversified as the IOCs are, with investments in various companies. Bonus payments compel the contractor to comply with the approved work programmes so as to recoup the bonus payment as early as possible. This helps the HG to realise more revenues early. Bonuses are tax deductible hence helping the IOC to save on expenses, although they are not cost recoverable.

2. The research established that the modern concession offers maximum royalties to HG when compared to the PSA. The Nigerian modern joint venture brings in to government royalties of 20% of the gross revenue yet the Ugandan model PSA captures only 12.5% of the gross revenue as royalties. As already discussed in *5.3.2*, royalties maximises host country's take under the concession

throughout the productive life of the exploration area. Being just a percentage of oil and gas produced makes royalty determination and prediction very easy, however higher royalty percentages may demotivate the IOC from investing further in the country because they increase the cost of production.

3. This study found the model PSA 2012 to offer maximum economic rent in terms of state participation. It mandates government to contribute only 15% when production begins. On top of that, the IOC carries the HG through development and production costs which helps the HG to save these funds for other developmental activities. This implies therefore, that the exploration risk would be entirely the IOC's responsibility.

   The Nigerian Joint venture agreement mandated the HG through NNPC to contribute 60% of the costs, likewise, participate in the risk, profits and losses at the same rate. NNPC contribution towards the exploration cost was an outflow of funds that could have been used in meeting other HG development priorities. For example, the NNPC contributed a total of $7,412,388,000 to eight joint ventures (NEITI 2006-2008 report). In the case of Uganda this contribution would not be made since the IOC uses own capital and technology to explore and produce the oil and gas resources. These funds could be used for other developmental projects under the PSA.

4. The Nigerian Modern concession was found by the study to be more appropriate and optimal in terms of cost recovery because it has no provision for cost recovery. The JV agreement allowed the operator to deduct costs incurred and then, allocate them to parties in proportion to their contribution. This puts all parties in a uniform position. Conversely, Ugandan model PSA 2012 allowed the IOC to recover 70% of the costs incurred in respect of oil and gas operations, carrying the 30% to subsequent years. In circumstances where this percentage was exaggerated, the HG would lose revenue. The HG could solve this problem by instituting a strong audit function to check

for costs that are not recoverable that might be included in the recovery schedules submitted by the IOCs.

5. The study revealed that the PSA model 2012 was more appropriate with respect to profit oil after deducting royalties and cost oil. Under article 31.1 of the model PSA, the Ugandan government currently receives a maximum of 68.5% of profit oil for production above 40,000bopd and a minimum of 46%. The IOC also receives a maximum of 54% and a minimum of 31.5%. The Nigerian joint venture agreement has no provision for this revenue from the contractor. The belief is that, the high tax rate of 85% would compensate for this.

6. This study established that modern concession ensures maximum tax revenue to HG at a rate of 85% as compared to PSA at on 30% of the IOC profit oil share.

7. In terms of progressivity, the study found the Ugandan model PSA 2012 to be more progressive and optimal under varying oil and gas prices.

6.2.2 Sustainable Economic Development

1. The study established that the PSA was optimal in terms of environmental conservation and management. Article 25 the PSA provides that the IOC must carry out oil and gas operations in a manner that conserves the environment and the biodiversity. This could be achieved by adhering to the environmental guidelines and regulatory framework. The Nigerian modern concession agreement was silent about the damage that might have been caused to the environment under Section 2 subsection 2.6 of the Nigerian joint operating agreement 1991 between NNPC and ELF (Nigeria) Limited.

2. The study found out that both the PSA and modern concession arrangements were appropriate for enforcing sustainable development through the utilisation of local products in the Oil and Gas Industry. However, the auditor general's report on the

implementation of national content in the oil and gas sector showed that the Ugandan companies/suppliers were not properly defined. This implied that there was a possibility that, the products the Ugandan suppliers provided were procured from foreign countries and not actually Ugandan products. This study also found out that most companies dealing in oil and gas related products registered in Uganda, were wholly owned by foreigners. Despite the nationality of owners these companies, the study considered them Ugandan companies since they were incorporated in Uganda.

