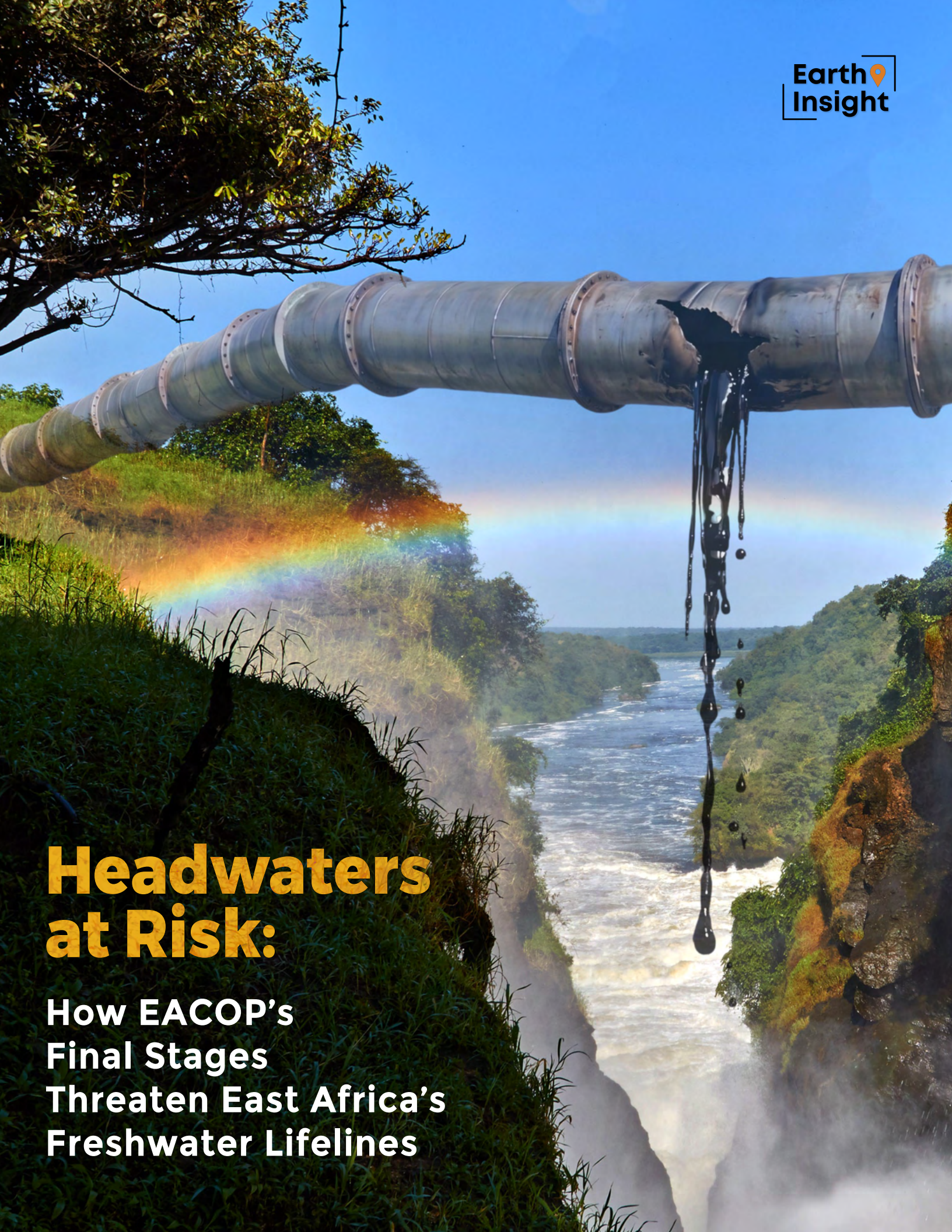

Earth Insight

Headwaters at Risk:

How EACOP's Final Stages Threaten East Africa's Freshwater Lifelines

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Contents

Murchison Falls in Uganda. Image credit: Mathias via Adobe Stock

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Cover Image: the waterfall of Murchison Falls National Park. Image credit Lennjo via Adobe Stock.

EXECUTIVE SUMMARY

The Uncertain Future

New spatial analysis reveals compounding risk and deepening uncertainty around the East Africa Crude Oil Pipeline. Threats to high-value ecosystems, coupled with long-term oil market uncertainties, the "carbon bomb" of emissions from a 1,443-km heated pipeline, and ongoing infrastructure, governance, and legal challenges, point to a project of escalating systemic risk.

The central EACOP and related pipelines cut through one of Africa's most extensive freshwater systems that connect the basins of lakes Albert and Victoria and end in mangroves on Tanzania's coast. Its trajectory could impact 158 wetlands in Uganda alone,[1] eleven rivers, 44 protected areas, and seven key biodiversity areas, along with:

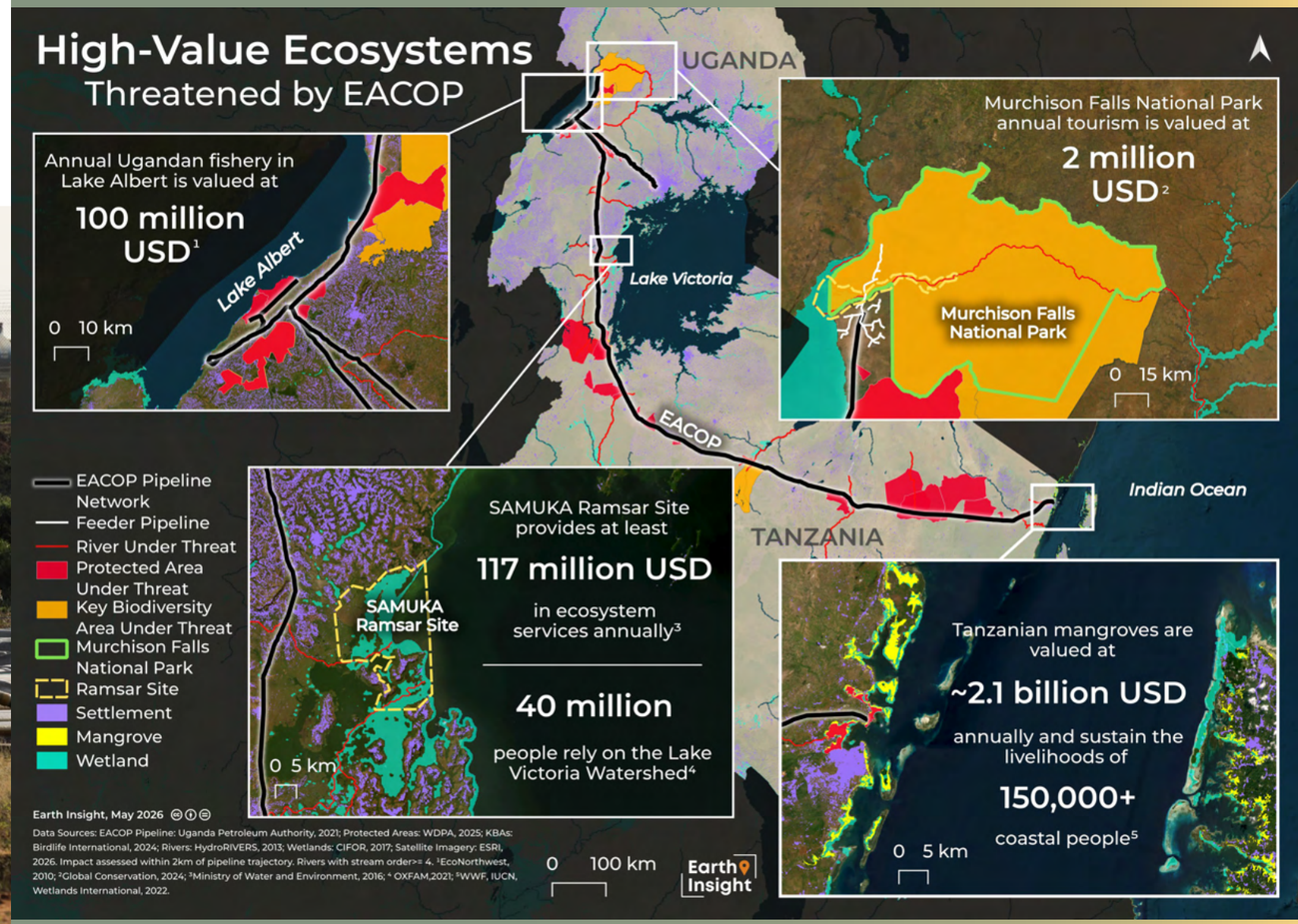
- **Uganda fisheries in Lake Albert, worth $100 million a year.**
- **Murchison Falls National Park, worth $2 million in annual tourism revenue.**
- **SAMUKA Ramsar Site (transboundary with Tanzania) worth at least $117 million in ecosystem services.**
- **Mangroves in Tanzania, worth some $2.1 billion a year in total economic value.[2]**

Construction Continues On Tilenga Oil Project's Central Processing Facility. Hajarah Nalwadda / Stringer via Getty. Rights managed.

