

Politics of Pipeline Ownership, Usage and Obligations in Oil and Gas Sector of South Sudan

Jacob Dut Chol Riak, PhD.
ORCID ID 000900340178612
Senior Researcher and Associate Professor,
Department of Political, University of Juba. South Sudan

Abstract:- The study focuses on the politics of pipelines in South Sudan. It investigates the pipeline ownership, usage and obligations in oil and gas sector, particularly, in the context of South Sudan. The study defines pipeline, discusses the typologies of pipelines such as liquid petroleum pipelines that include crude oil, refined production and highly volatile liquid and natural gas pipelines such as transmission and distribution lines. While its notes the features of pipeline, its argues the pipeline transportation model that embraces push-back and traditional types. The study surveys various alternatives for ownership and usage of pipeline such as build your own pipeline, access to third party pipeline, hybrid and equity pipeline ownerships. While noting the importance of obligations and responsibilities on the pipeline in the midstream section of oil and gas sector, the study argues the key obligations of key parties in the pipeline in areas of financing, governance structure, transportation, shipment, maintenance of health, safe and clean environment. The study appreciates the existing of trans-boundary pipelines in South Sudan to Sudan such as Dar Petroleum Operating Company (DPOC)/Bashayer Pipeline Company (BAPCO), Greater Pioneer Operating Company (GPOC)/Greater Nile Oil Pipeline Company (GNOPC) and Sudd Petroleum Operating Company (SPOC) pipeline. The study notes the politics of ownership, usage and obligations of pipeline through cut-throat politics between South Sudan and Sudan and through non-technical negotiations of pipeline tariffs/fees by the Government of South Sudan. The outcome of this cut-throat politics is delay of the fixing of destroyed DPOC pipeline by Sudan Rapid Force (SRF) by the Government of Sudan.

Although the study uses process-tracing, case study and literature review as its methodology, it describes and surveys the global understanding of piping as a very useful tool in midstream segment of oil and gas sector. The study concludes that ownership, usage and obligations of pipeline should be technically agreed upon by the countries pipelines pass through their territories, rather than being politically motivated. Both the Governments of Sudan and South Sudan should immediately review pipelines fees using percentage/sliding scale model. The study recommends further research on technical negotiations of pipeline host agreements and particularly, pipeline fees so that each country is not disadvantaged when prices of oil plummets and when pipelines are

destroyed during the war. The study also recommends to the oil and gas pundits on pipelines to exhaustively study the pipelines components and technologies use so as to innovate the best pipeline components and technologies for crude oil or gas that should be embraced by the piping world.

Keywords:- Politics, Pipeline, Ownership, usage, Obligation, Trans-Boundary, Negotiation, Oil, Gas.

I. INTRODUCTION

The history of pipeline is as old as the history of human advancement and enlightenment. It is believed that the first oil & gas pipeline was installed after the discovered of oil and gas resource. Although Sir Walter Raleigh appeared as the first person to talk about petroleum in the history of human civilization in United States in 1595, Colonel Drake Heralded is celebrated to be the first person to make discoveries about the petroleum in 1859 in Titusville, Pennsylvania of the United States of America. Later on, the largest discovery of petroleum resource in Texas in 1901 set the phase for the world petroleum economy, development and acknowledgment (Hidy, 1956). While pipeline installation begun from wood, leads and clay, the United States had initially installed the first crude oil pipeline in 1861, exactly two years later after the disclosure of petroleum resources in Pennsylvania. This discovery of petroleum postulated the ways to ferry it around and thus the need for pipelines. In realization of this dream, a six-diameter gravity oil line, ten kilometer in length without pumps was built in Pennsylvania in 1865 to ferry about 8000 barrels per day (Chanda, 2013). This development was quite groundbreaking given that the western countries, especially, the United States and the United Kingdom were going through upheaval advancements from human operations, capabilities and intellect to system and machines operations. Even with the progression of the age of reason and civilization, there was still awkwardness in recording the movement of industrial revolution amongst the western countries. In 1879, the first every cross-country pipeline was built underneath and it was named as the historical Tideswater pipeline of the United States of America. It was indeed 175 kilometers length from Allen to Bradford and one of the superior watersheds in piping industry (Makholm, 2012). Thirty years later, a modern crude oil pipeline managed by John D. Rockefeller was constructed and installed. By 1910, the standard crude oil company controlled over 85 % global transportation and refining and

Rockefeller became the most influential man in the pipeline transportation industry in the world. After second world war and cold war periods, modern oil and gas pipelines that crisscrossed different continents were installed. They include the longest crude and gas pipelines such as Nord Stream 1 and 2 between Russia and Germany with 1,224 kilometers, trans-Saharan gas pipeline with 4,128 kilometers, trans-med gas pipeline with 2,600 kilometers, the African Renaissance pipeline project with 2,475 kilometers and the East African Crude Oil Pipeline (EACOP) with 1,443 kilometers, being the most longest and heated pipeline in the world.

With the above interesting global progression in pipelines, many questions beg: What is a pipeline? What are its typologies and features? What are transportation models of a pipeline? What various alternatives for pipeline ownership and usage are there? What are the key obligations of the key parties in pipeline industry? What are the pipelines in South Sudan? What is the politics of pipelines between Sudan and South Sudan? These questions shall be attempted in this study.