3. This research found the Ugandan model PSA more appropriate and optimal in terms of training and employment of citizens, because it gives all Ugandan nationals equal opportunity to be trained. Unlike the Nigerian joint venture agreement under Article 10, where the operator is required to train only NNPC personnel as opposed to Nigerian citizens. This study also revealed that under the PSA, a total of 1,040 Ugandans were employed by the IOCs for the period 2012-2014 and were paid a total of UGX 6,723,554,362 for the same period. This income received by these employees could nurture sustainable economic development.

6.2.3 Governance

1. The study found out that both the PSA and the modern concession possessed the required regulatory frameworks to govern the exploitation of oil and gas operations for both Uganda and Nigeria.

2. In the context of accountability the study found PSA to be more appropriate in enforcing accountability through approvals by the advisory committees. This was made possible by emphasising the reporting obligations of the IOC. In addition, PSA empowered the auditor general's office to audit the cost recovery statements submitted by the IOC and thereafter report to parliament (the Public). The Nigerian JVs do not mandate the operator auditor to report to parliament.

6.2.4 Transparency

For transparency, the PSA and JV were found to be optimal because all the programmes and budgets were approved by both the representatives of HG and the IOC on advisory committee and operating committees before payments are made. The cost statements were also subjected to an independent audit by the supreme audit institution which reports to parliament.

6.3 Research questions: Restated and Answered

1. Does the existing oil and gas exploitation arrangement give Uganda the maximum economic rent from oil and gas resources when compared with modern concession agreement? Established from the data assembled and evaluated in respect of seven elements of economic rent, the PSA provided maximum economic rent for four elements out of the seven elements. This rendered the PSA more appropriate and optimal with 57.14 % for economic rent as compared to the modern concession with 42.86% (refer to *Table 16*).

2. Does the existing oil and gas exploitation arrangement guarantee sustainable economic development for Uganda when compared with concession agreement? Based on the evidence collected for sustainable economic development, the Ugandan model PSA 2012 guarantees more sustainable development through all the three instruments as compared to the modern concession. For sustainable economic development, the PSA was found to appropriate and optimal for all the elements.

3. Does the existing oil and gas resource exploitation arrangement provide for good governance for the Ugandan oil and gas sector? From the evidence obtained about governance of the oil and gas operations, both arrangements demonstrated adequacy of the governance frameworks, hence, both arrangements are 50% optimal in this regard.

4. What is the fiscal arrangement that is more relevant and will give Uganda the optimal benefits from oil and gas? Considering all the 13

elements analysed, seven for economic rent, three for sustainable economic development and three for governance, the Ugandan Model PSA 2012 was relevant and optimal for eight elements that is, 66.7% optimality.

6.4 Conclusion

Throughout the exploitation programme for oil and gas resources, the fiscal arrangement adopted should cater for the interests of the HG and also give incentives to the contractor. There are various fiscal arrangements used in oil and gas operations, their design enable different countries to achieve similar economic rent values (Johnston 2003, Bindemann 1999, Meurs 2008, Mazeel 2010). This research however, set out to ascertain whether the existing fiscal arrangement is appropriate for the exploitation of Ugandan oil and gas resources when compared to concession agreement.

This was done by collecting and analysing data about economic rent, sustainable economic development and good governance in the oil and gas sector in Uganda. The study found out that the PSA the existing fiscal arrangement in Uganda was relevant and optimal with 66.7% optimality when compared to a modern concession. This is in contrast with the argument advanced by Johnston (1994), Tordo (2007) and Meurs (2008) that even though HGs employ different parameters for determining economic rent under different fiscal arrangements they end up receiving the same statistics from a given license. The PSA also demonstrated this optimality with a 57.14% in terms of economic rent as compared to the modern concession with 42.86% optimality. The PSA also guaranteed sustainable economic development through preservation of environment, utilisation of Ugandan products, and training and employing Ugandans as compared to the Joint ventures. Similarly, the PSA provided for good governance in the Ugandan oil and gas industry. Under the PSA, the IOC would provide all the necessary capital and when no oil or gas is found, the company would have no claim against the HG. The HG above all remains the owner of the natural resources and uses them to achieve national objectives (Mazeel 2010). Although Frynas (2010) noted that

IOCs should not participate in the political process of a HG. The researcher is a view that, when IOCs try to achieve the HG's national objectives, they are also participating in the political process of the host country. Basing on the evidence of the findings above, the study concluded that, the Ugandan model PSA was relevant because it captured maximum economic rent, guaranteed sustainable economic development and provided for good governance as compared to a modern concession.

