I. Introduction

East Africa has followed a long road of highs and lows in developing its oil resources. On the back of high global oil prices between 2004 and 2014, a rush of new exploration put the region on the map as a new frontier for African oil. Large onshore oil finds in Uganda in 2006 and six years later in Kenya fueled optimism over the region's prospects. In total, nearly $13 billion, 32% of investment in Africa's oil and gas industry, went to East Africa in 2012.[1] The flood of investment offered hope the region's oil industry wouldn't fade away with South Sudan's declining oilfields.

But it did not take long for the momentum of East Africa's oil rush to lose steam. Long regulatory delays starting in 2010 slowed Uganda's advancement. Civil war in South Sudan broke out in late 2013, scuttling hopes for an investment boon. Then came the fall in global oil prices in mid-2014. It all served to deflate expectations for the region's potential and slowed progress towards the development of a new regional pipeline. Together, a diverse set of political, security, and social risks are present at varying levels across East Africa.

Beyond the impact of domestic political and security conditions, however, what defines the emergence of East Africa as a new African energy centre is the growing influence of regional politics. Never in the history of oil exploitation on the continent, where most oil producers both extract and transport onshore and offshore oil from within their own borders, have regional relations been so crucial to the success of domestic oil industries. Unlocking the oil potential of Uganda, a landlocked country, requires cooperation with one of its neighbours, either Kenya or Tanzania, to develop a regional pipeline. While the political secession of South Sudan in 2011, also landlocked, has resulted in a shaky reliance on Sudan for the only pipeline routes to international markets.

This paper examines the development, potential, and main risks facing oil industries in Uganda, Kenya, and South Sudan, as well as plans for regional pipelines in East Africa. It begins in Uganda, the future anchor of the region's oil production, where the development of oil first discovered in 2006 has only recently moved past a number of tax, regulatory, and contract disputes between the Ugandan government and international oil companies. Second, it reviews Kenya's oil industry, in which political struggles over oil between local communities, country representatives and national leaders remains acute. Third, the paper examines South Sudan's oil industry since its 2011 independence, and how regional disputes and conflict with Sudan over pipeline transit fees, and the outbreak of civil war in late 2013, have slowed production in an already ageing oil industry. Finally, the paper details and examines the shifting positions the region's governments and international oil companies have taken on developing critical new pipelines in East Africa, and the merits and challenges of different possible routes.

II. Uganda

Uganda is the backbone of East Africa's oil future. Oil finds in the landlocked East African country were some of the largest onshore discoveries on the continent in over two decades. Since the initial 2006 discovery, however, Uganda has struggled to reach first oil. An acrimonious relationship between international oil companies and the Ugandan government, mostly over tax and contractual disputes, slowed development for several years following the discoveries. Since the fall of global oil prices in mid-2014, most of those disputes between the two sides have been settled. That has established a foundation for a strong consensus around exploiting the majority of Uganda's oil through an export pipeline, as opposed to initial government plans to build a large domestic refinery. In August 2016, long delayed production licenses were signed with international oil companies, opening the way for first oil exports in the coming 3-5 years pending the completion of a regional pipeline.

[1] Yadullah Hussain, 'Canada's Africa Oil Corp. sees promise in Kenya', *Financial Post*, 24 October 2013.

Oil sector

The scale of Uganda's oil resources, and East Africa's more broadly, aren't on the same scale as West Africa's powerhouses Nigeria and Angola, which still account for the vast majority of reserves and production. But Uganda has the potential to be central to oil production in East Africa. It has an estimated 6.5 billion barrels of oil in place with recoverable oil between 1.8 and 2.2 billion barrels.[2] Based on current discoveries, oil production is expected to reach a 10-year plateau of between 200,000 and 250,000 b/d over a three-decade lifespan of output.[3] These levels are comparable to present day mid-level African producers, South Sudan, Equatorial Guinea and Gabon, which will likely decline in production in the coming years, making Uganda the third largest oil producer in sub-Saharan Africa.

Uganda's main concessions run across a narrow but long north-south track of territory on the eastern shores of Lake Albert on the border with the Democratic Republic of Congo. In the late 1990s and early 2000s, despite low oil prices at the time, and operational and security challenges, Uganda was able to attract wildcatter oil companies to prospect deep inland. This was possible due to the growth of the oil industry in neighbouring southern Sudan, technological advances lowering the costs associated with onshore drilling, and tax exemptions offered by Uganda's former minister of energy. The British firm Heritage Oil, Hardman Resources from Australia, and South Africa's Energy Africa were the initial investors.