II. DEFINING THE PIPELINE

Numerous great scholars in the midstream segment, especially on pipelines such as Jeff Makholm, Andrea Adebayo, Santoy Chand, Lewis Kennedy, Dada Santo, Sandra Mwesigye, Leornard Coburn, Jane Guyer, Alex Dawotola and Van Gelder, to name but a few have multifariously defined pipeline. However, they have all agreed that it is a roll of pipe that is connected together to make a long stretch for ferrying of both nonflammable and highly inflammable fluids under very intense pressure. In simple term, it is defined as the leak-proof made of steel material and utilized to store and ferry petroleum from the field processing facilities, central processing facilities to the point where commercial value of crude oil or gas is attained through the sale to an interested buyer (Kinya and Doesvenspeck, 2023). Although the pipelines are rolls of pipes, they are not that in actual sense, they are fittings such as flow tees, compressors, pumps, scraper traps, control devices and incorporated value-chains that are used to ferry crude oil and gas from one point to another either buried as underground or upheld as overground (Lewis, 1984). Pipelines have different standard features to measure their strength and quality. However, the one that is usually used around the world today in petroleum industry is American Petroleum Institute (API) that has continued to prevail and christened as API 5L in its application. This number defines various classes of pipelines and their standards. Each class has the chemical composition of steel used which is defined on mechanical property. Relying on the pressure intensity as well as other discernible pressure considerations, the class for pipeline is ascertained through various diameters and gauges such as 1, 3, 5, 15, 25, 35, 40 or more but the strongest modern pipeline is measured between 30 to 40 gauge (Chanda, 2013).

III. TYPOLOGIES OF PIPELINES

A. Pipelines are Aggregated into the following:

➤ *Liquid Petroleum Pipelines.*

These typologies of pipelines ferry anything related to oil and gas, especially, crude oil. They are further aggregated as follows:

- *Crude Oil Pipeline.*

This category is responsible for ferrying of crude oil in all its diet: waxy/sour blend, medium blend and sweet blend. This crude oil pipeline is further sub-aggregated into gathering lines which are also called infields, injection lines, trunk lines and flow pipelines.

- *Highly Volatile Liquid Pipeline.*

This category is responsible for ferrying of highly flammable petroleum liquid mixed such as Kerosene and Naphtha when they have been produced in big quantities. High volatile liquid pipeline is also used for ferrying of harmful liquid such as butane, ethylene, propane etc.

- *Refined Production Pipeline.*

This category is responsible for ferrying of the refined highly products such as heavy fuel oil (HFO), diesel (AGO) and petrol (PMS).

- *Carbon Dioxide Pipeline.*

This category is often used for ferrying of carbon dioxide (Co₂) obtained from various industrial sources for different underground storage or reuse for other industrial tasks. Although it is important for ferrying of Co₂, it can lead to serious health, environmental and safety risks if the pipeline ruptures or leaks (Dawotola and Gelder, 2009).

➤ *Natural Gas Pipelines.*

These typologies of pipelines are frequently used for ferrying of liquefied natural gas (LNG) or liquefied petroleum gas (LPG). This natural gas pipeline is further sub-aggregated into:

- *Transmission Lines.*

These categories are used for ferrying of gas using high-pressure lines and wide-diameters for far distances. They take natural gas from compressor stations to storage facilities and to the regulator lines.

- *Distribution Lines.*

These categories are used for ferrying of natural gas to the clients. They are networks of key and service lines that take the gas at the lowest pressure to corporate businesses and individual homes.

IV. FEATURES OF PIPELINES

A. *Pipelines are featured as follows:*

➤ *Easy to Constructed and Installed.*

These pipelines can be constructed, installed and buried into 2, 4, 6, 8 or 10 meters or even more deeper. They also can be built as overground either lower or higher depending on the terrain so as they don't cause accident. It is critical that front-end engineering designs (FEED) are done very well when constructing and installing pipelines.

➤ *Movement of Large Quantities.*

While pipelines have the capacity to take big quantities of certain types of commodities over long distances, they can do this at appropriately low cost as piping is cheaper comparing to road, river and air transports.

➤ *Low Operating Costs.*

Although many people think that pipelines operations are costly, this is not true. So long on quality pipes and standard installations that can be frequently checked are used, the operations costs can be very low comparing to other sectors of transport such as roads, river and air as argued above.

➤ *Non-Reactive to Surface Conditions.*

These pipelines are not reactive to surface conditions like storms or inclement weather because they are built on weather tested materials and they can withstand any severe weather conditions.

➤ *Cognizant of Health, Safety and Environment.*

While pipelines are designed intentionally to promote health, safety and friendly environmental movement of oil and gas, this should be clearly showcased before the construction and installation of pipelines through the environmental social impact assessments (ESIAs). Without any clearly articulated ESIA, people could commence raising serious complaints about the safety of pipeline to the people and other living things around the pipeline. This has been the case with East African Crude Oil Pipeline (EACOP) project (Kinya and Doesvenspeck, 2023).

➤ *Don't needs Two Ways Traffic.*

Pipelines don't needs two ways traffic like railways, roads, vessels-ways and these make them quite convenience and safe to use.

V. PIPELINE TRANSPORTATION MODEL

While pipelines have their transportation model borrowed from the transportation philosophy, the transportation philosophy is constructed around two concepts namely; capacity reservation and quantity transportation. On capacity reservation, pipeline is determined by the capacity of the pipe gauge wise or diametrically. If the pipeline has a capacity of less than 4 diameter and less than 25 gauge, then it cannot be able to provide a quantity of what 8 diameters with more than 45-gauge pipeline can deliver. Indeed, the transporter or ferry is needed to reserve capacity within

pipeline and ferry oil or gas while the shipper pays the transporter for reserving the capacity. The negotiation of this transaction requires to be done earlier and the key area of negotiations should be on the capacities of the pipelines which transportation industry has emphasized a lot. The capacity to own a pipeline and deliver has surfaced as an area of interest in the empirical literature of pipelines. For examples, numerous countries are now shifting the capacity of the individual ownership of pipeline infrastructure to the state for purpose of security assurance, safety, health and environmental considerations. Indeed, it is a compulsory in Norway that the pipeline infrastructure is owned by the state through the government of Norway. While in Africa, there is a growing tendency of promotion of local, national and regional contents, especially, local citizens taking over the oil and gas industry and drive it vigorously (Riak, 2024). Although this is the case, foreign governments through international oil companies (IOCs) continued to maintain their interests on big infrastructural projects such as refineries and pipelines. The reason for mushrooming and dominant of IOCs is that the governments in Africa are enormously faced by security, technical, financial and environmental challenges and this has made them failed in building and financing mega projects such as pipeline and refineries infrastructure. On the quantity transportation in the pipeline, the quantity is selected and ferried to the shippers while shippers in return pay tariffs and any other associated costs. The key negotiation point in this sub-model is on selection that bring out how the quantity was selected and whether it was the exact quantity or not. This negotiation is done before the quantity is ferried and delivery notes are authenticated and exchanged (Makholm, 2012).

