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JUBA TRENDS
September 2022

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ABSTRACT

The Sudd, one of the largest wetland areas in the world, is faced by huge evapotranspiration rates. More than 50% of the Sudd inflow is evaporated out of the Sudd swamps land, resulting in less water availability in the downstream areas. To gain extra water in downstream, many entities have over the time proposed to dig a canal (Jonglei canal) around the Sudd area in order to save an extra 4.8 Gm3/year. The latest efforts were in 2022 where some of the selected MPs including the late minister, advocated for the dredging of the river as a permanent solution to floods in the low areas. Others in some groups saw it as a means of opening our waterways for river transportation that will ease transportation bottlenecks in the country. Regardless of the potential benefits, these views were considered short sighted and inconsiderate to the dwellers around the Sudd Wetlands. This paper shows how the purported benefits of going through with the Jonglei Canal Project do not outweigh the massive disadvantages it will have on the communities, their economies and the entire ecosystem in the wetland region.

INTRODUCTION:

South Sudanese at large and/or many politicians argued that "the dredging of the Nile tributaries and resumption of Jonglei Canal project would lessen the occurrence of flood that recurrently occur in the Sudd Wetlands (Oxford Analytica, 2022)." The flood is caused by diverse factors that might include climate change, heavy rainfall and invasive human activities (Mayen, Wood and Frazier, 2022). As long as global warming and climate change still a global concern, then flooding would never cease (Mayen, Wood and Frazier, 2022).

Nevertheless, the language of the latter sentence ought to be given a greater amount of attention. Thus, challenges associated with recurrent occurrence of flood would not necessarily solve by dredging or deepening the water ground (Laki, 1994); rather it lessens the risk of blockage and opening the inland routes or transportations (Laki, 1994).

Flooding could still occur even after river channels have been clean and dredged especially during times of high river flow (Howell, Lock and Cobb, 1988). This lifts the veil that has been placed on the political packaging that several influential politicians are selling to the general populace. A great number of citizens have been persuaded by momentarily aided leaders that the solution to the challenges of flooding would be the completion of the Jonglei Canal Project, then deepening and the dredging of the Nile tributaries (Gaduel, 2022).

Global society frequently witness severe impact of climate change and global warming. Every year, we would expect flood as long as global warming continues to prevail without application of scientific pathways ensuing to other catastrophic climatic hazards. The mechanics of flooding in South Sudan, in and around the Sudd wetlands, are very complicated (Gaduel, 2022).

The abnormally high flooding that has become more common in recent years could be traced back to a variety of factors including high levels of rainfall in South Sudan and water levels upstream in countries that are adjacent to South Sudan and a lack of river system management (Gaduel, 2022). Despite the author's unyielding position on the current debate, the author is not completely oblivious to the possible advantages that could result from the proposal in Unity State and the benefits hereinafter (Gaduel, 2022).

To begin with, there was a study that was carried out before the beginning of this Jonglei Canal Project debate. The study proposed that "the Dredging Project would improve conditions in the Naam River and Bhar El Ghazal basins, consolidate its dispersed populations, open up the intermediate pathways and 'toich' lands for more effective and rational use; and put an end to the remoteness of this part of the country" (el Moghraby & el Sammani, 1985).

The current debate about the dredging of the Nile tributaries, deepening of the tributaries of the Nile and the resumption of Jonglei canal project has brought serious concern and tension among the participants as they look forward for viable solutions (Wise, 2021). The public debate involves policy makers, academicians, environmentalists, approval authority (top leaders) and the public at large. However, wonder never ceases when the approval authority (top leaders) became an initial debater (participants) before the public consultation or Environmental Impact Assessment (EIA) in Unity state (Mayen, 2022).

Environmental Impact Assessment is a process of identifying, communicating, predicting and interpreting information on the potential impacts of proposed project on the environment and propose the mitigation methods to the likely impacts the project may have cause to the public or environment. It is, therefore, a statutory procedure performed in order to define the impacts of a

given projects. As you had seen, the EIA should be a flexible process that can involve and deal with the complexity and diversity in economic, culture and so forth.

The reason why leaders usually call for Environmental Impact Assessment (EIA) is that the project might bring huge disaster if it's not monitored or done properly. It could cause effects in different field such as economic effects, biological effects, geological effects and cultural effects (Bishoge and Mvile, 2022).

The process should also allow and involve the participation of the public which comprises of wide range of stakeholders. Therefore, public consultation through different approach and Environmental Impact Assessment are vital steps that should have been taken as to reach the conclusive decision on the dredging of the Bhar El Ghazal Basins and the dredging of the Naam River (Ninrew, 2022).