The gradual uptick in global oil prices over the coming decade drew in further exploration interest. In 2004, Tullow entered Uganda after buying Energy Africa, which held stakes alongside Heritage and Hardman in key concessional areas on Lake Albert.[4] Tullow went on to purchase Hardman two years later, increasing its interests in Uganda even further. Months before the takeover, Hardman became the first to discover oil in Uganda, with Heritage also having success, making 2006 a breakout year.[5] As further discoveries were made, and oil prices continued to rise, oil majors and national oil companies began to take notice of Uganda.

In 2009, Heritage attempted to sell its 50 per cent stake in two main concessions to the Italian oil major ENI for $1.45 billion, but Tullow invoked its contractual pre-emptive rights to buy the assets, giving it full operatorship of Uganda's four main oil-holding concessions. In early 2010, Tullow announced its intention to sell a two-thirds stake in Blocks 1, 1A, 2, and 3A for $2.9 billion in equal shares to the French oil major Total and China National Offshore Oil Corporation (CNOOC). Total, in particular, possessed the size and expertise in mid and downstream operations to manage long-term production that Tullow lacked.

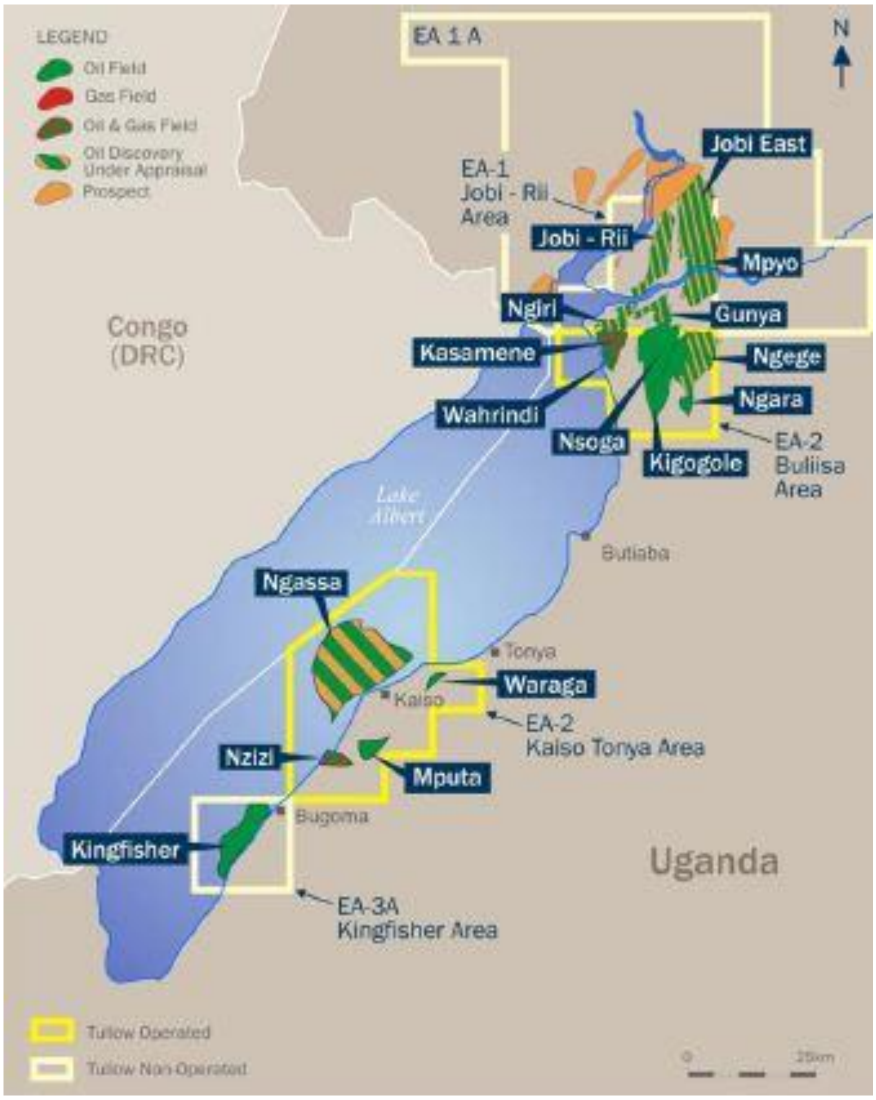
[2] 'Delivery of the Uganda Lake Albert Basin Development: Partner's Vision', Corporate Presentation, CNOOC, Total, Tullow Oil, Kampala, Uganda, 2014, 3 and 6; Ronald Musoke, 'Uganda's oil reserves now estimated at 6.5 billion barrels', *The Independent*, 28 August 2014.