6.5 Recommendations

Arising from the findings of this study, the following recommendations are made;

I. The government should introduce production bonuses based on a production volume sliding scale. This will help in bringing in more revenues to the treasury to facilitate more sustainable economic development for Uganda.

II. The Ugandan government should amend the PSA term to increase the royalties from 12.5% for oil production above 40,000 barrels of oil per day to at least 15% or 20% like that of the Nigerian joint venture.

III. Apart from the corporation tax, the Ugandan government can introduce special petroleum tax. This would help to capture more economic rent. It would also mitigate the risk of disallowed costs being recovered, in case they find their way into the submitted schedules for recovery, the special petroleum tax would cater for them.

IV. The government to should revisit the requirements for registering foreign companies in Uganda. It should include a requirement to have a number of Ugandan directors. This will solve a problem of foreigners owning companies in Uganda and consider their supplies as being made by Ugandans.

The study also recommends for further investigations and studies which compares all the fiscal arrangements using all terms of fiscal arrangements, in order to determine the most relevant arrangements for developing countries.

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Appendices

Appendix 1: Factsheet of Wells Drilled in the Albertine Graben

FACTSHEET OF WELLS DRILLED IN THE ALBERTINE GRABEN, MAY 2014

PAUID	OfficialWellboreName	LocalName	WellborePurpose	WellboreContent	SpudDate	LicenseOperator	TDDate	TDMD	TestStatus	RigName
1	1N31E/29-1	Waki-B-1	Wildcat	Oil shows	Jan-38	African and European Investment Company		1,237	Not Tested	Unknown
2	1N30E/136-1	Turaco-1	Wildcat	Oil & Gas shows	Sep-02	Heritage Oil and Gas Ltd	Jun-02	2,488	Not Tested	Eagle Drill
3	1N30E/136-2	Turaco-2	Appraisal	Oil & Gas shows	Mar-03	Heritage Oil and Gas Ltd	Jun-04	2,963	Not Tested	Eagle Drill
4	1N30E/136-3	Turaco-3	Appraisal	Oil & Gas shows	Sep-04	Heritage Oil and Gas Ltd	May-04	2,850	Tested gas with a ver	Eagle Drill
5	1N30E/84-1	Mputa-1	Wildcat	Oil & Gas	Dec-05	Hardman Petroleum (Africa) Pty Limited	Jan-06	1,187	Well tested with a cor	Dafora F200
6	1N31E/62-1	Waraga-1	Wildcat	Oil & Gas	Feb-06	Hardman Petroleum (Africa) Pty Limited	Aug-06	2,010	Well tested with a cor	Dafora F200
7	1N30E/83-1	Nzizi-1	Wildcat	Oil & Gas	Mar-06	Tullow Uganda Operations Pty Ltd	Oct-06	1,065	Not Tested	Eagle Drill
8	1N30E/84-2	Mputa-2	Appraisal	Oil	May-06	Hardman Petroleum (Africa) Pty Limited	May-06	1,344	Not Tested	Dafora F200