➤ *Therefore, Pipeline Transportation model is Constructed on the following:*

• *Push-Back Model.*

This model, also known as profit-making model helps the transporters to purchase petroleum products from shipper at the designated input points, for example at price X and the shipper buys back petroleum product from transporter at delivery point at price Y. Although the transporter may wanted to be paid the tariff, this is not the always the case. Indeed, the transporter is paid by profit made through the buyback price. This is a great model that doesn't rely too much on the tariffs but rather on the profits that have been accrued. In reality, this model pushes back the tariffs and pushes in accrued profits.

• *Traditional Model.*

This model recognizes what has been achieved in the transportation industry, especially on the pipelines. It argues that the transporter delivers petroleum products to operator of the pipeline who is also known as a shipper at designated input point and as well as transporter. The operator transports and redelivers petroleum products to shipper at designated delivery point. The transporter is then paid its tariffs or costs for the transportation service. This traditional model has been upgraded in the petroleum pipeline transportation industry because of being the founding philosophy of pipeline sector.

VI. DIFFERENT ALTERNATIVES FOR PIPELINE OWNERSHIP AND USAGE

There are various alternatives for pipeline ownership and usage in the today's oil and gas world. Although the globe maybe moving towards single alternative of pipeline ownership and usage, there are still various alternatives for pipeline ownership and usage which are quite critical and useful today. These alternatives are discussed as follows:

A. Build your own Pipeline Ownership

This is an alternative for pipeline ownership and usage that is thoughtful as an equity of gas pipelines. This ownership is built on owner and seller of pipeline that is anchored on pipeline shares. The pipeline is also built on common carrier and multi-shipper principles which are basically squeezed on numerous agents that sell pipeline to act as an income generating asset or tariff receipts for the state (Adebayo and Dada, 2008). In making sure of any successful deal on the operation of the pipeline, a pipeline operating agreement (POA) should be developed and must be signed by parties in the pipeline business. The parties include; owner of the pipeline, seller of the crude oil and the buyer of crude oil. POA is very important as regulates the relationships among the parties in the pipeline operations. The vitality of POA has been demonstrated in numerous pipelines operations in the world. For example, the East African Crude Oil Pipeline (EACOP) project has entered into different pipeline operations agreements. These include a contractual agreement which is also known as intergovernmental agreement between the Republic of Uganda and the United Republic of Tanzania, There is Host Government Agreement (HGA) between the Government of the Republic of Uganda and EACOP company, there is shareholders Agreement detailing the responsibilities, rights, duties, governance and the operations of the EACOP amongst the shareholders which include the Government of the Republic of Uganda, represented by Uganda National Oil Company (UNOC), Government of the United Republic of Tanzania, represented by Tanzania Petroleum Development Corporation (TPDC), TotalEnergies and CNOOC-Uganda. Their shareholdings are as follows: TotalEnergies has 62%, UNOC, 15%, TPDC 15% and CNOOC with 8% (Kinya and Doesvenspeck, 2023). Other EACOP operational agreements include transportation agreement, tariffs and Engineering Procurement and Constructions agreements (EPC). As always stated, the goal of POA is to ensure efficient and effective operation of pipelines to all the parties namely; sellers, owners and buyers of oil and gas products.

B. Access to Third Party Pipeline

Instead of building your own pipeline, one can use the third party access to the pipeline. This means that a pipeline operation can be accessed through a third party that is known as the agent or the seller. For one to access the pipeline, there must have been signed General Trade Agreement (GTA) which should govern the business of operation around the pipeline (Guyer, 2002). The GTA is required to focus on the quality of the crude oil or gas as well as quantity and the capacity of the pipeline that parties need to access.

However, there are factors to be considered for build your own pipeline ownership or third party access ownership pipelines. These factors are discussed as follows:

➤ Economic and Commercial Tools.

These are market and trade related factors in the country. They may include economic tools that can help to measure and analyze the economy. These analyses must be positive in calculations so that they support the business of ownership of pipeline through build your own or third party access. These economic and commercial tools include Net Present Value (NPV), Internal Rate of Return (IRR) and Return on Investment (ROI). They should be be positive to support the ownership of new pipeline as buying it requires substantiate funding. While taking the ownership of pipeline through third party access, there is a great need to strike a balance between a seller and a transporter. Although the transporter may want high tariffs to recover his/her costs, the seller may need the tariffs but should go slowly to maximize his/her profits. If they reach such level, the players must come to the middle ground where each party should garner little profit.

➤ Physical Consideration of the Pipeline.

It is imperative that physical capacity of the pipeline is considered so its operations are efficient, effective and secured. For example, the presence of nearby pipeline, the availability of ullage, the compatibility of the substance being carried by pipeline and overall, the security of pipeline from vandalism and damage. All the above are very critical for the ownership and usage of pipeline. Therefore, physical consideration of pipeline ascertains the quantity and types of substance the pipeline can transport.

➤ Regulations.

Good regulations necessitates the success of any transport sector in a given economy and in particular, the midstream segment of petroleum industry. In the situation where regulations are inadequate, the transport sector in midstream segment and particularly, pipeline transport system could severely be harmed. When the regulations are too numerous, in other words, when the industry or the sector is over-regulated, there could be little success in that industry and in this case, in the pipeline sector. In a situation where regulations have been properly done, the conundrums would always surface from the implementation of these regulations and this is christened as "*regulatory captured*" situation. Governments may release regulations that obstruct new pipelines installation. They can even issue regulations that give incentives for new pipelines installations. In the Eastern African region, Republic of Uganda is highly credited for being the only country that has profoundly regulated its oil and gas industry and especially, the midstream segment. These regulations include Petroleum (Refining, Conversion, Transmission Act 4 and Midstream Storage) Act 2013, Petroleum (Refining, Conversion, Transmission Act 4 and Midstream Storage) Regulations 2016, Petroleum (Refining, Conversion, Transmission Act 4 and Midstream Storage) (National Content) Regulations 2016, Petroleum (Refining, Conversion, Transmission Act 4 and Midstream Storage) (HSE) Regulations 2016, Petroleum (Refining, Conversion,

Transmission Act 4 and Midstream Storage) Act 2013 and Petroleum (Refining, Conversion, Transmission Act 4 and Midstream Storage) Regulations 2016. While South Sudan has limited regulations on ownership and usage of pipelines, its Petroleum Act, 2012 as amended regulates the pipelines in South Sudan.