[3] Nicholas Bariyo, 'Total sees Uganda oil output delayed by a year', *The Wall Street Journal*, 28 September 2012; 'Delivery of the Uganda Lake Albert Basin Development: Partner's Vision', Corporate Presentation, CNOOC, Total, Tullow Oil, Kampala, Uganda, 2014, 3 and 6.

[4] 'Creating shared prosperity in Uganda', Tullow Uganda Country Report, Tullow Oil, London, 2013, 4–6.

[5] 'Untapped oil frontier: Hunting elephants in East Africa', *Cormark Securities Inc*., 3 February 2011, 37–8.

Map 1: Uganda main concessions and oilfields



Source: Tullow Oil

But it was not until early 2012 when the Tullow farm down to Total and CNOOC received government approval. This was followed by another long delay in the awarding of production licenses to both Total and Tullow (CNOOC received its production license in 2013), which had divided operatorships across Uganda's oil-bearing concessions. These delays, the finalisation of appraisal work, and the fall in global oil prices in mid-2014, resulted in a substantial decrease in activities preparing Uganda's oil industry for first production.

But a breakthrough occurred in August 2016 when Uganda finally signed production licenses with Total and Tullow. The agreement established an 18-month deadline for the companies to reach a final investment decision and begin development of the oilfields with a goal of first oil in 2020.[6] In another important development, Tullow announced a further farm down of its Uganda assets in early 2017 to

[6] It also established unitisation of oilfields that straddled different license areas, a key sticking point between the two sides. It is expected that the Uganda National Oil Company will take a 15% stake in the concessions with its costs to be carried by consortium partners until production; Frederic Musisi & Mark Keith Muhumuza, 'Shs27 trillion needed to see first oil', *Daily Nation*, 31 August 2016.

Total for $900 million. Burdened by high debt levels, Tullow offered the French oil major 21.57 per cent of its 33% stake in the venture.[7] CNOOC has announced interest in using its pre-emption rights to acquire part of the sale, but pending government approval, it will be Total that likely takes over operatorship of Block 2. Tullow will use most of the proceeds from the sale to cover the development costs associated with its reduced stake.[8]

It is expected that upstream development will require $8 billion in investment by the consortium. According to estimates of a Joint Technical Team of Uganda and licensed upstream oil companies (Total, CNOOC, and Tullow), the planned 1,443km pipeline from the oilfields to the Tanzanian port of Tanga will cost another $3.9 billion. As Ugandan oil has high wax content, pipelines and storage facilities will need to be heated to reduce viscosity.[9] Ugandan oil officials argue that the breakeven price per barrel for development plans is between $50 and $60.[10] They remain keen on fulfilling the ambitious goal of reaching first oil by the end of 2020.

Risk

It was only a few years after oil was discovered in Uganda when a number of regulatory, tax, and contract disputes between the Ugandan government and international oil companies stalled the advancement of the oil industry. While onshore discoveries in frontier territories like Uganda can generally take 10 years from discovery to first oil, these delays have made progress even slower.

First, President Yoweri Museveni decided that Uganda's oil production should be used to supply a 150,000 b/d refinery to service Uganda and the region's fuel consumption needs.[11] Uganda does have a strategic interest in developing a refinery to lower its import bill and break its dependence on Kenya as the main source for petroleum products. But in light of the fall in global oil prices and Uganda's mounting debt levels, the economic challenge of such a large project has become increasingly apparent. In early 2014, the government relented in its demand for a large refinery, and signed a memorandum of understanding with Total, Tullow and CNOOC that an export pipeline could be built for the majority of Uganda's oil production.

Uganda still seeks to build a smaller refinery at a cost of $2.5 billion refinery, and it was successful in ensuring it would have first call on oil output, with an initial capacity of 30,000 b/d, scalable up to 60,000 b/d.[12] But even the smaller refinery has found few interested investors: first Russia's RT Global Resources, and then SK Energy from South Korea, pulled out. Uganda continues to seek interest among regional governments and international oil companies,[13] but overall, the centrality of developing the refinery has given way to the priority of developing a regional pipeline and generating export revenues.

