

in 2019, an atmospheric level of CO_2 that has not existed since at least three million years ago. The Intergovernmental Panel on Climate Change (IPCC) is warning¹ that a further increase of the world's temperature by more than another 0.6° C, a consequence of CO_2 levels exceeding 450 ppm, would have far-ranging catastrophic consequences on humanity, including food security and livability of cities.²

Section 8.22 of the ESIA is titled "Climate" and sub-section 8.22.2 of the ESIA is titled "Project Greenhouse Gas Emissions." This Section of the ESIA confines its assessment to only the operational emissions of CO_2 and reaches the following conclusion (on page 8-370).

"The following are the key conclusions related to the EACOP project's impact on climate:

"• Direct operational emissions in Uganda once the bulk heaters begin operation will range between 11–18 ktCO2e/a, which represents around 0.014–0.029% of Uganda's total GHG emissions in 2030: the contribution of EACOP to national emissions is therefore low and will not affect Uganda's ability to meet its emission reduction target published as part of the UNFCCC's Paris Agreement."

The claim that the project's emissions would be 11-18 kilotons of CO₂-equivalents per year ktCO2e/a) is grossly inaccurate as these emissions do not include indirect emissions, which (as stated on page 8-368) are "end use of the products derived from the crude oil." As stated in the ESIA, the purpose of the EACOP project is to transport 216,000 barrels per day of crude oil from the Lake Albert area so that the crude oil can be refined into transportation fuels that are used to power internal combustion engines, adding to the global atmospheric burden of CO₂ levels.

Table 8.22-1 of the ESIA states that EACOP crude blend E1 has a fuel density 868 kilograms per cubic meter (kg/m3), resulting in CO₂eq emissions of 3.14 kg/kg of fuel. End use of the products derived from the crude oil (combustion of transportation fuels derived from EACOP crude blend E1) *must be at least this high*. One barrel of EACOP crude blend E1 has a volume of 0.16 cubic meters (m³) and the purpose of the pipeline is to transport 216000 barrels per day, equivalent to 78.8 million barrels per year, 12.6 million m³ per year, 10,900 million kilograms per year, or 10.9 million metric tons per year. If combusting 1 ton of EACOP crude blend E1 results in 3.14 tons of CO₂eq emissions, then indirect emissions of the EACOP project would be at least 34.3 million metric tons of CO₂eq emissions per year – 2000 times higher than the operational CO₂eq emissions assessed in Section 8.22 of the ESIA

¹ Masson-Delmotte, V. (Ed.). (2018). Global Warming of 1.5 OC: An IPCC Special Report on the Impacts of Global Warming of 1.5° C Above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. World Meteorological Organization.

² The authors of the ESIA seem cognizant of these facts, stating on page 8-634: "The global climate has undergone unprecedented change28 and continuing change is predicted by climate scientists. Uganda's climate has changed and further change is predicted. • Uganda is vulnerable to increased climate variability and climate change. For example, the severity and frequency of extreme events such as droughts and floods is projected to increase. • Global anthropogenic GHG emissions, with other anthropogenic drivers, are extremely likely to have been the dominant cause of the observed warming of the global climate since the mid-20th century.

The Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) has published estimates of the social cost of CO_2 emissions to allow agencies to incorporate the social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions. In the methods adopted by IWG, the social cost of carbon is defined as:

"[T]he monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change."³

It is clear that from 2025 to 2029, indirect emissions of the EACOP project will be at least 34.3 MtCO₂eq per year. Applying the most recent Central Value (3% discount rate) and converting 2007 dollars to 2018 dollars,⁴ then estimates of the social cost of CO₂ emissions of the EACOP project would be as follows:

For the years 2025-2029 inclusive:

• **\$9.62 billion** ($46/tCO_2$ eq x 34.2 million tCO₂eq/year x 5 years x 1.22)

Conclusion and recommendation:

Therefore, indirect CO_2 emissions of the EACOP project would *have immense environmental*, *social, economic, and* moral *dimensions*. To this extent, approval of the current ESIA report for the project without scrutiny of the consequences of its indirect CO_2 emissions should be set aside as irrational. I recommend NEMA to reject the EACOP ESIA report and as such, no certificate of approval should be issued.