➤ *Security and Supply.*

Security is essential for rewarding business operations. Although the sellers, buyers and owners of the pipelines always ignore it, it is critical that security is first considered to promote the longevity of the pipelines. Tight secured transport route of any pipeline assists in reducing liabilities that perhaps have been incurred by the seller as he/she supplies the oil and gas products. It is paramount that GTA include security, risks and required mitigations if incidents such as spills, leaks, thefts, vandalism, pipeline damages and other insecurities take place which are the serious threats to the efficient and effective operation of pipelines in this contemporary world of today. It is important to recall that Nigeria is one of the countries that has continued to suffer from organized vandalisms as it completes its 5,130kms pipelines owned by the Nigerian National Petroleum Company (Adebayo and Dada, 2008).

➤ *Land Rights, Geography and Politics.*

These are very critical ingredients for any achievement of ownership and usage of the pipelines in any country. Acquisition of land today has emerged as a very strategic constraint not only for the pipeline but also for any other projects in a country. Although many governments have land policies and laws, some of these policies and laws are inconsistent from what is being done on the actual grounds, especially, at local communities where the petroleum related investments take place. The challenge is that the local communities often exaggerate their ownerships of the hydrocarbon resources. When these communities are compensated, their compensation is always not enough and complaints may persist forever. Besides, geographical viability is very important as it is a proposed a route. However, social, economic, logistics and negative political activities may affect the capacity to build pipeline. This is because any proposed route for the pipeline may crossover to another country or pass across various countries and if no agreements signed, this can be problematic. This therefore would require signing cross border pipelines agreements. For instance, Germany and Russia signed inter government agreements and host government agreements on Nord 1 & 2 Stream gas pipelines, Tanzania and Uganda inked inter government agreement as well host government agreement for EACOP project (Kinya and Doesvenspeck, 2023).

C. *Hybrid Ownership*

This type of ownership amalgamates variety of features of pipeline operation agreement where one person or accredited agent plays two or more roles. Sensibly, it is an ownership of a pipeline within another pipeline. This is where a shipper turns as a pipeline owner and at the same time turns as a transporter. Shipper keeps a portion of capacity and behaves like a transporter participating in part of transporter's risk and can use the transporter's risk for self-reflections

(Hammerson, 2011). In addition, and in normal circumstances, a pipeline owner may act as a shipper too and transporter maybe both a transporter and shipper as well. This is where pipeline is used by many shippers in which transporters enter into GTA in a different capacities as shippers. This in nutshell, is hybrid ownership that has to clearly discern the role of each person or accredited agent in the GTA hybrid ownership.

D. *Equity/Multi-shipper pipeline*

This is an alternative of pipeline ownership which has two types namely:

➤ *Equity Pipeline.*

It is rigidly built for Gas Sales Agreements (GSAs) commitments. With the GSA, one cannot supply and another person cannot buy. Both cannot transact anything together at this stage. But under equity terms, they need to have equal ownership.

➤ *Multi-Shipper Pipeline.*

It is constructed as an income generating asset to transport sellers' gas as well as third party's gas.

Nonetheless, the size of the pipelines must be sufficient enough to meet the sellers GSA needs and big enough for the future needs for more quantities. However, such a move maybe constraint by regulatory considerations where the private sector ownership of a pipeline maybe prevented by the laws and policies based on the country interests. Besides, it may also be constraint by physical considerations that continued to detail the presence of viable chemical combustible gas that are likely to be commercialized. What is more, the commercialization of chemical combustible gas is likely to be affected by financial considerations where the financiers maybe reluctance to put in more finances for the biggest pipeline.

VII. KEY OBLIGATIONS OF KEY PARTIES IN PIPELINES

Key parties in the pipelines infrastructure whether it is the national government, private sector or regional governments have very important roles for the achievement of any pipeline. Although, enormous literature has substantiated that constructions and installations of pipelines are very costly and hence cannot be single-handily built by single private equity, other new empirical literature pointers maintain that private equity takes lead in the financing of the pipelines instead of the governments. Given that governments have a lot of inefficiencies when it comes to financing, the private sector has continued to show the way and interestingly more investments on pipelines are being seen in the world and particularly, in Africa. Therefore, key obligations of key parties in the pipelines are discussed as follows:

➤ *Governance Structure.*

This is based on pipeline operation agreement (POA). It is imperative to note that a governance structure is a necessity for efficient, effective and coordination of the pipeline programmes and activities. Such governance may have Board

of Directors, General Managers and Managers etc for any successful pipeline operation.

➤ *Financing.*

Finance is very essential in any pipeline project. Parties have absolute obligations to adequately finance the constructions, installation and running of the pipelines. Any party that fail to contribute its finances based on the participating interests culminate into the failure of project. In the United States of America, shareholders are required to pay all the finances in tandem to their shares on time before the start of any pipeline project (Coburn, 1988). This is done to eschew defaulting conditions which have caused serious divisions in the US courts.

➤ *Transportation.*

The parties have the obligations to transport oil and gas through the pipeline. For instance, transportation of gas or crude oil to the intended buyer. Thus, the seller can change to be the transporter. The crude oil or gas need to be always ascertained; push into the pipeline while interference with deliverables must be avoided at all cost along the pipeline.

➤ *Shipment.*

As an obligation of the parties, shipment is very fundamental in piping sector. All the shippers are required to do the payment and deliver crude oil and gas. The shipper must make sure that the route for shipping of the gas or crude oil is very reliable and safe.