Two Fishermen on Lake Albert, Uganda. Image credit: Mathias via Adobe Stock

New maps and spatial analysis also indicate that 100% of Lake Albert could be overlapped by oil development:

60% by Uganda production blocks and 40% by shelved DRC oil blocks. If it continues, the Kaiso Tonya Project would add an additional 47 oil wells along the lake.[3] A major oil spill on Lake Albert would threaten the livelihoods of some 100,000 households and over 20,000 fishermen in the DRC alone.[4] Lake Albert's fishing industry makes up a third of Uganda's production.[5]



Ripple Effect: Lakes of Waste Oil Sludge

Research estimates that for every barrel of oil produced, three barrels of wastewater are generated, which increases to nine barrels as oilfields age – so the risks could triple over EACOP's life cycle.[6] An independent review of the Kingfisher pipeline project noted that a waste water spill would spread faster than oil across Lake Albert.[7] Another estimated that the Kingfisher project alone will **generate 200 metric tons a year of 'waste oil sludge '-- half of which could be dumped into the lake, contaminating both Ugandan and Congolese fisheries.**[8] Since the project began, Ugandan fisherfolk have reported oil slicks and dead fish floating on the lake's surface.[9] An independent review of the Tilenga impact assessment likewise recognized the pollution risks from waste water leaks into soil and groundwater, noting **"There is no history in Uganda of successful operation of hazardous waste landfills at a standard necessary to process drilling wastes from the Tilenga Project."** [10] [11]

The project and its related pipelines begin along Lake Albert in the Kingfisher and Tilenga oil fields, which include **132**[12] **oil wells inside the iconic Murchison Falls National Park, Uganda's last lion stronghold.**[13] **This spatial analysis shows pipelines inside the habitat ranges of elephants, lions, and tree frogs.**

New data in this report also show:

- 84% of the pipeline network intersects with antelope habitat
- 22% intersects with leopard habitat
- 17% intersects with giraffe habitat
- 67% intersects with monkey habitat

A third of the pipeline runs along Lake Victoria, where it crosses a river that feeds the SAMUKA Ramsar wetlands, before heading into Tanzania's mangroves near the port of Tanga.[14] Studies show **pipelines that cross rivers are especially prone to erosion from floods, which increases the risk of oil spills.**[15] Analysis of the Kibale/Bukoora River Crossing shows overlaps with the habitats of the critically endangered black rhino, as well as endangered pangolins.

Local fisherman on lake Victoria, Uganda. Image credit: Gatis via Adobe Stock.

Transparency about the EACOP's full life-cycle impact on interconnected cultures and ecosystems over the next 30 years and beyond can prevent irreversible, long-term harm. [16]

All Pain, No Gain

The EACOP (combined in this report with the Tilenga and Kingfisher projects) is priced as a **high-risk, uncertain-return infrastructure asset.**[17] Market hesitancy has driven delays and **pushed total costs up 55% so far.**[18] [19] Most major bankers, more than 20 of the largest multinational commercial insurance companies,[20] and the four biggest reinsurance companies in the world have backed off,[21] **concentrating exposure among a narrow pool of lenders**.

Long-term risks include:

- **Low global oil demand:** Despite spikes in volatility, China's steady electric vehicle production is expected to push down oil demand. **The value of Uganda's oil could drop 34% for investors; 54% for the country.**[22]
- **Increased oil supply:** Over the long-term, new oil and gas production, (notably the "Americas quintet": the United States, Argentina, Brazil, Canada, and Guyana) is projected to drive most non-OPEC oil supply growth over the next decade,[23] which creates uncertainty for Uganda's long-term returns.[24] [25]
- **Due Diligence Gaps:** As the world's longest heated crude pipeline, EACOP **depends on uninterrupted power**[26] **to maintain pipelines at 80°C/176°F.** Yet independent technical and ESIA reviews have flagged limited transparency around flow-assurance failure scenarios. For example, the **risk of failure of the pipe heating systems, which would lead to the oil turning solid** (in the equipment, flowline, feeder lines) **was not discussed in the 4,000-page Kingfisher impact assessment.**[27]
- **Governance risks:** According to more than more than a dozen UN Chair and Special Rapporteurs on human and environmental rights, "100,000 people may be displaced due to the project, leading to escalating food insecurity, rising household debt, and an increase in school dropout rates among children."[28]

Carbon Bomb

The Climate Accountability Institute calculated that EACOP emissions for the full pipeline-to-consumer value chain could reach 379 million tonnes CO2e (MtCO2e)[29] in what has been called a "carbon bomb."[30] EACOP's annual emissions could reach 34 million tons, compared to Austria's total annual emissions of around 70 million tons. "So basically, **this project could add half an Austria to the global climate burden every year.**"[31]

- **Legal risks:** Project Affected Persons (PAPs), and Ugandan and French NGOs have filed two lawsuits against TotalEnergies, the French company leading the EACOP. A French court's ruling in March 2026 on TotalEnergy's responsibilities outside of France could help other cases, including the "Total Uganda" case launched in 2023 by 26 people directly affected by the Tilenga and EACOP projects, human rights defender Maxwell Atuhura, and five Ugandan and French organizations.[32] [33]

Unanswered Questions

Road construction work in Murchison Falls National Park. Image credit: LoneExplorer, Uganda.

A 2017 case against EACOP argued that the **pipeline's governing agreements violated regional treaty obligations,** bypassed environmental safeguards, enabled large-scale human rights harms (particularly displacement and livelihood loss), and exposed the Lake Victoria Basin to significant ecological risk as it exponentially increased the region's carbon emissions.[34] While the case was dropped on technicalities, the substantive questions remain unanswered.

By April 2026, the pipeline was 80% complete.[35] After years of delay, last year as soon **as construction began, eight of ten affected districts reported impacts that were supposed to be avoided:** destructive flash floods, water, dust and noise pollution, unauthorized dumping of excavated soils on community land, and the loss of gardens and local water sources.[36]

Activists from the Climate Reparations Bloc and Defund Climate Chaos prepare for a march as they demand: 1) stop insuring and financing fossil fuel projects 2) stop the East Africa Crude Oil Pipeline (EACOP) and stop Rosebank oilfield, 3) climate reparations for communities worldwide. Image credit: Insure Our Future via Flickr. PDM 1.0

> "Park rangers report the Tilenga project and the Victoria Nile Pipeline have triggered such drastic change that **"the long-term effect could be a park that resembles an industrial oil field with pockets of semi-domesticated wildlife, rather than a true wilderness.**[42]"