1. The Economic Impact Assessment is Wrong and Fails to Discuss Substantial Risks

Section 8-11 is titled Economy and presents an assessment of the possible impacts of the EACOP project on the economy. In this section, only the benefits of the project are presented.

During the construction of the EACOP project, page 8-164 of the project states:

"The total direct, indirect and induced economic impact of EACOP's Capex on the Ugandan economy amounts to an estimated USD 224 million (UGX 839.8 billion) per annum for the three-year construction period, equivalent to 0.9% of 2015 Gross Domestic Product (GDP)."

During the operation of the EACOP project, page 8-166 of the project states:

"The total direct, indirect and induced economic effect of EACOP Opex on the Ugandan economy amounts to an estimated USD 54 million (UGX 203 billion) per annum for the duration of pipeline operation, equivalent to 0.2% of 2015 GDP."

³ IWG (August 2016) Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866

⁴ <u>https://www.usinflationcalculator.com/</u>

These estimates ignore risks of the EACOP project that are well-known to investors and the financial community, but have not been provided to NEMA and stakeholders in the ESIA document. In 2018, Assaye Risk, a risk management consultancy, with offices in the United Kingdom, Tanzania, and Uganda, published a risk analysis report of the EACOP project containing information that was excluded from the ESIA.⁵

To begin with, the ESIA makes no mention of the substantial debt the Government of Udanda might need to take on to fund construction of the project. The Assaye Risk report states:

"Funding concerns. Ugandan President Yoweri Museveni has promised that the EACOP will achieve all the necessary financing to achieve completion by 2020. Thus far, only Tullow Oil has committed funding for 10% of the project. The majority of funding is set to come from government debt financing which could be problematic given the ongoing deficits which Tanzania (5.3%) and Uganda (4.9%) both have. Additionally, large scale infrastructure development projects in each of the countries will compete for government finances. Consequently, some financial advisory companies involved with the EACOP, such as Standard Bank, have been sceptical of President Museveni's claims that the project will be completed by 2020.

"As part of a strategy to entice foreign companies to invest in the EACOP, Uganda and Tanzania have agreed that companies involved with the construction of the project will not be subject to Value Added Tax (VAT) or corporate income tax. Whilst it remains a possibility that rising government debts may force the Ugandan and Tanzanian governments to introduce a series of taxes against these companies, the reputational damage this would cause with investors makes this unlikely."

Page 8-164 of the ESIA reveals that the capital construction costs of the EACOP project is USD \$3.5 billion. The possibility that the Government of Uganda would borrow heavily to finance construction of the EACOP entails substantial consequences and risks that that are not accounted for in the ESIA. First of all, the EACOP project might never earn a profit, a fact admitted in the ESIA. Page 8-164 of the EISA states:

"This government income stream from taxes has not been quantified in the assessment. As an equity partner, the government will derive income from its equity share of the tariff and profits from pipeline operation (*or incur losses if the pipeline is not profitable*). The income cannot be estimated based on the currently available information, but it is expected to be positive (i.e., profitable)."

There are several reasons why the Government of Uganda *might incur losses* from operation of the pipeline, and a main reason deals squarely with the issue of climate change. The profitability of the EACOP project depends on enough cars, trucks and other vehicles in the world continuing to exist with *internal combustion engines* in sufficient numbers to economically justify purchasing the costly waxy crude oil from the Lake Albert crude oil reserve that would emerge at the end of the East African Crude Oil Pipeline. However, averting catastrophic climate impacts

⁵ Available at: <u>https://www.assayerisk.com/20180627-east-africa-crude-oil-pipeline-eacop-cone-of-plausability-analysis/</u>

requires reducing the global scale of vehicles with internal combustion engines. As the IPCC has stated in its report Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development:

"Demand-side measures are key elements of 1.5°C pathways. Lifestyle choices lowering energy demand and the land- and GHG-intensity of food consumption can further support achievement of 1.5°C pathways (high confidence). By 2030 and 2050, all end-use sectors (including building, transport, and industry) show marked energy demand reductions in modelled 1.5°C pathways, comparable and beyond those projected in 2°C pathways.