9	1N30E/117-1	Kajubilizi-1	Wildcat	Oil & Gas	Aug-06	Heritage Oil and Gas Ltd	Mar-06	2,125	Well tested and flowe	Dafora F200
10	1N30E/117-1A	Kajubilizi-1A	Wildcat	Oil & Gas	Dec-06	Heritage Oil and Gas Ltd	May-07	2,963	Well tested and flowe	Dafora F200
11	1N30E/117-1B	Kajubilizi-1B	Wildcat	Dry	Jan-07	Heritage Oil and Gas Ltd	Aug-07	3,195	Not tested	Dafora F200
12	1N30E/95-1	Nzizi-2	Appraisal	Gas	May-07	Tullow Uganda Operations Pty Ltd	Jun-07	982	Not Tested	Dafora F200
13	1N30E/84-3	Mputa-3	Appraisal	Oil & Gas	Jul-07	Tullow Uganda Operations Pty Ltd	Sep-07	973	Well tested and flowe	Dafora F200
14	1N30E/72-1	Ngassa-1	Wildcat	Gas	Nov-07	Tullow Uganda Operations Pty Ltd	Feb-08	1,602	Not Tested	Nabors Rig 221
15	1N30E/84-4	Mputa-4	Appraisal	Oil & Gas	Apr-08	Tullow Uganda Operations Pty Ltd	Sep-07	1,082	Well tested and flowe	Dafora F200
16	1N31E/29-2	Taitai-1	Wildcat	Oil	Apr-08	Tullow Uganda Operations Pty Ltd	Feb-08	1,006	Not Tested	OGEC IRI 750
17	1N30E/105-1	Kajubilizi-2	Appraisal	Oil	Apr-08	Heritage Oil and Gas Ltd	Jul-08	3,906	Well tested and flowe	Nabors Rig 221
18	1N31E/29-2A	Taitai-1A	Wildcat	Oil	May-08	Tullow Uganda Operations Pty Ltd	May-08	981	Not Tested	OGEC IRI 750
19	2N31E/139-1	Ngege-1	Wildcat	Oil & Gas	Jun-08	Tullow Uganda Operations Pty Ltd	Jun-08	640	Not Tested	OGEC IRI 750
20	1N31E/18-1	Karuka-1	Wildcat	Oil shows	Jun-08	Tullow Uganda Operations Pty Ltd	Jul-08	853	Not Tested	OGEC IRI 750
21	2N31E/126-1	Kasamene-1	Wildcat	Oil & Gas	Jul-08	Tullow Uganda Operations Pty Ltd	Aug-08	879	Well tested and flowe	OGEC IRI 750
22	2N31E/126-1A	Kasamene-1A	Wildcat	Oil & Gas	Aug-08	Tullow Uganda Operations Pty Ltd	Aug-08	866	Well tested and flowe	OGEC IRI 750
23	2N31E/127-1	Kigogole-1	Wildcat	Oil	Aug-08	Tullow Uganda Operations Pty Ltd	Jan-08	616	Well tested (Lower Zo	OGEC IRI 750
24	1N30E/117-2	Kajubilizi-3	Appraisal	Oil & Gas	Sep-08	Heritage Oil and Gas Ltd	Oct-08	3,200	Not Tested	Nabors Rig 221
25	2N31E/114-1	Ngiri-1	Wildcat	Oil & Gas	Sep-08	Heritage Oil and Gas Ltd	Oct-08	911	Not Tested	Eagle Drill
26	2N31E/103-1	Jobi-1	Wildcat	Oil & Gas	Nov-08	Heritage Oil and Gas Ltd	Dec-08	637	Not Tested	OGEC R600
27	1N30E/117-2A	Kajubilizi-3A	Appraisal	Oil & Gas	Dec-08	Heritage Oil and Gas Ltd	Jan-08	2,712	Not Tested	Nabors Rig 221
28	2N31E/102-1	Rii-1	Wildcat	Oil & Gas	Dec-08	Heritage Oil and Gas Ltd	Jan-09	705	Not Tested	OGEC IRI750
29	2N31E/126-3	Kasamene-2	Appraisal	Oil & Gas	Jan-09	Tullow Uganda Operations Pty Ltd	Aug-08	957	Not Tested	OGEC IRI 750
30	1N30E/84-5	Mputa-5	Appraisal	Oil & Gas	Jan-09	Tullow Uganda Operations Pty Ltd	Feb-09	1,231	Well Tested and flowe	OGEC IRI 750