Wildlife Under Pipelines

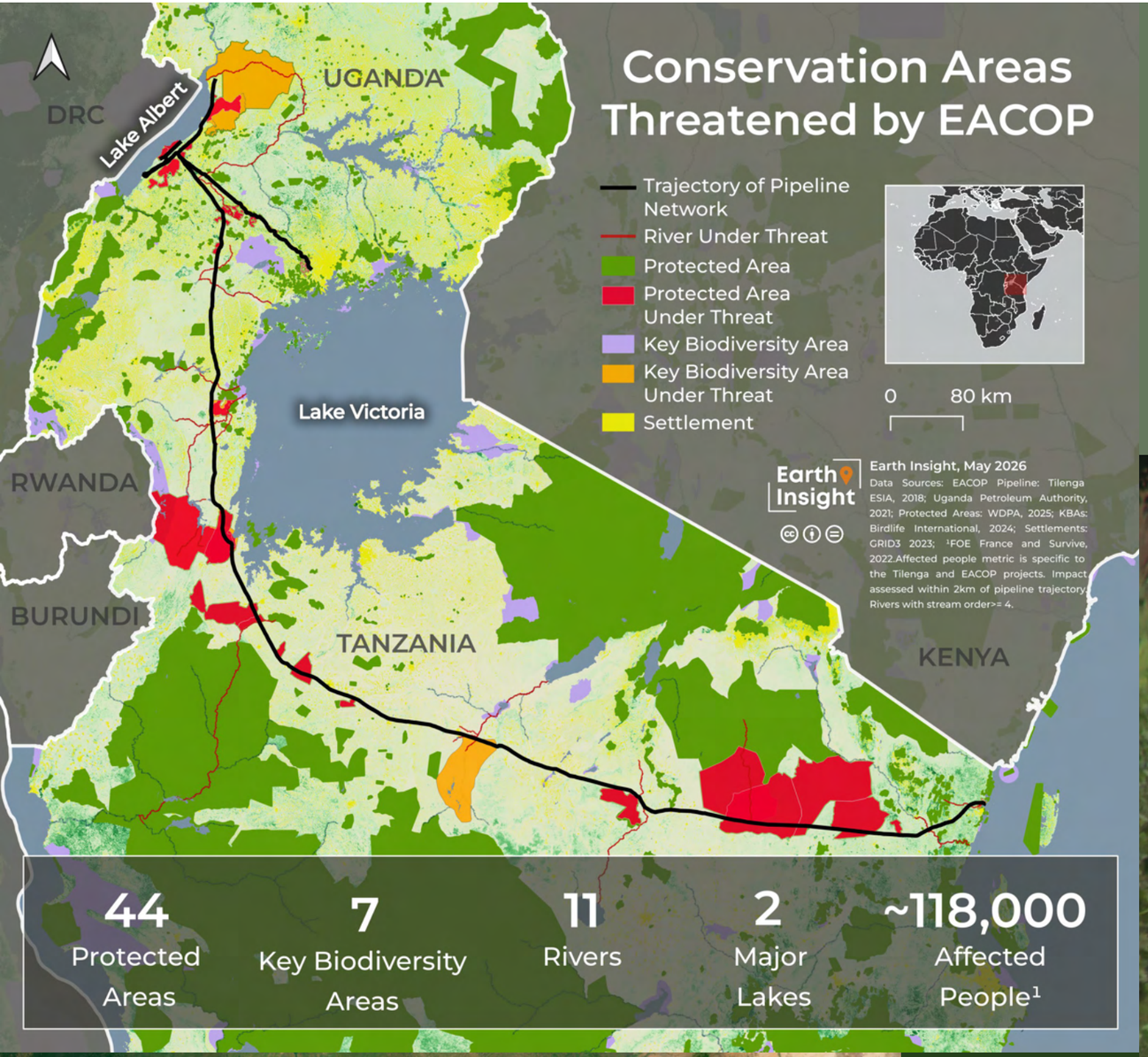
Conserving Uganda's last remaining lions is a global responsibility. The country's lions have declined by almost 40 percent in less than a decade. Only 415 of the big cats remain in the network of national parks, and in the largest park of all, Murchison Falls National Park, there are just 132 left. Image Credit: Julie Larsen Maher, FrontLines Environment Photo Contest Winner, Wildlife Conservation Society

Before white rhinos were poached to the brink of extinction in the 1980s, Murchison Falls National Park (MFNP) was known as the world's top tourism site to see the so-called "Big Five" game species: lions, leopards, elephants, buffalos and rhinos."[37] Now the park is **considered Uganda's "last lion stronghold**."[38]

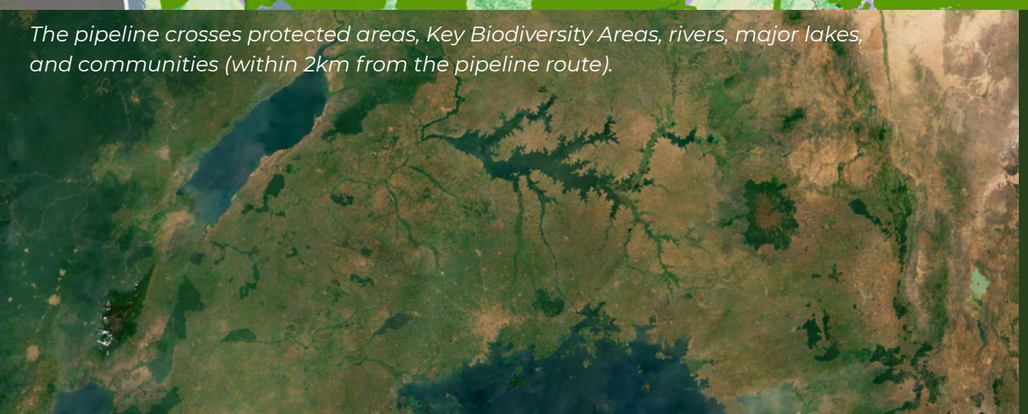
The country's oldest and largest park, the MFNP is still the habitat of more than 500 bird and 144 mammal species, along with more than 50 species each of amphibians and reptiles.[39]

Noise pollution is driving elephants out of the park. In 2023, a petition to the Uganda Wild Authority complained of increasing conflicts with buffalo and elephants fleeing the park.[40] A 2025 petition reported that more than 300 people were affected by elephants escaping the MFNP.[41]

Murchison falls rainbow. Image credit: Vaibhave nagori via Wikimedia Commons. CC BY-SA 4.0



The pipeline crosses protected areas, Key Biodiversity Areas, rivers, major lakes, and communities (within 2km from the pipeline route).



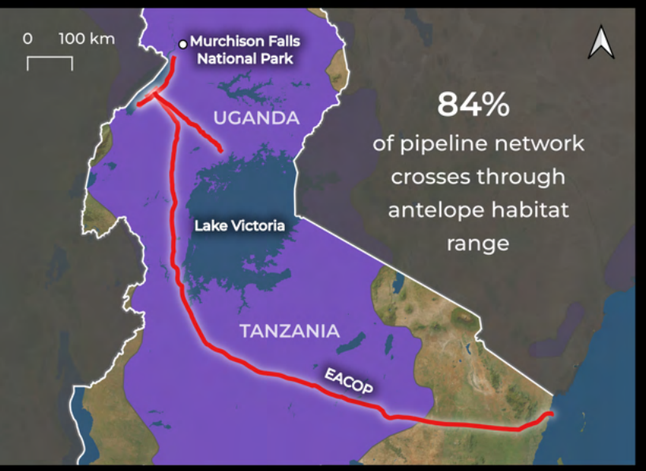
Several bodies of water are pictured including Lake Albert (upper left), Lake Victoria (bottom center), and Lakes Kwania, Kyoga, and Kojweri (center). Image credit: Imagery © 2026 Planet Labs