"Transport accounted for 28% of global final energy demand and 23% of global energy-related CO₂ emissions in 2014. Emissions increased by 2.5% annually between 2010 and 2015, and over the past half century the sector has witnessed faster emissions growth than any other. The transport sector is the least diversified energy end-use sector; *the sector consumed 65% of global oil final energy demand, with 92% of transport final energy demand consisting of oil products (IEA, 2017a*), suggesting major challenges for deep decarbonization.

"In road transport, incremental vehicle improvements (including engines) are relevant, especially in the short to medium term. *Hybrid electric vehicles are also instrumental to enabling the transition from internal combustion engine vehicles to electric vehicles, especially plug-in hybrid electric vehicles.* Electrification is a powerful measure to decarbonize short-distance vehicles (passenger cars and two and three wheelers) and the rail sector."

This year (in 2019) tesearchers with the School of Economics and Finance, Queensland University of Technology, published a study about how the transition from internal combustion engine vehicles to electric vehicles (especially plug-in hybrid electric vehicles) has major implications for the profitability of projects like the EACOP.⁶ The pipeline would not deliver crude oil to the market until 2022 at the earliest, considering a minimum 6-month regulatory approval period and a two-year construction schedule.⁷ In their recent study, these researchers concluded:

"From the surveyed recent studies there is the view that there is already an underlying nonsubsidised price parity between EVs and ICVs which will be realised in the market place once economics of scale are achieved. *Moreover, there is an emerging consensus that EV costs will continue to fall in line with cheaper battery costs while ICVs will, if anything, increase in cost as fuel efficiency standards are raised.* Further, there is broad acceptance that the future of autonomous vehicles and car sharing will be inextricably tied to the advent of EVs.

"Thus, once consumers are given the option of substantially cheaper per km travel via SEAVs and as the concept of TaaS takes root, it is being predicted that ICVs will suffer a further substantial decline in cost competitiveness. This raised the obvious question as to whether manufacturers will choose to meet mandated higher fuel efficiency by downsizing or through

⁶ Sioshansi, F., & Webb, J. (2019). Transitioning from conventional to electric vehicles: The effect of cost and environmental drivers on peak oil demand. *Economic Analysis and Policy*, *61*, 7-15.

⁷ ESIA at page 2-70.

new fuel saving technology or simply switch to EVs. It therefore seems to be a risky assumption by oil companies that manufacturers will willingly invest to meet rising fuel economy standards for ICVs in order to sustain a major share of the automotive mix.

"For their part manufacturers will also be acutely aware the international community is increasingly unlikely to meet the COP 21 GHG emission reduction targets for holding global warming to $2 \circ C$. They will also not be unaware that, over the next several decades, the transport sector will receive far great attention as the single most cost effective way of reducing GHG emissions. That is, transitioning from IC to electric propulsion will soon be cost free as EV/ICV parity is reached. Moreover, over the longer term, consumers stand to reap an increasingly large saving given the expectation that the cost per km of EVs will continue to fall below that of ICVs. For developing countries – and in particular China and India – where the bulk of the increased vehicle population will occur, these advantages will be greatly magnified through reducing the negative quality of life and health effects of dangerously high urban pollution levels.

"In such an environment there are strong incentives for automotive manufacturers to lock in long term viability and profitability by transitioning sooner rather than later to EVs. For their part, oil companies are signalling through their upward revisions of EV market penetration that they are not unaware of how quickly the cost gap with ICVs is being closed. Equally, they will be aware that environmental drivers are likely to accelerate the EV/ICV transition given parity will make the transport sector the most cost effect means to deliver a substantive lowering of GHG emissions."

