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Why Uganda needs natural gas pipeline from Tanzanian coast

In May this year, Uganda and Tanzania's presidents signed the East African Crude Oil Pipeline Agreement (EAOP) for oil export from Hoima through the Port of Tanga in Tanzania.

Subsequent to the May agreement, last week on August 5, 2017 the two presidents launched the construction of the 1,445km electrically-heated pipeline project estimated to cost \$3.5b (about sh12 trillion). This is a great step towards our oil development programme.

Uganda's full capacity production is projected at 230,000 barrels per day, with an estimated cost of production of \$25 per barrel. There is no doubt that the oil sector development will boost our economy.

Ugandans expect to register access to more affordable and adequate supply of petrol, diesel, kerosene, liquefied petroleum gas (LPG) and fertilisers than is the case today.

However, the world oil and gas development trends show the market all over is embracing the use of liquefied natural gas (LNG) largely for power generation. Also, LNG is turned into a gas form to be used for cooking and house heating, especially during winter. It is used for industrial production and reduces harmful atmospheric emissions. LNG remains in its liquid form and used as transportation fuel.

LNG is a natural gas largely containing methane with properties of ethane that is converted into liquid for easy storage and transportation. Depending on how it needs to be used, it is either used in gas form, where it goes through a regasification process or remains in liquid form, for example, in case of motor vehicle fuel.

Tanzania and Mozambique have registered commercial natural gas discoveries. Mozambique's is estimated at between 100-180 trillion cubic feet and Tanzania's at 57 trillion cubic feet (with 49.5% of the reserves offshore in the Indian Ocean).

Tanzania established a pipeline from the southern province of Mtwara to Dar-es-Salaam. Tanzania Petroleum Development Corporation is partnering with six international oil majors: USA's ExxonMobil, Royal Dutch Shell, Norway's Statoil, Singapore's Pavilion Energy, British's BP group (recently owned by Shell) and London-based Ophir Energy to build a \$30b LNG export terminal at Lindi Port south of the country. Tanzania is likely to commence its first LNG export in 2025.

LNG is a hydro-carbon, but classified as clean energy, is becoming very affordable and, therefore, adopted as an alternative source of energy, especially for power generation.

The fuels that provide the world with primary energy needs are: Oil-34%, coal-24%, gas-21%, nuclear-7%, hydro-2% and others like geothermal, solar, etc all combined-12%. Due to new discoveries, extensions of pipelines and terminals and registered reduced prices, LNG demand will rise more strongly than any other fossil fuel and it is projected to double between now and the year 2030.

I strongly urge the Uganda Government to consider embracing the use of LNG for future energy security and possibly adopt the same in the framework of the 2030 agenda. Uganda needs to look ahead of times and sign a long-term LNG sales and purchase agreement with Tanzania.



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The Hoima-Tanga pipeline project will be run by PIPE Co. A Special Purpose Vehicle (SPV) PIPE Co is to construct, own and operate the pipeline and also negotiate with shareholders, do project financing and transportation agreements between shippers of oil from Tanga port to the international market.

The shareholders are Uganda and Tanzania national oil companies and joint ventures partners; the Anglo-Irish Tullow Oil company, French's Total E&P and China National Offshore Oil Company (CNOOC).

Uganda needs to take advantage of the Rights-Of-Way (ROW) of the newly acquired route of a proposed Hoima-Tanga port oil pipeline to start negotiating for a parallel LNG pipeline import agreement with Tanzania. However, the designers of Hoima-Tanga pipeline of which Total E&P is in the lead, should have chosen the destination route of Dar-es-Salaam.

This route is presently expensive to take, but would have been a least-cost option in the future when establishing an LNG import parallel line. According to a feasibility study, Tanga route was deemed the cheapest at \$12.2 per barrel of transit fees, convenient flat terrain, limited infrastructure constraints and the lowest environmental challenges.

The Hoima-Dar-es-Salaam route would have incurred costs of infrastructure encumbrances, but later connect close to the Tanzania LNG pipeline of Mtwara-Dar-es-Salaam. Mtwara-Dar es Salaam pipeline will transport LNG from Tanzania's natural gas fields in Mnazi bay, Mtwara region, to Dar-es-Salaam. It would become far cheaper in the future to plan for the LNG pipeline from Dar-es-Salaam to Kampala.

If we maintain Tanga as a destination port, it will be expensive in the future to plan for LNG import pipeline. Tanga port is far north of Dar es Salaam by 334km and would mean constructing a coastal LNG pipeline from Dar to Tanga to be able to

establish an import route for Uganda. This would be very expensive in the future.

The other best option would be to have an East Africa Community (EAC) LNG development framework for member states to benefit from the same resource. Kenya had proposed a regasification plant and a 700MW gas powered plant at Dongo Kundu, Mombasa. A combined EAC approach would bring the development costs down.

Justification for use of LNG
Uganda's projected installed power generation capacity by year 2018 is at 3,500MW of which 84% is hydro-generated.

Hydro power will not be sustainable because of climate change. This, therefore, calls for other affordable sources of power in the future.

Uganda is registering impressive economic growth and a number of industries are coming up that are consuming a lot of power, such as steel mills. There are emerging developments like standard railway gauge electric trains that consume a lot of power.

Another case in point is the electrically-heated Hoima-Tanga oil pipeline, which will require constant power supply. This will call for alternative and affordable sources of power.

In an effort to curb pollution and largely combat climate change emissions from the transport sector, the world over is looking for options to phase out diesel and petrol cars. In a number of countries, heavy toxin tax is levied on diesel vehicles in an effort to curb emissions.

The use of LNG is rapidly increasing worldwide and the following are two good examples: United Arab Emirates (UAE) proven oil reserves is at 98 billion barrels and exports more than 40% of its crude oil to Japan. UAE relies on gas to meet half of its electricity needs.

About two billion cubic feet of gas imported from Qatar is sent through the 364km undersea pipeline per day under the Dolphin Energy venture, with 51% owned by Abu Dhabi's Mubadala Investment.

The recent Gulf member states cut off ties with Qatar, but UAE cut off air, sea and land links, but only kept the flow of LNG. Qatar supplies Emirates's LNG that generates half of its power.

According to Poten and Partners, energy commercial consultants, "Saudi Arabia is developing plans to invest in foreign liquefaction plants as it looks to LNG imports to meet rising domestic gas demand. Through its national oil company, Saudi Aramco, it will consider taking an equity stake in a liquefaction project, delivering its LNG volumes to Saudi Arabia, predominantly for use in power generation to displace oil".

According to Poten, estimates of Saudi Arabia's gas needs, it could see the Gulf state importing up to 12 million metric tonnes per year, becoming the Middle East's biggest LNG importer.

Beginning to negotiate for LNG long term sales and purchase agreements and a parallel pipeline early in time will save Uganda more resources than having it in many years to come. I applaud the launch of the Hoima-Tanga oil pipeline as a milestone for our oil sector development.

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