However, it should be noted that dredging and deepening of the Nile tributaries will never prevent the flood to happen either reduce the volume of the water. It could only ease the inland transportation. Perhaps it is worth mentioning that the three major concerns, put together into one package are supposed to be handled separately.

The three main concerns are dredging of the Nile tributaries (paving the pathway of the inland transportations); deepening of the tributaries of the Nile (The Naam River and Bhar El Ghazal Basins); and resumption and dredging of Jonglei Canal toward Kanal or Dolep Hill.

These are the current issues that had soared up the public perceptions in the cities of South Sudan. It is important to screen issues and critically filter, in order to determine the level of engagement and commitment of institutions. These issues should be debated and handled at the national or state government level.

Unblocking the Nile tributaries that cause uneasiness and blockage of the inland transportation in the country was not a bad idea. It is very important because the communities in the village levels will have access to the needs. Although these matters are of national importance and they need urgent solutions, it is extremely important that public consultation should begin from villages and the approval authority should sit back and engage the media to collect the data from surveys on whether the victims are really in need to dredge the Bhar El Ghazal Basins and the Naam river or not.

The victims call for urgent rescue in Unity State for example because the inland transportation in Unity State has ceased and the cattle cannot move easily. This is urgent matter in the State level because most of those villages on the shore of tributaries of Nile rely heavily on foods that is transported through the inland transportation mechanism. The residents of the villages have no roads, they have no railways and their main livelihood is cattle, faming and fishing activities (Ninrew, 2022).

When analysing potential replies to such matters, individuals should consider how much they are willing to risk their nation's dignity (elderly and children), sanctuary and the people. "Water Management in wetlands has often been oriented towards the needs of people such as transportation, agriculture, fishing activities, flood control and settlement. The people come first, followed by their needs.

Their needs are foods and materials that can be delivered through the inlands transportations mechanisms, fishing activities, cattle herding, farming and other associated important things that they wanted in the wetland territories or region. Unity State for example has been hardly hit by floodwaters that won't drain despite the dry season. This affects more than 305,000 people in the state. The Children and elderly people are vulnerable to flood-related risks including malnutrition, diarrhea and cholera (Otieno, 2022).

People describe being unable to rely on customary coping mechanisms and revenue-generating activities, which worsening the widespread collapse of livelihoods. Since 2020, flooding has prevented people from accessing their farms thus, crop production was impeded seriously. It equally forced the affected population to concentrate in the highlands and sometime beyond South Sudan borders (Otieno, 2022). Therefore, Flooding makes it extremely impossible for people to live, farm, fish and move freely in Unity States and it is difficult for them to survive (Otieno, 2022).

The Nile River is one of the longest rivers in the world and perhaps in the continent. It has many tributaries such as White Nile, Blue Nile, Atbara, Sobat or swamp channels that connect the main river body with its swamps and tributaries. The author had noticed that communities may have negative perception about the involvement of Egyptians' contractor in the process of dredging and clearing the pathways of Naam River and Bhar El Ghazal Basins.

This is because South Sudanese are suspicious with limited trust on any project that involves Egyptian contractors (Akec, 2022). The Nile River is governed by the law. However, the law does not prevent the beneficiaries of the Nile River/ tributaries to build and conduct activities that are not harmful to the end users (Akec, 2022).

These swamp channels could be blocked if there is no mechanism used to clean and clear the pathway of the inland transportation. In the country connected with lot of tributaries/swamps, the easy route to use is the river transportation. We had seen in many places that some of communities are living in the swamp area, for instance those who live in the banks of Naam river. There are people who may have thought that Naam River is just the Nile River. Naam River is a tributary of the Nile and if it's dredged, it would not cause any huge disaster on the general ecosystem of the Sudd wetland at large (Machol, 2022).

The only meant of transportation from the communities living on the islands and banks of Naam River is through the inland transportation and if their rivers are blocked with grasses and the trees fall into pathways, then the boat cannot move and the community would die of starvation due lack of access to the markets (Machol, 2022). Therefore, dredging of the swamp channels or river Naam was and validate and logical argument that is extremely demanded (Machol, 2022).

The conclusion should likewise be left to the victims or people of the state (Machol, 2022). For example, if the Nile tributary connecting Pibor County and Akobo County (Pibor River) is impassable due to trees, logs, and grasses on the main road, the business communities cannot supply commodities to the communities surrounding those counties (Machol, 2022).

Food and materials will be blocked, and they will be unable to provide any materials or foods. If there are goodwill Samaritans who wish to aid in paving the river routes, the remedy for this blockage, for example, should come from the two counties and the approving authority should be the Parliament) and Pibor Government (Machol, 2022).