Simply put, the Government of Uganda, already saddled with substantial debt, is proposing, via the EACOP project, to borrow billions more a scheme for a product (crude oil) the world will begin to shun 5 to 10 years from now because of the necessity to reduce CO_2 emissions and because of the lower costs and environmental benefits of electric vehicles. Under this foreseeable scenario, the EACOP project generates large losses, crippling the ability of borrowers, including the Government of Uganda, to pay back their debts.

However, these are not the only financial risks of the EACOP project. The Assaye Risk report identifies two other foreseeable risks, lack of infrastructure and lack of skilled workforce. With respect to the first risk, the Assaye Risk report states:

"Infrastructure and electricity requirements. The project is likely to face delays if insufficient infrastructure surrounding the project is not constructed alongside the building of the EACOP. Tanga port requires the construction of the Handeni-Singida highway to allow for the EACOP construction materials to be transported along the planned route. Furthermore, six pumping stations and a marine storage terminal at Tanga are needed for the crude oil to be transported to international markets. The Ugandan government has announced a 21% budget increase in road infrastructure, however, significant challenges for transporting goods along the EACOP route are almost certain to persist in 2018/19.

"The EACOP requires a large input of electricity to be operationally effective. Uganda is spending USD\$2.2bn on two hydropower plants which is expected to add 783 MW of power to

the grid. Similarly, Tanzania has outlined plans to invest USD\$3.6bn (25% of the total Tanzanian budget) into the Stiegler's Gorge hydropower project. *It is possible that funding for hydropower projects could compete with funding for the EACOP, leading to further delays.* Whilst competing funding and stable sources of power are areas of concern, the greatest obstacle is likely to be expansion of the electricity distribution network. On 21 June 2018, these fears were alleviated to some extent by the World Bank's approval of a USD\$455mn loan to Tanzania for "infrastructure that will support the electrification of the southern and north-western regions of Tanzania."

With respect to the lack of a skilled workfoce, the Assaye Risk report states:

"Uganda and Tanzania will face challenges in employing local workers with sufficient construction, engineering and electrical qualifications to work on the EACOP. This will result in workers from foreign countries being brought in to work on the project. Without adequate training institutions, local communities will not benefit from EACOP employment.

"Another potential scenario is generated when the assumption for the 'Skills, employment and local community benefits' driver is changed. For this scenario, the assumption becomes "EACOP land acquisitions prove unpopular with local populations and this results in the disruption of production along the pipeline." The altered assumption generates a fourth alternative scenario:

"Local community benefits promised by both governments are not delivered across all communities. *The governments are forced to acquire land from local communities to build the EACOP which leads to the loss of employment and livelihoods for those communities. A lack of retraining opportunities for the displaced workers creates issues for agricultural workers looking to benefit from EACOP employment. This results in civil unrest amongst communities and attempts to sabotage the development and operations of the EACOP as previously seen with other pipelines, such as the Trans Mountain Pipeline in Canada and the Trans-Adriatic Pipeline (TAP) between Greece and Italy. Consequently, the respective governments are forced to increase security to prevent incursions which disrupt production on the EACOP. International Non-Governmental Organisations (INGO's) increase negative publicity on the EACOP which gives reputational damage for the companies and governments involved."*

The EACOP project ESIA report has substantial inherent economic risks that can result in substantial *environmental and social consequences for Uganda and its citizens*. Approval of the ESIA for the project without scrutiny of these risks should be set aside as irrational. We call on NEMA to reject the current EACOP ESIA report.

2. Impacts to Surface Water Have Not Been Assessed

Constructing and testing the integrity of an oil pipeline prior to its service requires substantial quantities of water. However, the ESIA reveals that Total East Africa Midstream BV *does not know where this water would come from.* Page 2-24 of the ESIA states:

"For hydrotesting, described in Section 2.4.2.2, *a hydrotest management plan will be repared that will identify water sources and discharge options* which will serve as the basis for a surface water abstraction permit application to the Uganda. Department of Water Resources Management and discharge approvals which may be acquired." Page 2-29 of the ESIA further states:

"The estimated project water requirements are:

• Construction camps – potable water 200 m3/day at maximum occupancy (up to 1000 people)

• Construction activities - 100-200 m3/day

• hydrostatic testing 16,000 m3 per test section required, see Section 2.4.4.2."