31	1N31E/18-2	Karuka-2	Appraisal	Oil shows	Mar-09	Tullow Uganda Operations Pty Ltd	Mar-09	879	Not Tested	OGEC IRI 750
32	1N30E/72-2	Ngassa-2	Appraisal	Oil	Mar-09	Tullow Uganda Operations Pty Ltd	Aug-09	3,392	Not Tested	Nabors Rig 221
33	2N31E/126-2	Nsoga-1	Wildcat	Oil	Apr-09	Tullow Uganda Operations Pty Ltd	Apr-09	755	Not Tested	OGEC IRI 750
34	2N31E/128-1	Awaka-1	Wildcat	Dry	May-09	Tullow Uganda Operations Pty Ltd	May-09	700	Not Tested	OGEC IRI 750
35	3N31E/125-1	Iti-1	Wildcat	Dry	May-09	Neptune Petroleum Uganda Ltd	Nov-09	592	Not Tested	MBU-125 CASCO
36	2N31E/127-2	Kigogole-3	Appraisal	Oil	Jun-09	Tullow Uganda Operations Pty Ltd	Aug-09	575	Not Tested	OGEC IRI 750
37	2N31E/125-1	Wahrindi-1	Wildcat	Oil	Jul-09	Tullow Uganda Operations Pty Ltd	Nov-09	1,058	Not Tested	OGEC IRI 750
38	2N31E/139-2	Ngara-1	Wildcat	Oil & Gas	Jul-09	Tullow Uganda Operations Pty Ltd	Jul-09	685	Not Tested	OGEC IRI 750
39	2N31E/5-1	Avivi-1	Wildcat	Dry	Feb-10	Neptune Petroleum Uganda Ltd	Feb-10	764	Not Tested	OGEC IRI750
40	2N31E/125-2	Kasamene-3	Appraisal	Oil & Gas	Mar-10	Tullow Uganda Operations Pty Ltd	Mar-10	1,130	Not Tested	OGEC IRI 750
41	2N31E/125-2A	Kasamene-3A	Appraisal	Oil & Gas	Mar-10	Tullow Uganda Operations Pty Ltd	Mar-10	988	Not Tested	OGEC IRI 750
42	1N30E/96-1	Nzizi-3	Appraisal	Oil & Gas	Apr-10	Tullow Uganda Operations Pty Ltd	May-10	974	Not Tested	OGEC IRI 750
43	1S29E/70-1	Ngaji-1	Wildcat	Dry	Jun-10	Dominion Uganda Ltd	Jun-10	1,769	Not Tested	OGEC JOHN-14
44	2N31E/127-3	Nsoga-5	Appraisal	Oil	Jun-10	Tullow Uganda Operations Pty Ltd	Jul-10	589	Not Tested	OGEC IRI 750
45	2N31E/114-2	Ngiri-2	Appraisal	Oil & Gas	Jun-10	Tullow Uganda Operations Pty Ltd	Jul-10	892	Tested	OGEC IRI 750
46	2N31E/127-4	Kigogole-5	Appraisal	Oil	Jul-10	Tullow Uganda Operations Pty Ltd	Jul-10	622	Not Tested	OGEC IRI 750
47	2N31E/103-2	Mpyo-1	Wildcat	Oil	Jul-10	Heritage Oil and Gas Ltd	Jul-10	465	Not Tested	OGEC IRI 750
48	2N31E/126-4	Kigogole-2	Appraisal	Oil	Aug-10	Tullow Uganda Operations Pty Ltd	Aug-10	738	Not Tested	OGEC IRI 750
49	2N31E/127-5	Kigogole-4	Appraisal	Oil	Sep-10	Tullow Uganda Operations Pty Ltd	Sep-10	676	Not Tested	OGEC IRI 750
50	2N31E/126-5	Nsoga-2	Appraisal	Oil	Dec-10	Tullow Uganda Operations Pty Ltd	Dec-10	882	Not Tested	OGEC IRI 750
51	2N31E/126-5A	Nsoga-2A	Appraisal	Oil	Jan-11	Tullow Uganda Operations Pty Ltd	Jan-11	766	Not Tested	OGEC IRI 750
52	2N31E/138-1	Kigogole-6	Appraisal	Oil	Jan-11	Tullow Uganda Operations Pty Ltd	Feb-11	828	Not Tested	OGEC IRI 750
53	2N31E/138-1A	Kigogole-6A	Appraisal	Oil	Feb-11	Tullow Uganda Operations Pty Ltd	Feb-11	736	Not Tested	OGEC IRI 750