➤ *Maintenance of healthy, safe and clean environment.*

As an obligation of parties, it is the role of pipeline owner, transporter, shipper, seller and to ensure that the

operations of the pipeline whether high or low for the supply of oil and gas must be safe, healthy and environmentally friendly.

VIII. PIPELINES IN SOUTH SUDAN

South Sudan lacks its own pipeline infrastructure and instead depends on trans-boundary pipelines in Sudan that connect to its oilfields. These are referred to as Sudanese pipelines and are discussed as follows:

➤ *Petrodar/Bashayer Pipeline Operating Company (BAPCO)/ Dar Petroleum Operating Company (DPOC) Pipeline*

The Petrodar Pipeline known DPOC begins at Pump Station 1 (PS1) in Block 3 & 7 Paloch (Palouge) and extends 1,504 km to Port Sudan (Riak, 2024). This pipeline features six pumping stations, starting from PS1 in Paloch (Palouge) and reaching PS6, which is 1,300 km away, at the Marine Terminal in Port Sudan, ultimately leading to the Red Sea for export.

• *The Block 3 & 7 Pipeline Includes Several Sections:*

- ✓ Moleeta to Paloch (Palouge) pipeline: 18 km
- ✓ Gumry to Paloch (Palouge) pipeline: 45 km
- ✓ Adar to Paloch (Palouge) pipeline: 76 km
- ✓ Paloch (Palouge) to Central Processing Facility (CPF): 242 km

The remaining kilometers connect to Port Sudan. Block 3 & 7 pipeline has a gauge of 36.

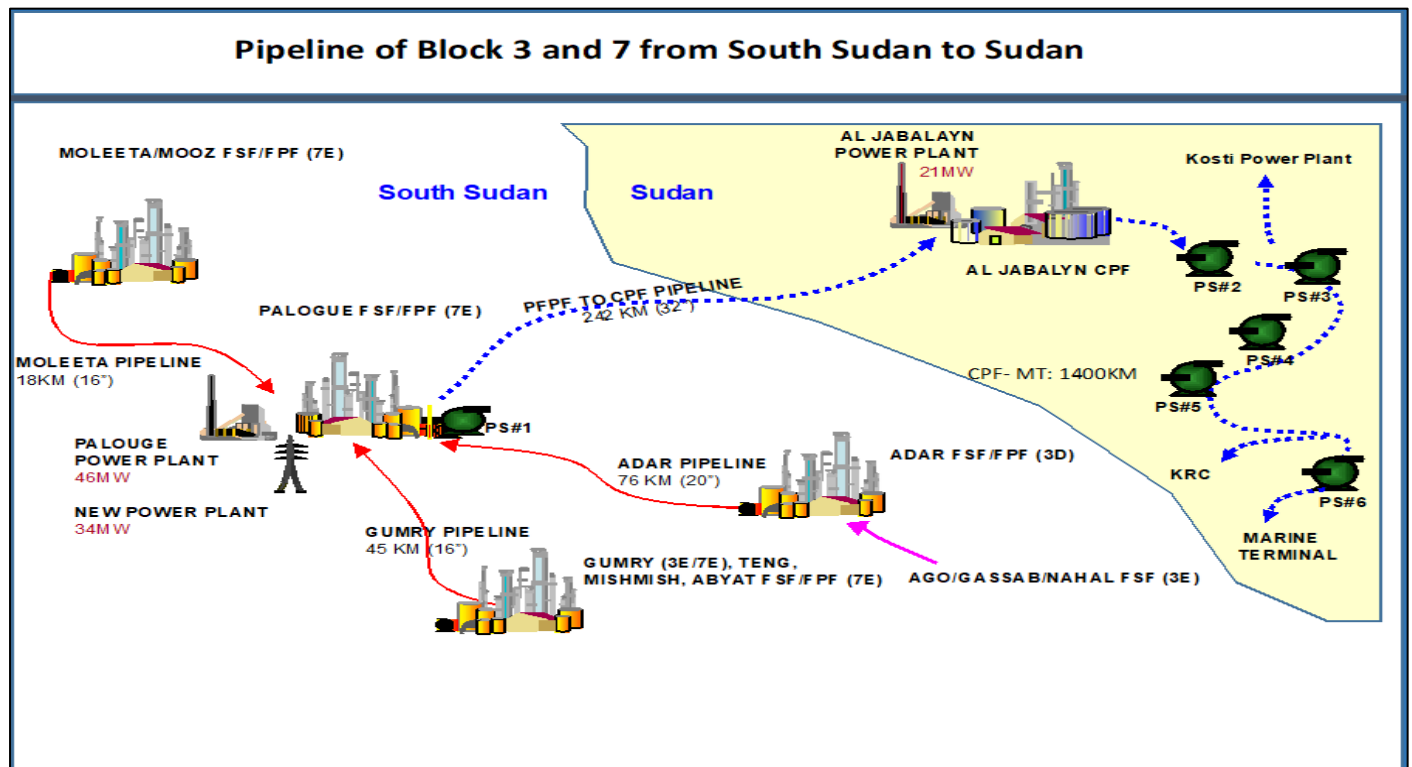


Fig 1 Pipeline for Block 3 & 7 in South Sudan to Sudan
 Source: DPOC

➤ *Greater Nile Oil Pipeline Company (GNOPC)-Greater Pioneer Operating Company (DPOC) Pipeline*

The pipeline was constructed by the Greater Nile Petroleum Operating Company and began operations in 1999. It is currently operated by the China National Petroleum Corporation (CNPC), which holds a 41% stake in DPOC. Initially, the pipeline started at the Heglig oil field in South

Kordofan State, Sudan. Since then, it has been extended to begin at the Unity oilfield in South Sudan. The pipeline runs to the Port Sudan crude oil refinery on the Red Sea, traversing the Nuba Mountains and Khartoum. Known as the block 1, 2, & 4 pipeline, it spans approximately 1,600 km, including 1.8 km of submarine section (Riak, 2024).