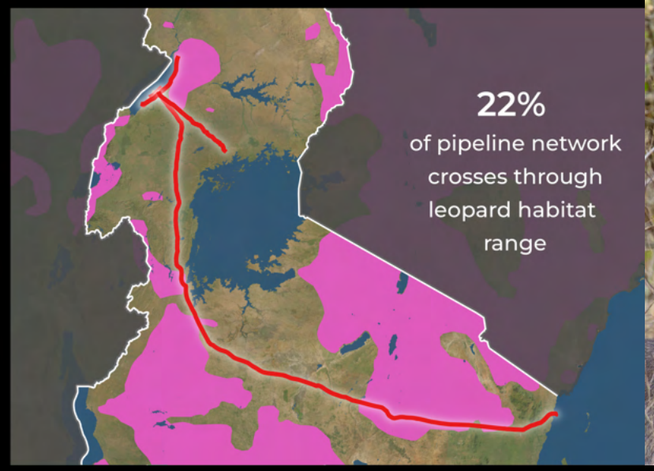
Ripple Effect: Animals Fleeing Noise

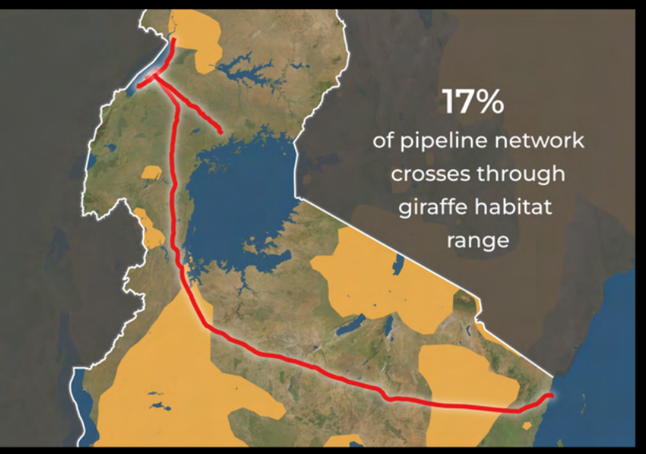
Studies show that industrial noise bothers wildlife across the food chain, from elephants and Nile crocodiles to shellfish.[43] Special nerve endings on the bottoms of their feet enable African elephants to sense distant vibrations. Research has found that ground vibrations, such as those created by oil activities, can cause them to flee their habitat.[44] Nile crocodiles feel vibrations through skin more sensitive than human finger tips, which helps them to both hunt and care for newborn hatchlings.[45] The Tilenga report on environmental impacts noted that the upcoming Operation Phase risks "increased noise generation" in Murchison Falls National Park and other "ecologically sensitive areas."[46] **Of the Tilenga project's more than 400 oil wells, over 132 will be drilled in the park.**

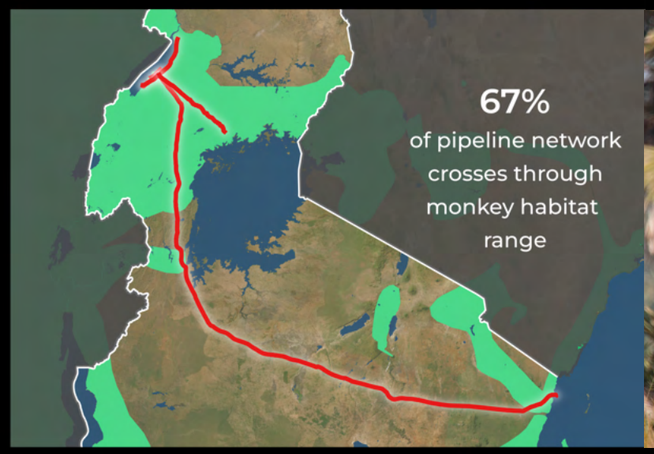
Baboons and a road construction truck in Murchison Falls National Park in Uganda; roads in the park were paved, raising concerns including loss of habitat for arboreal wildlife as well as increased road accidents and increased air and noise pollution, which could impact baboons and other wildlife in the park. Image credit: LoneExplorer, Uganda.

Wildlife Threatened by EACOP Construction









EACOP Pipeline Network
Antelope Habitat *(Genus: Ourebia)*
Leopard Habitat *(Genus: Panthera)*
Giraffe Habitat *(Genus: Giraffa)*
Monkey Habitat *(Genus: Cercopithecus)*

Earth Insight

Earth Insight, May 2026

Data Sources: Pipeline Network: Uganda Petroleum Authority, 2025; Species Ranges: IUCN, 2025; Satellite Imagery: ESRI, 2026.

These maps illustrate the overlap between the EACOP pipeline network and the habitat ranges of selected wildlife species across Uganda and Tanzania.

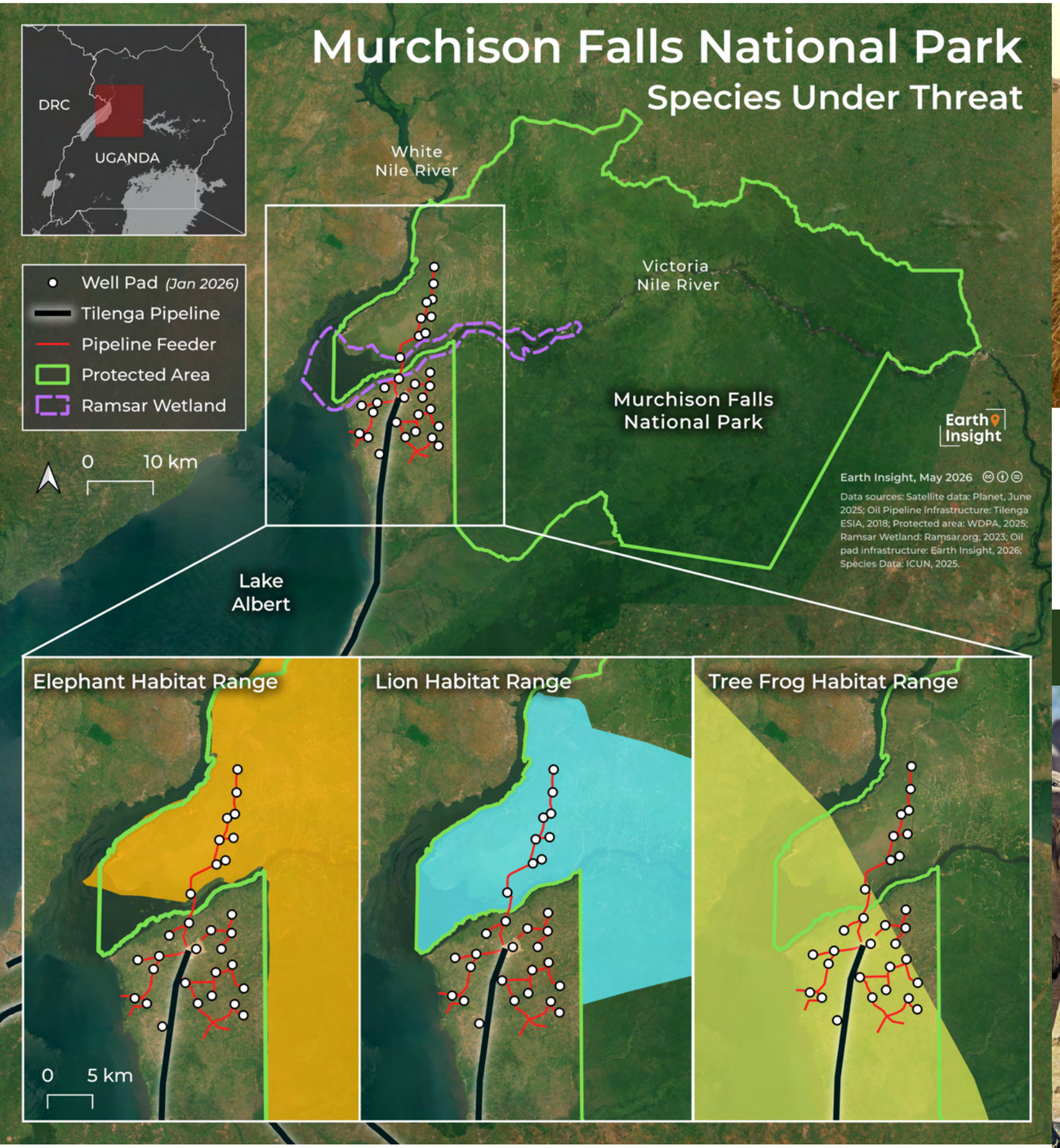
Top left: Common Waterbuck (Kobus e. ellipsiprymnus) - male Arusha National Park, Tanzania, East Africa. Image credit: Allan Hopkins via Flickr. CC BY-NC-ND 2.0

Top right: Leopard in the tree in Tanzania. IMage credit: Erwin via Adobe Stock

Bottom left: Reticulated giraffes, Murchison Falls National Park, Uganda. Image credit: Maciej via Flickr. CC BY-SA 2.0

Bottom right: Vervet Monkey in Kruger NP. Image credit: Wegmann via Wikimedia Commons. CC BY-SA 3.0

A lake in Uganda. Image credit: Nina R via Flickr. CC BY 2.0



This map shows oil and gas infrastructure of the Tilenga pipeline project within and next to Murchison Falls National Park. Overlap between this infrastructure and species habitat ranges are depicted in inset maps.