Figure 7: Factsheet of Wells Drilled in the Albertine Graben.

Appendix 2: Status of Licensing in the Albertine Graben

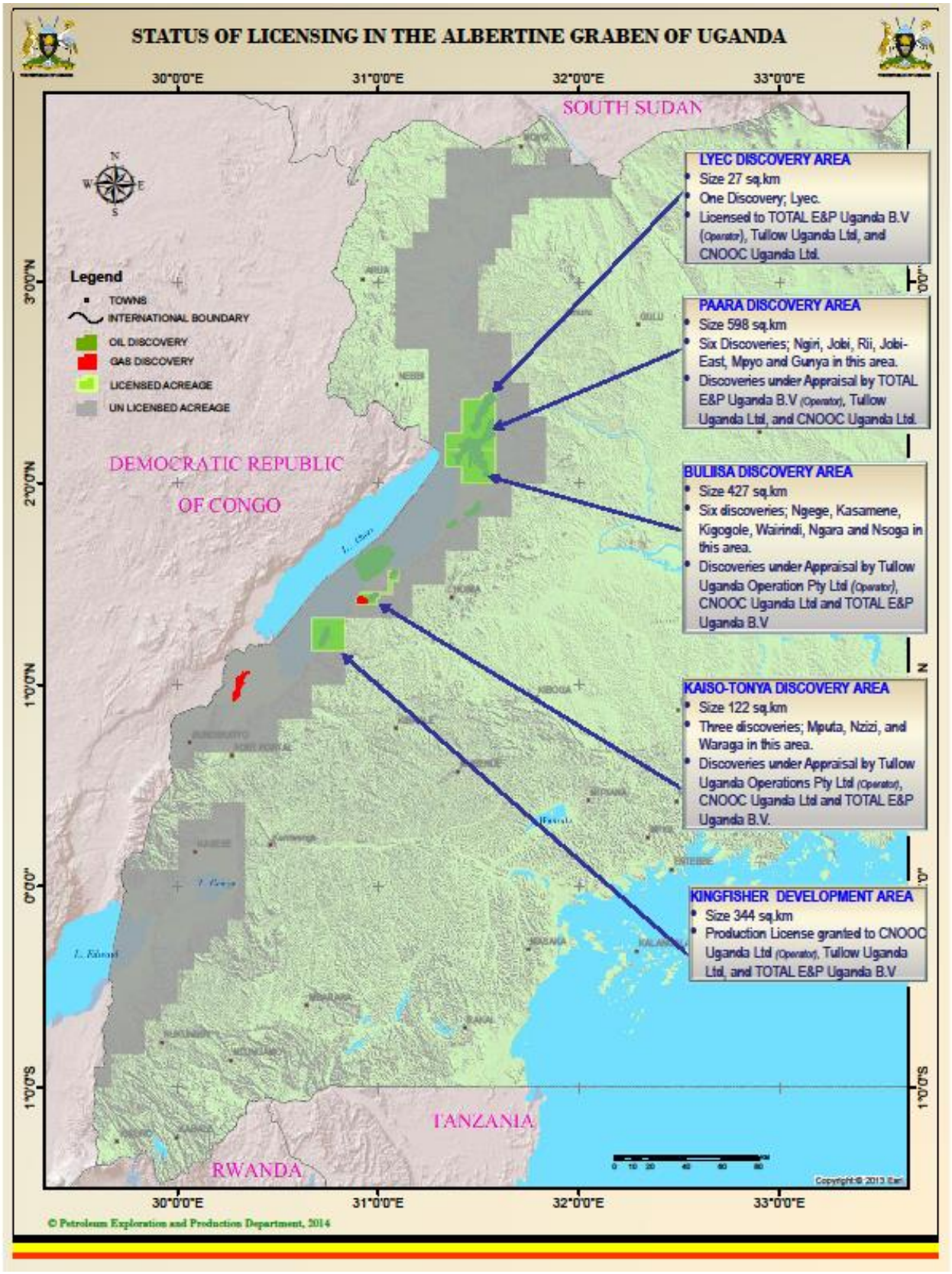