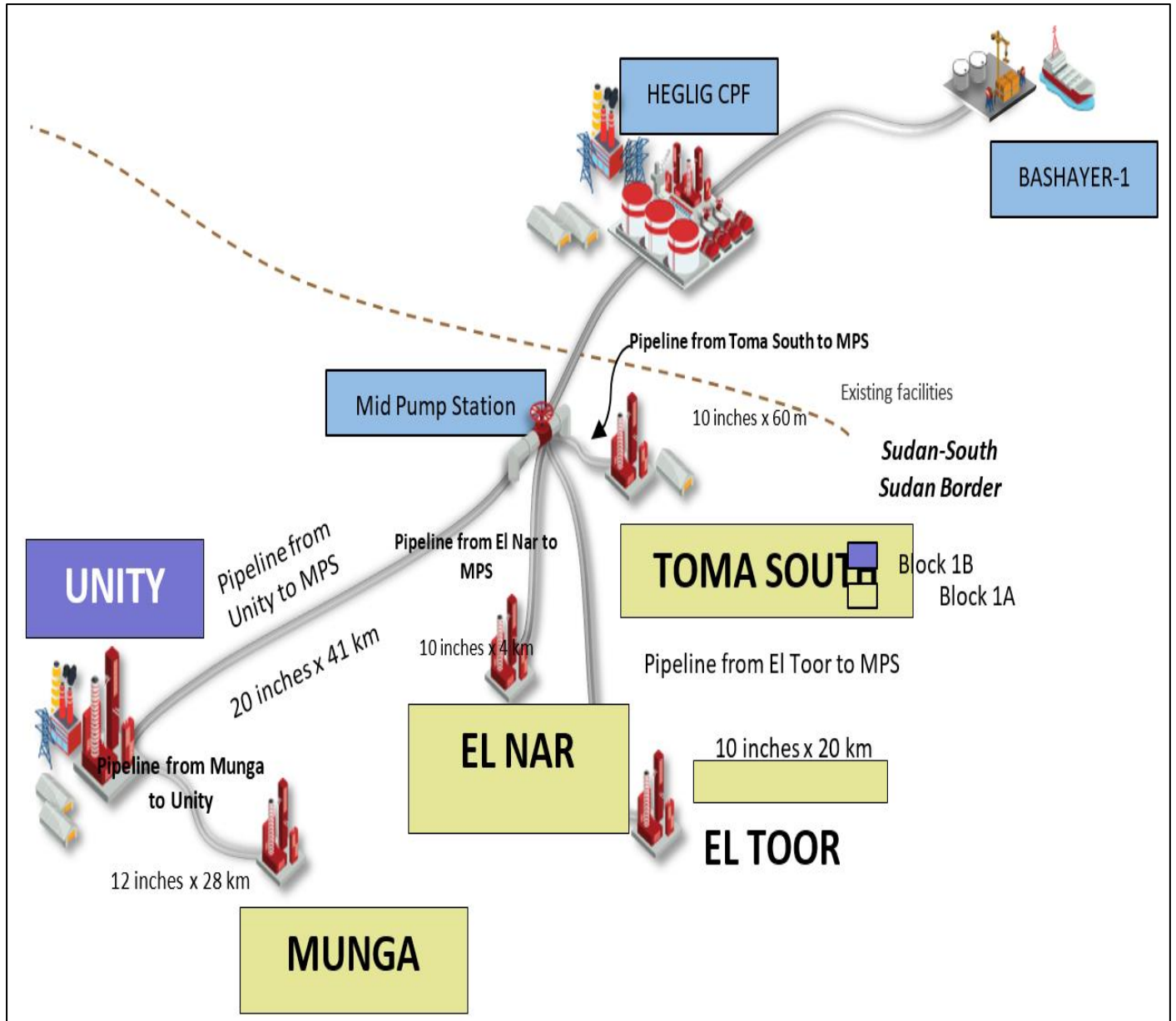


Fig 2 Pipeline for Block 1, 2 and 4 for South Sudan to Sudan
 Source: GPOC

➤ *Sudd Petroleum Operating Company (SPOC) Pipeline*

It is 1,540 kilometres (960 mi) underground pipeline opened in 1999 from Tharjiah-Upper Nile to Port Sudan and Red Sea through Unity oilfields (Riak, 2024). It is also known as a SPOC Pipeline. However, this pipeline doesn't take the crude oil directly to Sudan anymore. The crude oil in block 5A is waxy and requires blending. Thus, a tied-in pipeline

known as block 5A pipeline takes the crude oil to unity state, unity oilfields, block 1,2 and 4 for mixing of waxy crude oil with Nile blend so that American Petroleum Index (API) of waxy oil is improved. This blending of the two crude oil products has continued to improve the crude oil from block 5A.