Lion pride in Uganda. Image credit: Anne via Adobe Stock

Congo tree frog. Image credit: Nick Hobgood viaWikimedia commons. CC BY-SA 3.0

In the Murchison Falls-Albert delta wetland system, the River Nile flows from the crest of the mighty Murchison Falls to the delta at Lake Albert, a critical spawning and breeding ground for both Uganda's and the DRC's fisheries. **This spatial analysis shows pipelines inside habitat ranges of elephants, lions, and tree frogs in and around Murchison Falls National Park.** It clearly shows a high concentration of oil infrastructure within this nationally protected area and Ramsar wetlands of global importance.

Ripple Effect: Collapse of Ancient Migration Corridors

Local groups on the ground report elephant migration is at risk: "An ancient migration route linking Murchison Falls to South Sudan and the Congo Basin is being consumed by commercial farms, oil infrastructure and the absence of legal protection – and **the consequences could be irreversible.**"[47]

Herd of Elephants. Image credit: Benh LIEU SONG / Benh LIEU SONG via Wikimedia Commons. CC BY-SA 2.0

The Stakes at River Crossings

The EACOP crosses headwater rivers, lakes and wetland systems that can be compared to an extended biological corridor. An oil spill in a large inter-connected wetlands system could result in decades-long damage for wildlife and humans alike. For example, **research on oil spills in rivers found that even after ten years, freshwater turtles still had higher mortality rates and smaller bodies**."[48]

According to the EACOP's revised environmental impact assessment, river crossings were supposed to be "adapted for ecological value," including critical habitats and social use, such as community water, wetland resources, and fishing.[49]

Murchison Falls National Park is home to one of Uganda's densest concentrations of hippopotamuses. Found primarily along the Victoria Nile River and around the Lake Albert Delta. Image credit: LoneExplorer, Uganda.

The Tilenga pipeline impact assessment expected **flooding to the regions around the Victoria and Nile Ferry Crossing during all phases of the project.** An independent study of the EACOP project noted that "crossing of the wetlands remains one of the most critical activities in the construction of the pipeline."[50] Pipelines can disrupt wetlands resilience through sediment that interrupts the water's natural flow.[51]

Ripple Effect: Gender-based Violence

Since construction began, communities report safety concerns about an influx of outsiders, such as soldiers and workers. In one illustrative case, a woman in a village near the Kingfisher project recounted, "They either take your fish or rape you [so] you can accept to sleep with that man but if you refuse, they take your fish. So you're [forced to] choose of two which one is easier for you: Remaining with your fish or giving 'service' to the soldier."[52]

A member of the local community looks towards an oil drilling rig at well pad 3 in the Kingfisher Development Area (KFDA) in Kikuube, Uganda, on Tuesday, Oct. 24, 2023. The $4 billion EACOP infrastructure will transport 16,000 barrels of oil a day from Western Uganda to Tanzania's Tanga port on the Indian Ocean coast. Image credit: Luke Dray/Bloomberg via Getty Images. Rights managed.

The Victoria Nile River Pipeline Crossing

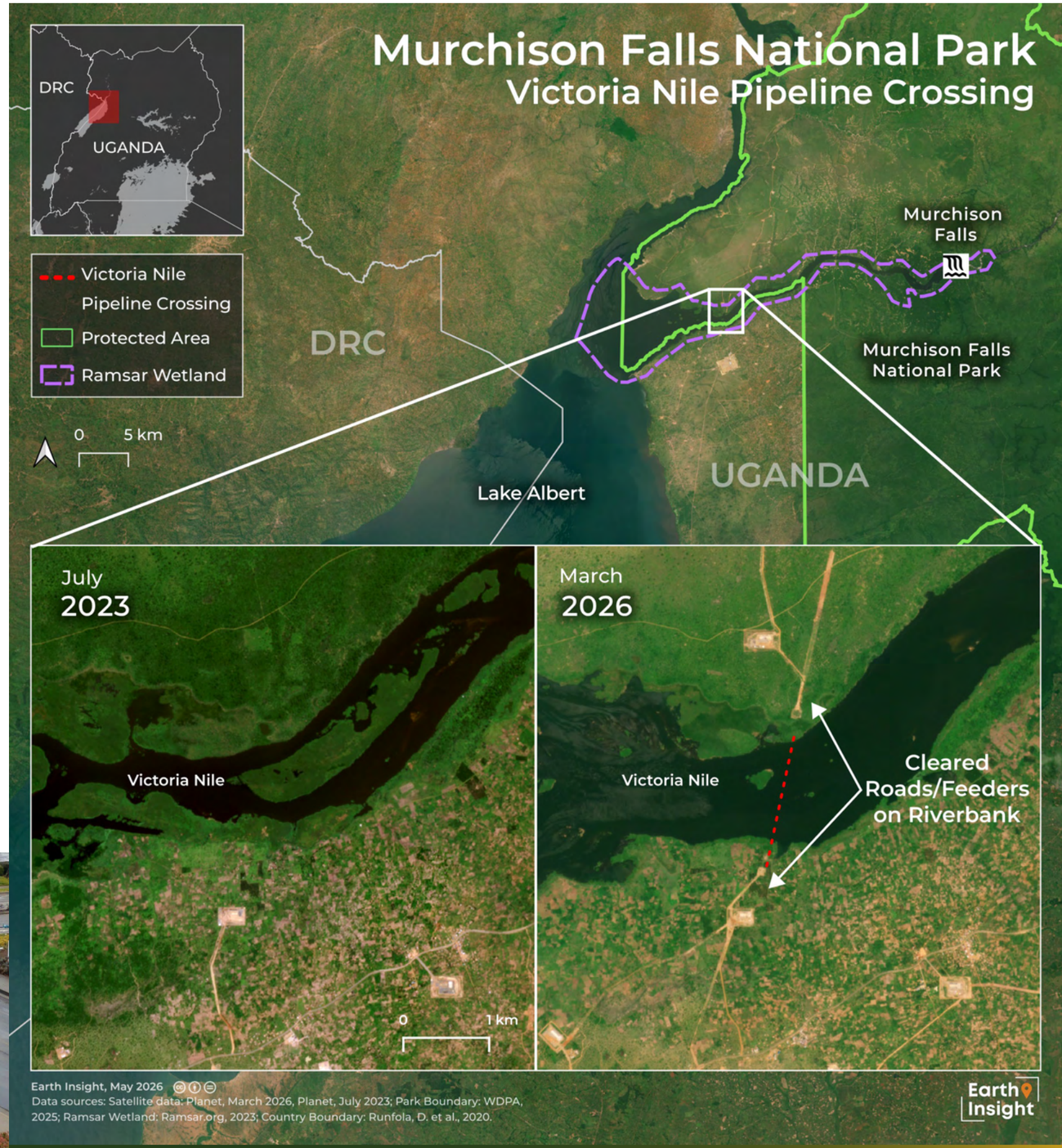
A pipeline across the Victoria Nile in the MFNP, known as the Victoria Nile Pipeline Crossing, will transport oil across wetlands to a processing facility in Buliisa district.