Page 8-95 of the ESIA further states: "Hydrotest Water Disposal, "Impact: Deterioration of water quality

"Disposal of the hydrotest water may impact the quality of the receiving water, depending on the waterbody receiving the discharge. Potential receiving surface locations or waterbodies will be identified in the above-noted hydrotest management plan. *Even though the impact is expected to have a transient duration and localized extent, in the absence of a defined receiving waterbody, the significance of the impact of abstraction is indeterminable.*

Unless the entire EACOP project is undermined by the lack of water available for hydrostatic testing, there was no obstacle in the way of Total East Africa Midstream BV preparing and including in the ESIA a hydrotest management plan that identifies surfaces waters from which testing waters would come from and spent testing waters would be discharged.

Conclusion and recommendation:

An ESIA should never conclude that the impact to surface waters is interminable, especially considering the substantial quantities of water needed for testing of the pipeline. Approval of the ESIA without determining the precise location and impact to surface water should be set aside as irrational.

3. Impacts of Hazardous Waste Disposal Have Not Been Assessed

Crude oil pipelines, such as the EACOP, must be cleaned of a scum that accumulates on the inside of the pipeline lest the pipeline eventually clog. Removal of the scum is achieved by a special device, called a "pig" by the oil & gas pipeline industry. This is described on page 9-4 of the ESIA as follows:

"A dedicated pipeline integrity management system will be implemented during the commissioning and operations phase. This will include regular preventative maintenance including operational pigging, intelligent pigging and inspection campaigns to monitor the status of the pipeline. Regular pigging will maintain optimal flow by removing wax deposits, and the use of intelligent pigs will provide information on the line integrity and condition of the interior pipeline wall."

Transportation pipeline pigging wastes are classified as a hazardous waste⁸ because of benzene (a known human carcinogen) in the waste that is component of crude oil.⁹

Despite the fact that pigging waste is classified as a hazardous waste, the ESIA for the EACOP acknowledges that Total East Africa Midstream BV has not identified the amount of such waste that would be generated or where it would be disposed. Page 2-64 of the ESIA states:

"2.4.5.5 Operations Waste Management

"An operational waste management plan <u>will be</u> developed which identifies waste types and volumes, and locations where these may be generated. The plan will be based on the same elements as the construction waste management described in 2.4.2.8, waste avoidance, reduction, re-use and recycling, and disposal. Expected waste types will include:

"• solid – wax deposited in the pipeline will be cleared from the pipeline by pigging operations. Most of the wax will be reinjected into the pipeline. Disposal space will be provided for residual wax not deemed suitable for reinjection. ...

"• hazardous – operational hazardous waste plans will be generated. Other than trace amounts of biocide; anti-corrosive, oxygen scavenger; and maintenance wastes, no hazardous wastes are expected from typical pipeline operations. The preferred and alternative waste management methods used will be waste specific. When these methods are not available, the waste will be stored safely while a method is developed."

Conclusion and recommendation:

It is not reasonable to claim that most of the pigging waste will be reinjected into the pipeline; such waste accumulates inside the pipeline in the first place because of its tendency to solidify within the pipeline. Even so, the residual wax not deemed suitable for reinjection would be hazardous. *Lacking specifics of where and how such pigging waste would be disposed of renders the impacts of hazardous waste generation and disposal by the project indeterminable.* Approval of the ESIA without determining the impacts of hazardous waste disposal and generation should be set aside as irrational. NEMA should reject the current ESIA report for EACOP project.