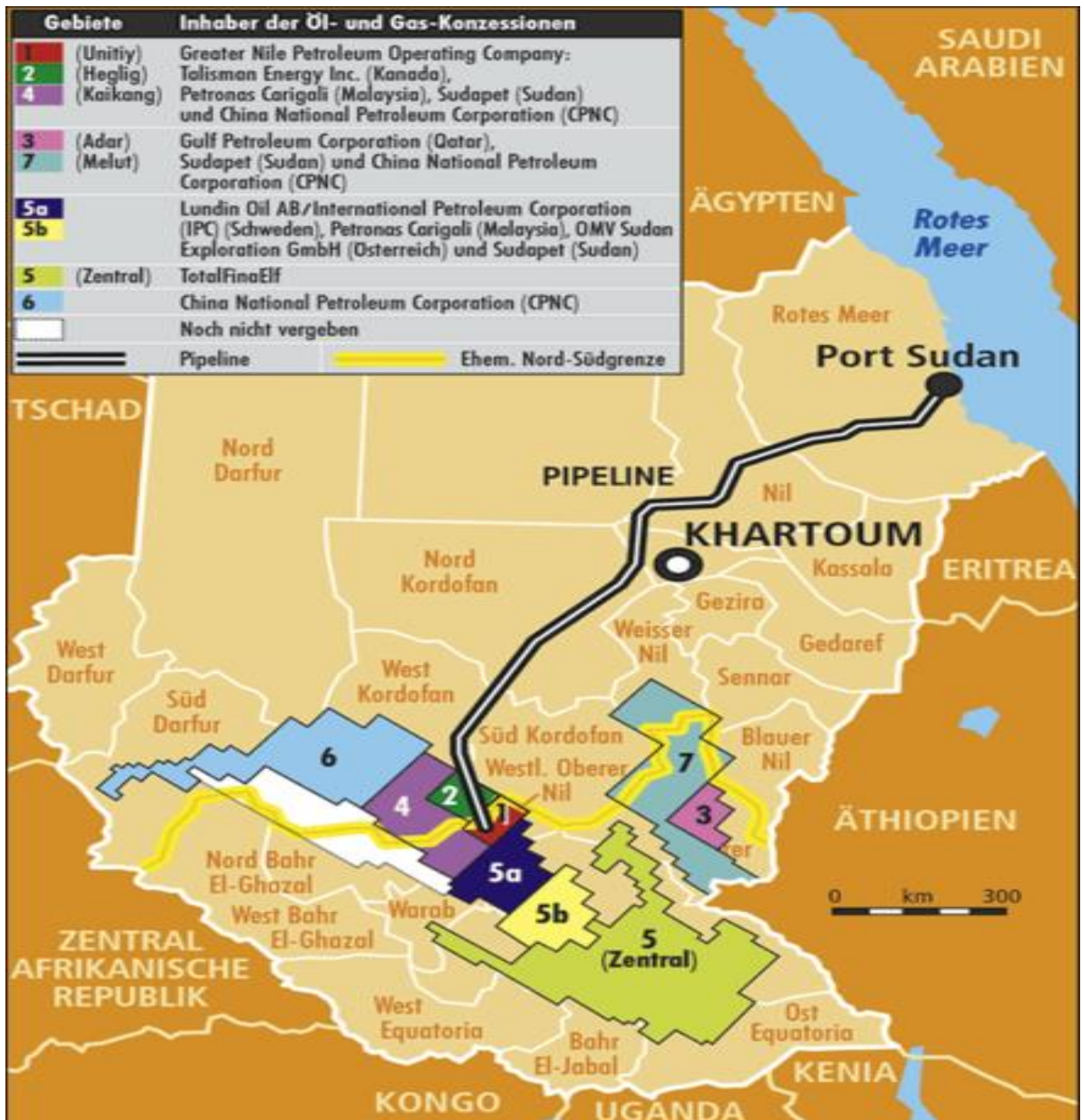


Fig 3 Sudd Petroleum Operating Company (SPOC) Pipeline
 Source: SPOC

IX. POLITICS OF PIPELINES OWNERSHIP, USAGE AND OBLIGATIONS IN SOUTH SUDAN

The politics of pipelines in South Sudan commenced from the necessity of South Sudan to evacuate its crude oil from its oilfields situated at the northern part of South Sudan. Given that South Sudan is a landlocked country, it has to rely heavily on a neighbour with port services to transport her crude oil and gas to the international market. The only

neighbour with South Sudan crude oil legacy and facilities is the Sudan. When South Sudan broke free from Sudan in an international supervised referendum for self-determination on 9th July 2011, it was expected to chart its own social, economic and political path (Riak, 2021). However, the conundrum of facilities and who to produce the crude oil became a problem and therefore, South Sudan entered into agreement with Sudan and this agreement became to be known Cooperation Agreement, 2012 on crude oil and other economic related matters. This agreement stipulates the fees

South Sudan should pay to access the oil facilities that fell into Sudan territory after the independence (Geda and Kayizzi-Mugerwa, 2014). These facilities include pipelines, storage tanks, central processing facilities and crude oil vessels to mention but a few.

➤ *Cut-throat politics of pipelines ownerships, usage and obligations between Sudan and South Sudan.*

Sudan took the independence of South Sudan as a bitter pill and thus it had to raise its politics to cutthroat level with the Republic of South Sudan. With the pipelines stretching from South Sudan to Port Sudan, the Government of Sudan doesn't accept South Sudan to have any ownership on these pipelines. Although pipelines are trans-boundary resource infrastructure between two countries, Sudan argues that their usage by the Republic of South Sudan should be through agreed obligations and through the host governments agreements as well as pipelines operation agreements (POAs). That is why Government of Sudan charges 9.1 United States dollars as a pipeline fee (tariff) for transportation of a barrel per day of Dar blend through DPOC pipeline for block 3 and 7 in Paloch, Melut County to Port Sudan. On the other hand, the Government of Sudan also charges 11 United States dollars (USD) as a pipeline fee (tariff) for transportation of waxy crude oil from block 5A in Tharjiah to GPOC pipeline to Port Sudan. The difference between two pipeline charges is due to the quality of crude oil. The Government of Sudan argues that crude oil of block 5A of SPOC oilfields is very waxy with high sulphur and requires blending with Sweet Nile Blend of GPOC and that is why its charges 11 United States dollars compare to 9.1 United States dollars for DPOC pipeline (Riak, 2024). However, this agreement on the pipeline/tariff fees was not technically negotiated.

The obligations of South Sudan to Sudan is to pay these pipelines fees apart from storage and processing fees. While the Government of South Sudan cleared payment of 3 billion United States dollars in 2023 to Sudan as part of Transitional Financial Assistance (TFA) for having separated from Sudan, the Government of Sudan could not back-down in revising the exorbitant pipeline charges.