Early morning river ferry crossing over the Nile in Murchison Falls National Park in Uganda, the site of 132 oil wells. Image credit: Dennis Wegewijs via Adobe Stock

Of particular concern are **plans to use a type of drilling known as Horizontal Directional Drilling**, or HDD, which multiple studies have confirmed poses high risks to wetlands.[53] [54] Documented HDD failures in Canada and the US have caused breaches that led to severe losses of fish and aquatic life. In the US, HDD pipelines were **associated with the largest, most expensive inland oil spill in US history.** [55]

The Tilenga environmental and social impact report listed HDD drilling and barge movements as "key noise and vibration" activities in the Victoria Nile Crossing during construction and later project phases, **which could mean another 25-30 years of wildlife disturbances from noise pollution.**[56]

Horizontal directional drilling rig. Image credit: Doug Letterman via Flickr. CC BY 2.0



The two satellite images compare land-use conditions at the crossing points between July 2023 and March 2026. The 2025 inset map highlights newly cleared roads and feeder paths along the riverbank, showing recent infrastructure development associated with the pipeline crossing.

The Kibale/Bukoora River Pipeline Crossing

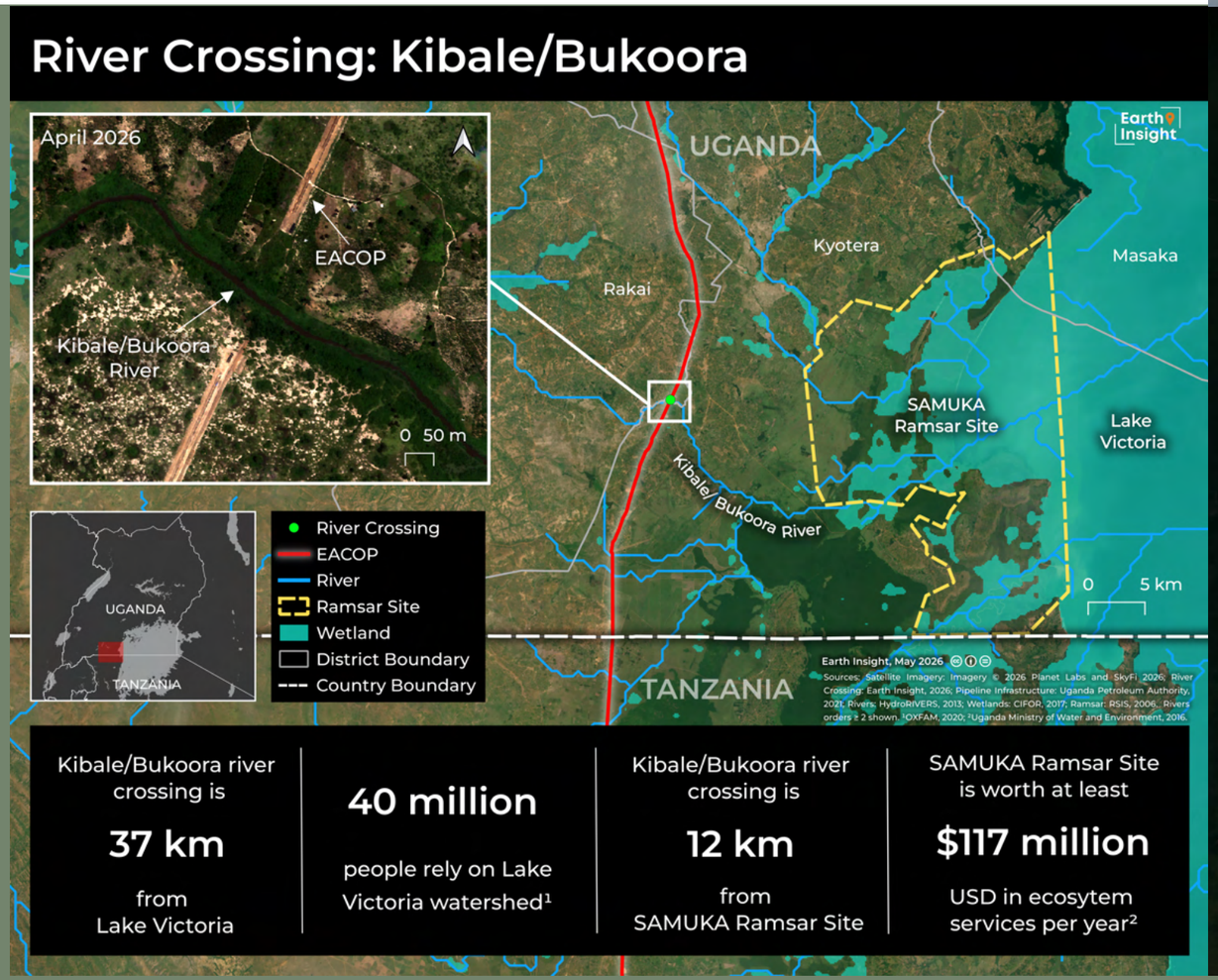
In Uganda, the EACOP is expected to cross at least 158 wetland sections.[57] One of the most noteworthy is the Kibale/Bukoora system in southern Uganda. **This analysis shows overlaps with the habitats of the critically endangered black rhino and endangered pangolins.** An estimated 80 plant species are found nearby in the Kanywabarogo wetland in Hoima, along with Colobus and vervet monkeys, and such iconic birds as the endangered Grey Crowned Crane and papyrus gonolek.

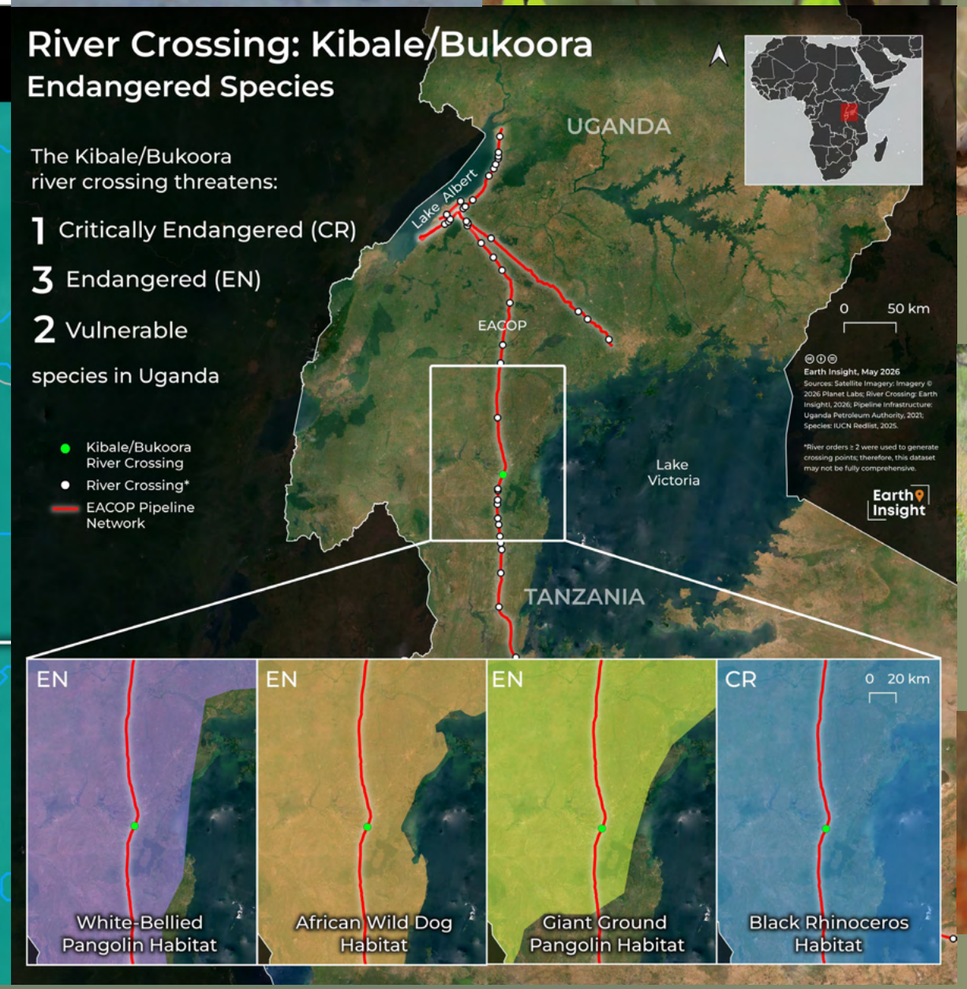
The pipeline also poses a threat to the **SAMUKA Ramsar site, a mosaic of wetlands that serve as a major East African flyway stopover and wintering zone.** Its papyrus wetlands, floodplains, shallow water margins and wet grasslands are vitally important to both European migratory birds and local livelihoods.[58] [59]

Curlew in flight. The Eurasian curlew, also called the 'courlis cendré', summers in France and winters in Uganda's SAMUKA wetlands. Image credit: Charles J. Sharpvia Flickr. CC BY-SA 4.0

A Black-headed Gonolek. Image credit: LoneExplorer, Uganda.