Capital gains tax disputes have also been a major point of friction between the Ugandan government and international oil companies. Beginning with the profits earned from Heritage's sale of its interests to Tullow in 2009, followed by Tullow's farm down to Total and CNOOC in 2012, tax rows dragged on through Ugandan and international courts for six years until they were settled in 2015.[14] Moving

[7] Nathalie Thomas, 'Total ups stake in Uganda oil project via $900m deal with UK's Tullow', *Financial Times*, 9 January 2017.
[8] Tullow also made a commitment to Uganda to invest in 10% of the regional pipeline.
[9] 'Creating Shared Prosperity in Uganda', Tullow Uganda Country Report, Tullow Oil, London, 2013, 6.
[10] 'Tullow trouble for Uganda', *The Independent*, 22 February 2015.
[11] 'The competition heats up', *Africa Confidential*, Vol. 49, No. 14, 4 July 2008; Esther Nakkazi, 'Swiss study urges Uganda to build oil refinery', *The East African*, 18 October 2010; 'Oil in Uganda Timeline, *Oil in Uganda*, Issue 1, 2012, 12.
[12] Nicholas Bariyo, 'Uganda Reaches Deal on Refinery, Pipeline', *The Wall Street Journal*, 15 April 2013; 'Uganda', US Energy Information Agency, Country Analysis Note, August 2014.
[13] Joseph Burite & Fred Ojambo, 'Uganda says Total will take stake in planned oil refinery', *Bloomberg*, 27 October 2016.
[14] The dispute centred on whether Heritage and Tullow were exempted from capital gains taxes after signing an agreement with a former energy minister. Uganda argued that only parliament could award such privileges, and after long court proceedings with Heritage, which in a last-minute attempt tried to avoid paying taxes by re-domiciling the company to Mauritius, won the $400 million ruling. It later settled in its dispute with Tullow for $250 million; Michael Kavanagh, 'Heritage plays down ruling on Uganda oil asset sale', *Financial Times*, 5 April 2013; 'Tullow to challenge Ugandan court order to pay $407 mln tax bill',

forward, a key test will be whether the government and companies have moved past their differences on capital gains tax in light of Tullow's 2017 farm down to Total. Tullow claims no profit on the $900 million sale, but still awaits government approval of the deal.

But arguably the longest setback for the advancement of Uganda's oil industry has been protracted negotiations between the government and international oil companies on the terms of production licenses for Total and Tullow.[15] Long negotiations repeatedly pushed back starting dates for planning midstream development and executing the final investment decision. After some two years of intermittent discussions, the licenses for Total and Tullow were finally granted in August 2016.[16] Although it was a protracted process, the direct involvement of President Museveni in negotiations with international oil companies, as well as the technical and bureaucratic capacity of leading Ugandan officials, did pay dividends, and Uganda stands out among its East African neighbours.[17] Notwithstanding social and environmental issues, Uganda's production sharing agreements have financial terms that are relatively strong in the government's favour.[18]

But Uganda's hard bargaining has also clearly slowed down the speed of development for the oil industry. And while the Ugandan government has proven willing to stomach delays, it has in time, also offered concessions to its earlier positions with international oil companies. The long process also demonstrates that there remains a lack of expertise in the government beyond the exploration stage of the industry.[19] Nonetheless, in the short term, while no oil company investing in Uganda should ignore the history of disputes with the government, most have been resolved, and there is renewed confidence for Uganda's oil industry to move ahead to first oil.

As Uganda moves towards first oil through the development of a major regional pipeline, new risk could emit from the process of political succession in the mid to long run. President Museveni was reelected in 2016, extending his 30-year rule to 2021. Whether the 71-year old will seek another term, closely timed with the planned completion of a regional oil pipeline, remains an open question. In any case, the multi-decade lifespan of the oil industry in Uganda will at some point witness a transition of political power. It is unlikely that a future leader, whether it is Muhoozi Kainerugaba, Museveni's son, who is touted to be his successor and recently was appointed by his father as presidential advisor, or a figure from the ruling National Resistance Movement, or even someone from the political opposition, will heavily interfere in the competitive agreements Uganda has signed with international oil companies.