In summary, the section below presents key general weaknesses of the EACOP ESIA report and recommendations for NEMA to take action as follows:

• The ESIA raises unnecessary high expectations with respect to jobs and other economic benefits because the current ESIA report lacks key information upon which to base the conclusions that there would be jobs and other benefits to the communities. What happens when

⁸ Enbridge Pipelines (NW) Inc. Line 21 Segment Replacement Project Waste Management Plan, available at: <u>http://registry.mvlwb.ca/Documents/MV2017P0013/MV2017P0013%20-%20Enbridge%20Pipelines%20-</u> <u>%20Waste%20Management%20Plan%20V1.2%20-%20Feb%2022_18.pdf</u>

⁹ Page 9-84 of the ESIA acknowledges that benzene is a component of EACOP crude blend E1 that might contaminate surface water during a spill.

the construction phase is ended and many casual workers are laid off? This is not clearly addressed in the current ESIA report.

• The proposed technique for water and wetland crossings (open trench) has the potential of significant negative impacts, particularly in wetlands. The current ESIA report ignores this fact and to make it worse, it does not give justification or reason why the proposed technology is acceptable compared to other alternatives.

• The issue of landownership and how it will be handled is not addressed by the ESIA as the proposed mitigation measures are too vague to provide a basis for any credible decision. The ESIA does not present evidence for its conclusion that the impacts will be negligible.

• The energy/CO2 paragraphs are insufficient: most emission sources are left out, the calculations are not transparent and the outcome seems unrealistically low. In addition, the cumulative CO2 emissions of all oil development projects (Tilenga, Kingfisher, Refinery, EACOP etc.) have not been presented.

To address the above and other weaknesses of the ESIA report, we recommend that NEMA rejects the ESIA report and decline to issue a certificate of approval because to do so will destroy the environment and livelihoods, a common feature of oil in Africa. If they so wish, the developer and lead agency should go back to the drawing board to address all the weaknesses. The new ESIA report and its NTS should provide a good and easily understandable overview of the most important impacts of the EACOP project and corresponding mitigation measures. Any weakness in the ESIA should be a ground for NEMA not to approve the project especially in this error of climate change and when oil has been identified as the biggest cause of climate change.

• More so, the Tilenga and Kingfisher Feeder pipelines which are upstream developments and entirely subject to local Ugandan regulatory requirements should be done separately but alongside the EACOP so that the impacts and mitigation measures are considered collectively since many aspects such as heating, costs, financing, etc are intertwined with the EACOP project,

• The entire East African Crude Oil Pipeline (EACOP) which is a midstream development and will be subject to Ugandan and Tanzanian regulatory requirements separately should have a summary report indicating the transboundary impacts from Kabaale-Hoima Uganda to Tanga-Tanzania. Isolating the Ugandan section of 296km from that of Tanzania 1,100km is bad practice because there many things that may have happen in one country and will affect the other. Unfortunately, right now, there is no information in the Uganda ESIA report taking about impacts in Tanzania.

• We also recommend that other infrastructure such as camps, material storage yards and pipeline coating yards among others in addition to the main EACOP ESIA report, should be subjected to separate ESIAs as they were not given adequate attention in the scoping report and ToR.

Conclusion

AFIEGO takes this opportunity to call upon NEMA to reject the current EACOP ESIA report and desist from issuing a certificate of approval for the same. It is also sad that NEMA is considering the ESIA reports for the oil industry at a time when the country lacks operational Strategic Environmental Assessment Regulations (SEA) and Environmental and Social Impact Assessment (ESIA) regulations to strengthen enforcement and compliance with the 2019 National Environmental Act. The current 1998 EIA regulations provide for an EIA regime while the 2019 National Environmental Act provides for an ESIA regime and these contractions existing in the main environmental laws explain why our national forests, wetlands, forests, national parks game reserves, rivers, lakes, waterfalls and others are being destroyed. Therefore, it is dangerous to allow oil exploitation based on faulty ESIA reports and outdated and absolute EIA regulations.

Thank you.

Regards,

Kannigshy.

Dickens Kamugisha-Chief Executive Officer

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- Petroleum Authority of Uganda (PAU)
- Total and other Joint Venture Partners.