White-bellied Pangolin (Manis temminckii.) Image credit: U.S. Fish and Wildlife Service Headquarters via Wikimedia Commons. CC BY-SA 2.0





Black Rhino.. Image credit: Bernard DUPONT via Wikimedia commons. CC BY-SA 2.0

African wild dog (Lycaon pictus pictus). Image credit: Charles J. Sharp via Wikimedia Commons. CC BY-SA 4.0

Ripple Effect: Sudden Loss

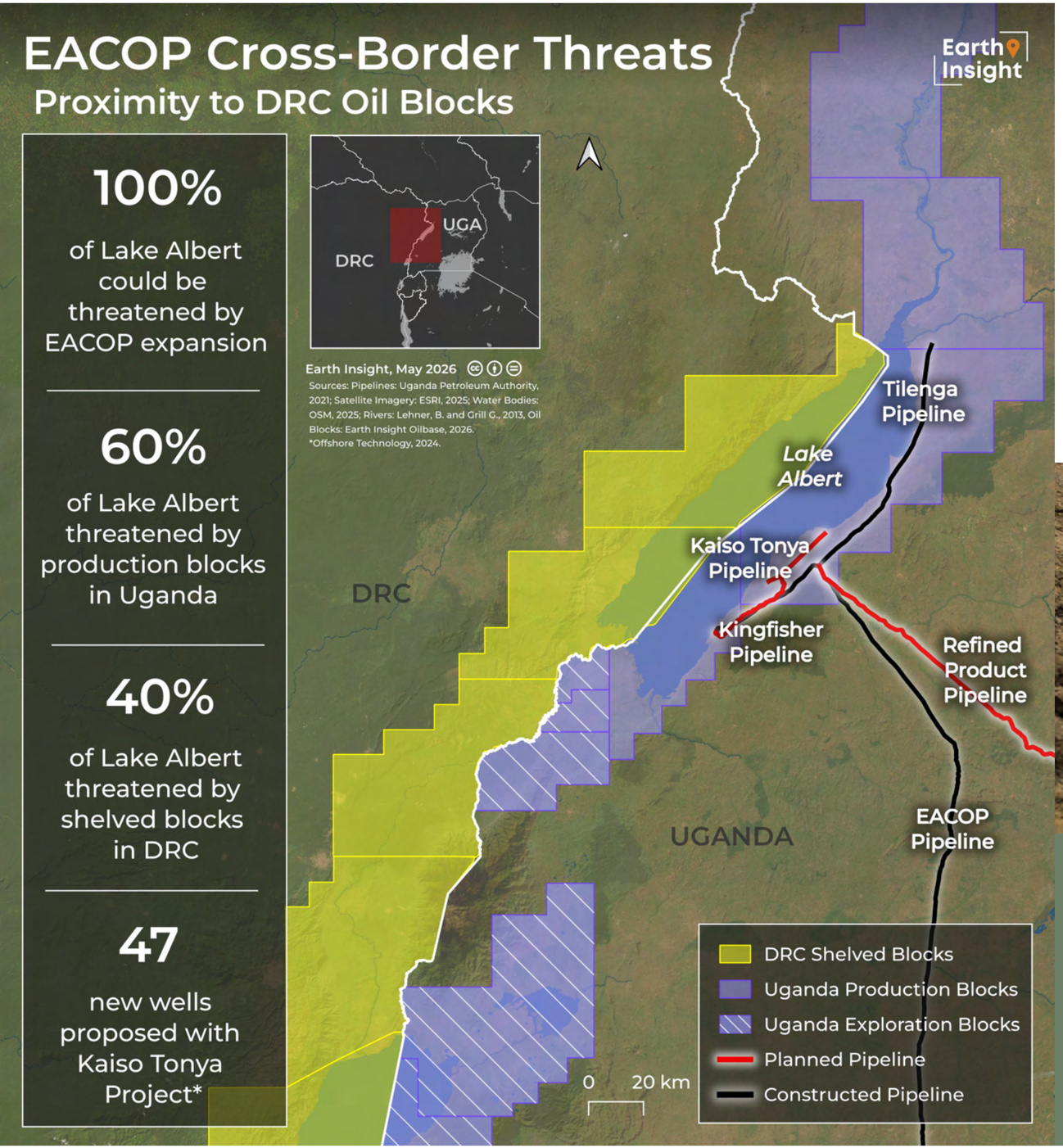
Oil pipeline infrastructure bisects two major chimpanzee strongholds: the Bugoma and Wambabya forest reserves. A 2025 lender-commissioned Environmental and Social Due Diligence report identified "the **urgent need for landscape-scale mitigation"** to protect chimpanzee habitats near the Kingfisher project.[60] Otherwise, their populations could plummet within 17km from constructed roads.[61] The reserve is currently **one of East Africa's most critical chimpanzee strongholds.**[62]

Common Chimpanzee (Pan troglodytes schwein-furtii) relaxing in a tree, Kibale Forest National Park, Rwenzori Mountains, Uganda.
Image credit: Gunter via Adobe Stock

Looking Ahead: Preventing Long-term Harm

The next phases of the EACOP will decide the long-term health of the entire Lake Victoria basin system. In particular, the river/wetland crossing window is one of the most sensitive phases of this project.[63] Research has clearly documented that pipelines risk lasting harm to wetland systems. **One study, for example, found impact eight years after pipeline construction.**[64] Another noted that "even when best management practices are used" pipeline and access road construction cause erosion and sedimentation that create water pollution.[65]

Lake Victoria fishermen go to work. Image credit: slava2271 via Adobe Stock



Lake Albert is surrounded by oil blocks and pipeline infrastructure.

Transboundary Threats:

The ecosystems of Lake Albert are surrounded by an expanding complex of oil activities that will feed into the EACOP, including the Kingfisher oil project and new wells proposed under the Kaiso Tonya project.

An independent analysis of the Kingfisher project's environmental and social impact assessment suggested it may "**significantly underestimate the residual impacts of the project.**"[66] In 2024, impacted communities in Kikuube district in Uganda sent a petition about "incessant noise and intense vibrations emanating from the nearby oil rig" which affected both humans and wildlife.[67] Drilling has expanded into the Kabwoya Wildlife Reserve, a protected area and habitat of a wide variety of animals, including leopards, chimpanzees, and more than 400 bird species.[68]

If the Kaiso Tonya project proceeds, it could connect to the (currently shelved) oil blocks in the DRC, which would drastically expand the risk of widespread, long-term harm.

While these latest spatial analyses point to impacts already being reported and observed, there is still time to avoid widespread, long-term harm. **The decisions to risk or protect such a vital, interconnected system of rivers, lakes, habitats, and communities represent a true watershed moment.**

A section of Kingfisher feeder pipeline. The Kingfisher site, operated by the China National Offshore Oil Corporation (CNOOC). TotalEnergies, a majority share owner in the project, has also faced financing issues and legal challenges by climate groups over its development of the East Africa Crude Oil Pipeline. Image credit: Hajarah Nalwadda / Stringer via Getty. Rights Managed.