Figure 8: Status of Licensing in the Albertine Graben

Appendix 3: Blocks for the first Licensing Round of Uganda

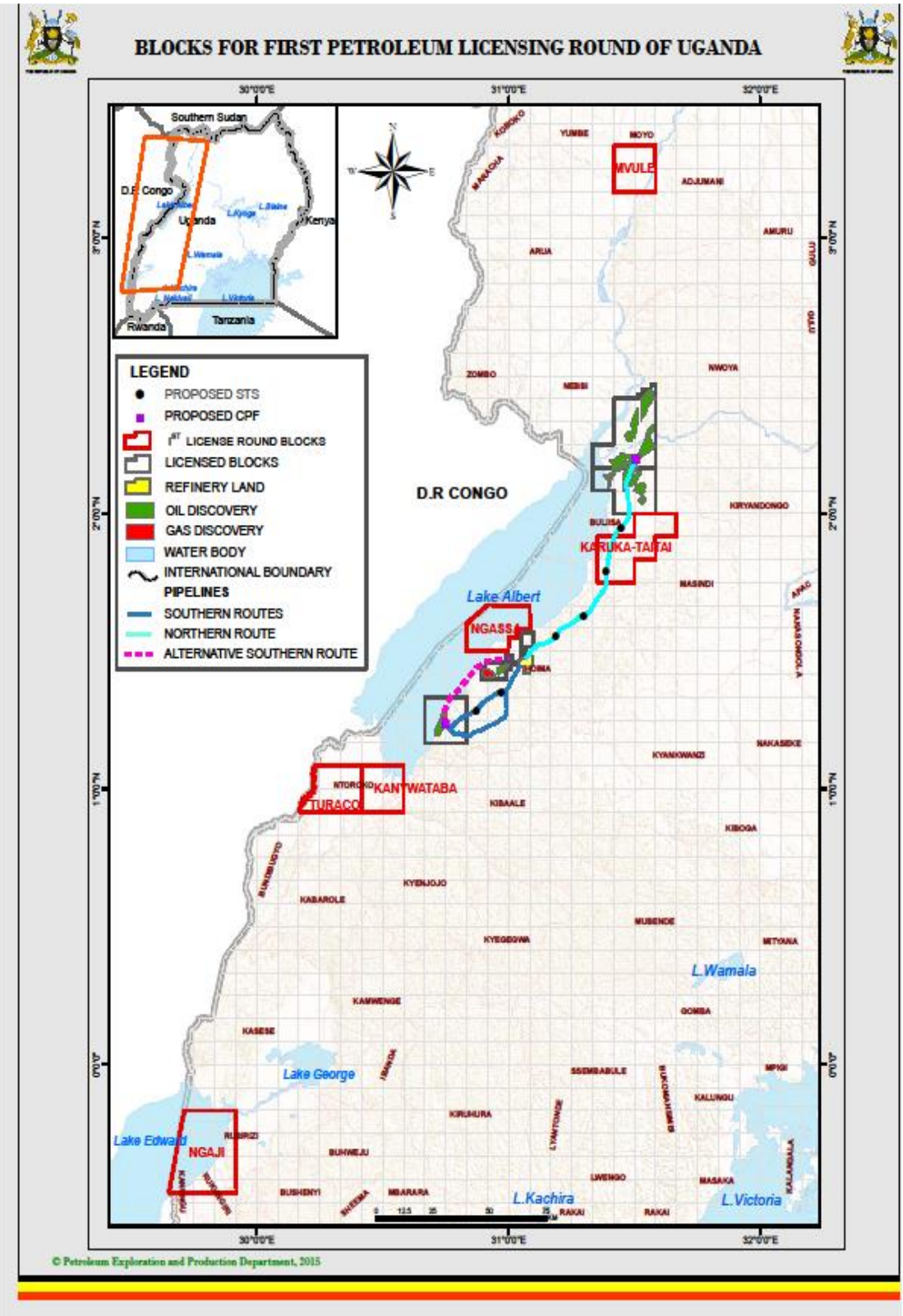

Figure 9: Blocks for the first Licensing Round of Uganda