What is less certain is whether the process of succession will be a stable one. Post-Museveni Uganda remains a big unknown. Recent fighting between government security forces and the royal guards of the Rwenzururu kingdom demonstrate internal conflict is still an acute concern as fault lines within the

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Reuters, 16 July 2014; Jeff Mbanga, 'Questions as Tullow settles $250 tax row', *The Observer*, 24 June 2015; Rob Wilson, 'Panama Papers: How Jersey-based oil firm avoided taxes in Uganda', *BBC*, 8 April 2016.

[15] Among other points of disagreement, the negotiations centred on the demand of the oil consortium for an integrated basin-wide development programme, to share costs between concessions, particularly Total and Tullow's Blocks 1A and 2, where the Ngege oilfield overlapped the concession areas. The basin-wide approach would have allowed the companies to recover investments at a faster pace, but the Ugandan government sought to divide the operatorships and regulate the companies individually to secure better terms; Isaac Imaka and Frederic Musisi, 'Government to announce oil refinery investor', *The Daily Monitor*, 25 February 2014.

[16] Uganda was able to ensure a basin-wide approach was applicable across all concessions, but the unitisation of the Ngege field was allowed; Frederic Musisi & Mark Keith Muhumuza, 'Shs27 trillion needed to see first oil', *Daily Nation*, 31 August 2016.

[17] Sam Hickey & Angelo Izama, 'The Politics of governing oil in Uganda: Going against the grain?', *African Affairs*, Vol. 115, No. 461, 2016.

[18] Global Witness, 'A good deal better? Uganda's secret oil contracts explained', September 2014.

[19] Senior officials at the Petroleum Exploration Production Department of the Ministry of Energy and Mining Development are trained as geologists.

ruling NRM and army widen with Museveni's once strong grip on power waning.[20] The process of succession could be violent, with Uganda's growing debt problems from large-scale infrastructure initiatives, which have been reportedly partially bank-rolled by future oil revenues, fuelling any instability by constraining the government's financial flexibility.[21] For the present, however, the largest challenge preventing large-scale production and export of Ugandan oil by early next decade is ensuring the development of a regional pipeline through neighbouring Tanzania or Kenya.

III. Kenya

Kenya's oil industry is still in its infancy. Its first discovery came in March 2012. The steep fall in global oil prices, and scuttled plans for a joint regional pipeline with neighboring Uganda, has since dampened initial rosy prospects, putting its potential as a future energy transport hub for East Africa in doubt.

Oil sector

Ten years of sustained high oil prices between 2004 and 2014, and regional successes in Uganda's 2006 onshore oil finds and Tanzania's offshore gas discoveries, attracted an assortment of oil companies to explore for oil and gas in Kenya. The London-based and Africa-focused independent, Tullow Oil, has had the biggest impact. Tullow entered Kenya in 2010 by purchasing a 50 per cent stake in five onshore licenses wholly owned by the smaller-sized Canadian exploration company Africa Oil. Tullow went on to make a string of discoveries in Block 10BA and Block 13T, beginning with the estimated 300 million-barrel Ngamia oilfield. While other companies have engaged in exploration work throughout much of the country, including offshore, oil finds to date have been limited to Tullow and Africa Oil's concessions in the northwestern region of Turkana County.

Since the fall in global oil prices in mid-2014, however, exploration activity in Kenya has slowed significantly. A number of companies have withdrawn from operations and relinquished their interests. Tullow has scaled-back its exploration plans, lowering active rigs from four to one and slashing operational expenses as part of a company-wide cost restructuring.[22] But the discoveries in Kenya still have potential for further development. One of the most significant changes in Kenya's oil industry in recent years was the sale by Africa Oil of a 25% interest stake in Blocks 10BB and 13T, among others in Kenya and Ethiopia, to Maersk Oil and Gas in November 2015.[23] Africa Oil made the sale from a position of weakness as the company was struggling to maintain its financial commitment to appraisal and development work. But the entry of Maersk also underlined the attractiveness of low-cost, onshore production that Kenya offered in the global oil industry.

[20] Personal communication, oil industry to East Africa, 5 March 2017.

[21] Elias Biryabarema, 'Uganda central bank warns of 'debt distress' if oil revenues delayed', 20 July 2016.

[22] Reacting to the decrease interest from oil companies, the Kenyan government put a freeze on new exploration licenses in late 2015; Stephan Mudiari, 'Sharp drop in crude prices busts Kenya's oil sector boom', 6 October 2015.

[23] The International Finance Corporation (IFC) also made a $50 million equity subscription with Africa Oil in 2015.