Ripple Effect: Pattern of Intimidation

In 2024, **more than 70 people were arrested in a single month** in connection with opposition to the EACOP, Kingfisher and Tilenga oil projects.[69] In 2025 more than a dozen UN Chair and Special Rapporteurs on human and environmental rights described a pattern of "intimidation and harassment" to silence local opposition, noting the "the arbitrary detention, including incommunicado detention, torture, enforced disappearance, and judicial harassment of environmental human rights defenders, members of civil society, affected communities and students in Uganda."[70]

Community Opposition

These spatial analyses show the EACOP could follow **a telltale pattern of generational harm** experienced by other communities.[71] For the Ogoni people of the Niger Delta, the largest wetland in Africa, oil left their lands and water so poisoned, the UN Environmental Programme estimated it would take more than 30 years to restore it.[72] **Where their grandfathers once fished and farmed, the next generations now puncture pipelines and pirate oil for a living.**[73] [74] [75]

Last year, 50% of Waorani people of Ecuador surveyed blamed decades of oil activities for fewer fish in the rivers, poor harvests and scarce forest foods.[76] Oil exploitation **triggered a "transformation of the collective Waorani imagination"**, as ancestral skills were replaced by temporary jobs that disappeared.[77] For nearly 50 years, Indigenous peoples in Peru's northern Amazon have complained of "lagoons with oil, contaminated animals, dead fish, knowledge loss, social disorder and the mistreatment of men, women and children, among other things."[78]

Delegation from the Waorani Baihuari People, present the situation they are experiencing in the Intangible Zone of Yasuní National Park, in relation to the government policies applied in this reserve. Image credit: Asamblea Nacional del Ecuador via Flickr. CC BY-SA 2.0

Kegbara- dere community oil spill, Ogoniland, Nigeria. Image credit: Friends of the Earth International via Wikimedia Commons. CC BY-SA 2.0

Environmental activists protest in front of the Parliament of Uganda against the East African Crude Oil Pipeline (EACOP) in Kampala. Image credit: BADRU KATUMBA/AFP via Getty.

These communities can share strategies to heal their land, water and cultures. In the Niger Delta, in what one granddaughter called "Love in Action," the Federation of Ogoni Women's Association (FOWA) pushed drilling sites off their lands[79] with grassroots tactics, such as prayer meetings and dance to build community support, and songs to tell stories, remember heroes, or shame the government and oil companies.[80]

In Ecuador, Waorani communities created a digital **"map full of things that don't have a price"** for both legal evidence and to recover lost knowledge.[81]

In 2024, an Indigenous women's federation in Peru won a court case that ordered repairs to pipelines that still leak oil 50 years after operations ended. **The court also appointed the women as legal guardians of the river.**[82]

In Uganda and Tanzania, against all odds, grassroots groups keep communities and the wider world updated about EACOP impacts. Despite crackdowns on dissent, resistance is persistent and undeterred.[83] Civil society groups also created the Inclusive Green Economy-East Africa network to promote investment in "affordable, reliable, clean energy services."[84] **Across Africa, financing for fossil fuels is three times higher than for green energy.**[85]

Around the world, communities have started to use the **United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas** (UNDROP) for legal cases and campaigns. The UNDROP helped at least five legal cases for community rights. In 2022, for example, the Indonesian Peasants Union cited the UNDROP as a legal basis for food sovereignty areas across several provinces.[86] (To date, no UNDROP lawsuit has directly applied to oil activities.) However, UNDROP's recognition of community rights to make informed decisions about projects, and to equitable distribution of both risks and benefits could **inform legal and advocacy strategies** to prevent widespread, lasting damage. **Both Uganda and Tanzania have voted in favor of UNDROP.**

Recommendations

- **Halt the EACOP project** given the harm and risks to communities and nature
- Immediate assessment of **EACOP adherence to the "Agreement on the Nile River Basin Cooperative Framework**, in which nine countries agreed to "take all appropriate measures to prevent the causing of significant harm to other Basin States." [87]
- If the project continues to move forward, then given the current pathway to long-term harm, the **precautionary principle should now guide all activities**.
- Ensure compensation is **fair, timely, and sufficient to cover both land loss and long-term livelihood impacts**, alongside robust livelihood-restoration programs so affected communities can rebuild local economies.[88]
- Transparency is critical: **Independent biodiversity and community impact audits** need to be conducted immediately and publicly released.
- The Project's **true Life Cycle** needs to be independently assessed to include and address **long-term, systemic impacts** for communities and ecosystems.
- Local communities should be trained and compensated to monitor and document environmental impacts.
- Restoration and remediation measures should be implemented where documented environmental damage has occurred.
- Develop transboundary fisheries management plans for both Lake Albert and Lake Victoria.

Environmental activists protest against the East African Crude Oil Pipeline Project (EACOP) in Kampala. Image credit: BADRU KATUMBA via Getty. Rights managed.

Mikumi National Park, Tanzania. Image credit: Marc Veraart via Flickr. CC BY 2.0

Methodology

Spatial Analysis:
Note: The geospatial analyses in this report are an attempt to capture threats to communities and ecosystems using the most recently available and most accurate and precise data and methods available. All data analysis was conducted in QGIS, an open source geographic information system.

I. Pipeline Impact Analysis

Pipeline Buffer
Pipeline trajectories were sourced from the Uganda Petroleum Authority (2021). A 2 km buffer was applied to each of the five pipelines (Tilenga Feeder, Kingfisher Feeder, Kaiso Tonya Feeder, Refined Product Pipeline, and the East African Crude Oil Pipeline). This buffer distance was selected based on its use in Total's Environmental and Social Impact Assessment (TZ ESIA, 2019), where it was identified as the expected zone of impact from the pipelines.

Protected Area Data
Protected area data were obtained from the World Database on Protected Areas (UNEP-WCMC and IUCN, 2024), which categorizes sites according to primary management objectives (Dudley, 2008):
Ia – Strict Nature Reserve
Ib – Wilderness Area
II – National Park
III – National Monument or Feature
IV – Habitat/Species Management Area
V – Protected Landscape/Seascape
VI – Sustainable Use Protected Area
Not applicable / Unclassified

The protected area layer was intersected with the pipeline buffer using the Intersection function and the overlapping feature count was calculated.

Rivers
River data was obtained from the HydroRIVERS database authored by Lehner, B., Grill G. (2013). Rivers with a stream order >= 4 were selected to filter out small streams and rivers. The remaining river dataset was intersected with the pipeline buffer using the Intersection function and overlaying river features were counted and identified as at rivers at risk. The pipeline network was also intersected with rivers with a stream order >=2 to locate smaller river crossings that may still have ecological significance.

Key Biodiversity Areas
The Key Biodiversity Area was generated using the World Database of Key Biodiversity Areas data layer (BirdLife International, 2024). The dataset was intersected with the pipeline buffer using the Intersection function and the overlapping features were counted.

Wildlife Ranges
Wildlife distribution data representing the geographic ranges of selected taxa were compiled from the IUCN (International Union for Conservation of Nature) Redlist of Threatened Species. These ranges were overlaid with the pipeline trajectories using a spatial Intersection function in QGIS. The resulting intersected features were used to identify and quantify segments of the pipeline and locate river crossings that overlap with mapped wildlife habitats and distribution ranges.

II. Satellite Image Interpretation

High-resolution satellite imagery (~5 m) was obtained from the Planet Labs archive (Planet Labs PBC, 2026) and downloaded using the Planet QGIS Plugin (version 2.3.4) for image dates 2023, 2025, and 2026. Additionally, satellite imagery from SkyFi Imagery was interpreted using visual cues such as brightness, tone, shape, and texture to identify landscape changes. Well pad clearings were recognized by their square or rectangular shapes and bright surfaces indicative of recent vegetation removal. New well pad clearings were recorded as point data. Aboveground river crossing statuses were confirmed visually by either bright linear lines (pipeline) on either side of the riverbank or cutting across the rivers (darker, meandering lines). The status of 2 river crossings (Kibale/Bukoora and Kanywabarogo) were field-validated by a local partner.

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