➤ *Political and non-technical negotiation of pipeline fees (tariffs)*

The pipeline fees were negotiated by politicians from South Sudan who could not apply any technical knowledge at arriving at 9.1 and 11 USD respectively. The political negotiators agreed on the fixed charges, thus, giving the Government of Sudan upper hand in refusing to re-negotiate the fees/tariffs. Therefore, Sudan fixed the charges per barrel whether the prices of crude oil raise or plummet. In the petroleum economics and petroleum resource taxation, the pipelines tariffs are calculated using a percentage and indeed using sliding scale. This way when the prices of crude oil increases, the percentage increases and when the prices fall, the percentage fall too. This is an ideal formula for setting crude oil tariffs to avoid cheating and exploitation. Although, during covid-19 period, the price of crude oil went as far as below 10 USD per barrel, the Government of South Sudan paid the same pipelines tariff fees to the Government of

Sudan while her revenues were reading at negative figures. The shutdown of the main pipeline (DPOC pipeline) in February 2024 due to dislocation of pump stations 3, 5 and 6 by Sudan Rapid Force (SRF), the Government of Sudan could not bend down to renegotiate the pipeline fees.

During the workshop on resumption of crude oil organized by the Ministry of Petroleum, DPOC technical staff and Bashayer Pipeline Company (BAPCO) of Sudan from 28th -30th October 2024 in Juba, the senior staff from the Ministry of Petroleum, Government of South Sudan requested for renegotiation of tariff fees given the economic condition the people of South Sudan were going through. However, the Sudanese senior staff from the Ministry of Petroleum of the Sudan could not agreed on that discussion. While the Government of South Sudan wanted the flow assurance rate of 90,000 barrels per day during the resumption, so that the pipeline integrity is tested and restored, the Government of Sudan through the Ministry of Petroleum and BAPCO wanted 120,000 barrels per day. The reason of such demand from the Government of Sudan and particularly, BAPCO, was to quickly recouped the cost BAPCO incurred in the maintenance of pipeline after the war. Although, the two parties, namely Government of Sudan and Government of South Sudan agreed later in the resumption workshop for initial assurance rate flow of 90,000 barrels per day for block 3 and 7, the politics of when oil resumption will commence is a game in town and an order of the day in South Sudan. Issues to do with security and protection of pipeline together with a need for discussion with SRF who are controlling most part of the pipeline came into surface. While the pipeline fees require urgent renegotiation, they should not be negotiated by politicians again so that cheating and blackmail as it was done by Sudanese government should never repeat itself. The politics of ownership, usage and obligation of pipeline should be taken by the Government of Sudan seriously so that South Sudan get its rights in the pipeline host agreement as well as pipeline operating agreement and any other agreement covering the use of pipeline.

X. CONCLUSIONS

The study has argued one of exciting and often neglected topics in oil and sector known as pipeline. While it begun the discussion with the definition of pipeline, its zero-in and explained the different typologies of pipelines such as liquid petroleum pipelines and natural gas pipeline. The study then analyzed features of pipelines such as easy to construct, movement of large quantities, cognizant of HSE, low operating cost, insensitive to surface conditions and not require two ways traffic. The study pertinently discussed the pipeline transportation through two models; namely, push-back and traditional. It then waded over the variety of alternatives for pipeline ownership and usage such as build your own pipeline, access to third party, hybrid and equity/multi-shipper. Moreover, the study discussed the key obligations of key parties in pipeline. These obligations include financing, governance structure, transportation, shipment and maintenance of healthy, safe and clean environment during piping. The study discusses pipelines in

South Sudan and politics associated with them from Sudan and South Sudan governments. It is critical to conclude that the ownership, usage and obligations of pipeline should be technically agreed upon by the countries pipeline pass through their territories, rather than being politically motivated. Both the Governments of Sudan and South Sudan should immediately review pipelines fees using percentage/sliding scale model.

- [12]. Riak, J. (2021). *South Sudan State Formation: Failures, Shocks and Hopes*. Africa World Book Press.
- [13]. Riak, J. (2024). *The Petroleum Industry of South Sudan: Institutions, Trends, Legal Regimes and Leaderships*. Virtue Books Publishers-Nairobi.

XI. SUGGESTIONS FOR FURTHER STUDY

Further research is hereby recommended on the technical negotiations of pipeline host agreements/operating agreements and particularly, fees, so that each country is not disadvantaged when prices of oils and gas plummets and when pipelines are destroyed during the war. The study also recommends to the oil and gas pundits on pipelines to exhaustively study the pipelines components and technologies use so as to innovate the best pipeline components and technologies for crude oil or gas that should be embraced by the piping world.

REFERENCES

- [1]. Adebayo, A and Dada, S. (2008). An Evaluation of the Causes of Oil Pipelines Incidents in Oil and Gas Industries in Niger Delta Region of Nigeria. *Journal of Engineering and Applied Sciences*. Vol 3 (3): 279-281
- [2]. Chanda, S. (2013). *Petroleum Pipelines. A Handbook for Onshore Oil and Gas Pipelines*. Cambridge University Press
- [3]. Coburn, L.(1988). Eighty Years of US Petroleum Pipeline Regulations. *The Journal of Transport History*. Vol 9 (2): 149-169
- [4]. Dawotola, A and Gelder, V. (2009). *Risk Assessment of Petroleum Pipelines in Europe*. University of Brussels Press
- [5]. Geda, A and Kayizzi-Mugerwa, S. (2014). Sudan and South Sudan. Ensuring Mutual Viability through Macroeconomic Cooperation. *Zambia Social Science Journal*. Vol 3 (1): 46-57
- [6]. Guyer, J. (2002). Briefing: The Chad-Cameroon Petroleum and Pipeline Development Projects. *Journal of African Affairs*. Vol 10 (402): 109-115
- [7]. Hammerson, M. (2011). *Cases, Materials and Commentary. Upstream Oil and Gas*. Globe Law & Business
- [8]. Hidy, R. (1956). Some Implications of the Recent Literature on the History of the Petroleum Industry. A Review Article . *Journal of Business History Review*. Vol 30 (3): 329-346
- [9]. Kinya, P and Doesvenspeck, M. (2023). Governing Petro-(im) Mobilities: The Making of Right of Way for Uganda's East African Crude Oil Pipeline. *Journal of Mobilities*. Vol 18 (6): 968-984
- [10]. Lewis, K. (1984). *Oil and Gas Pipeline Fundamentals*. Princeton University Press.
- [11]. Makhholm, J. (2012). *The Political Economy of Pipelines. A Century of Comparative Institutional Development*. University of Chicago Press.