Unity State has been the only state that has been severely damaged by floodwaters that have been difficult to drain, even as the dry season begins. Approximately 305,000 persons were affected. Children are especially vulnerable to the dangers associated with flooding aftereffects such as diarrhoea and cholera, as well as starvation.

Flooding in the Western Nile is worse than in previous years, causing extensive displacement into 2022. It makes little difference how everyone, especially South Sudanese natives, feels about the dredging of Nile tributaries and the accompanying desire to deepen the Naam River (Machol, 2022).

Truthfully, it's a village and state issue. Unblocking the Nile tributaries, which causes flooding in Unity State's villages, is vital and urgent. People's inability to rely on traditional coping methods and revenue-generating activities has accelerated the disintegration of livelihoods. Flooding has prevented people from cultivating their crops, leading to a population concentration in Sudan's highlands and south.

Dr. John Garang De Mabior had once briefed hundreds of forces and the author would like to quote his statement that "if you liberate your villages/region and it's the objective that brought you to bush, stop from there and the rest of us that still targeting a biggest agenda (Sudan) will move forward."

Because of the floods, Unity State villages must find new methods to survive. South Sudanese residents depend on the Nile Basin and its water supplies. The farming and fishing industries provide food security, cash crops, and economic energy. Unlike Unity State, Jonglei did not support restarting canal dredging.

The residents of Jonglei State have had special concern when it comes to the resumption of Jonglei Canal and the subsequent dredging of its pathway toward Kanal city or Malakal. The issue of Jonglei Canal was part and partial of the key factors that influence massive enrollment of residence of jonglei into ranks of rebel against Khartoum regime left wing members pf Parliament who advocate for its completion.

Thousands have been documented to have joined the liberation movement because of regional/village threats and some of whom joined the bush because of national matters. However, the main theme of the struggle was categorized into a national threat.

The main theme of the struggle was once categorized into many categories and among these categories include national threat (Marginalization of the Southern Sudan, imposing Islamic belief and governances, and fake Unity without marriage); regional threat could include opening of Jonglei Canal and SAF disturbance in the villages or region where they rape women and little girls and the likes.

There is lot that could be said about how such a proposal was arrived at on the floor of the Parliament in the first place, or if at all it was approved by the National Legislative Assembly and Parliament. This descriptive argument delves so much into the past of the Jonglei canal to provide context for the writers' vehement objection and the proposed dredging of the Jonglei Canal. Following this, a critical analysis of the present situation in the Jonglei region was performed to assist the audience in comprehending the importance of finding a logical and scientific solution.

The author examined the flooding situation and the consequences of the aftermath. Promptly, foundation will be laid for a better understanding of the Jonglei situation. After that, a debate on the various potential solutions was engaged, based our deliberations on factors that are generally acceptable to the people of Jonglei and the country at large.

THE SUDD WETLANDS

The fact remains that Sudd Wetlands bring lot of benefits to the entire society of South Sudan and Sudan as well. It remains the most extensive freshwater ecosystems in the world, which is believed to cover somewhere in the neighbourhood of 57,000 km2 in total area. There is a considerable amount of variation in the size of the Sudd wetlands. This variation is mostly influenced by the seasons respectively (Persico, 2021). The size of the wetland expands to a maximum of 90 000 km2 during the wet season and then progressively shrinks to a maximum of approximately 42 000 km2 depending on the high seasonal flood.

In addition to the precipitation runoff from its surrounding areas, it is maintained by the flow of the White Nile which perhaps originates in Uganda's Lake Victoria (Persico, 2021). A network of channels, lagoons and inundated areas are formed as a result of the White Nile's dissipation northwards from Juba through a shallow depression. These locations could extract the nutrients from the clay soils that lie underneath the river. The vegetation/plants of the Sudd are mostly comprised of permanent wetlands, swamps, rivers, lakes and the rain flooded the grasslands and floodplain woods; all of which are significantly influenced by the patterns of flood inundation that occur constantly and seasonally (Persico, 2021). These ecosystems display high environmental gradients that are accompanied by pronounced short-term and long-term fluctuations in the production and distribution of biomass.

The Wetland is recognised all over the world for its exceptional ecological qualities, which include several mammalian species that are at risk of extinction, antelope migrations, millions of migratory birds from the Palaearctic and significant fish populations. The African elephant (Loxodonta africana), the Nile lechwe (Kobus megaceros) which is endemic to South Sudan, the Tiang migration (Damaliscus lunatus tiang), the white-eared kob migration (Kobus kob thomasi) and the buffalo (Syncerus caffer) are all notable examples of wildlife animals and the shoebill is an example of a notable bird species (Balaeniceps rex) (Persico, 2021).

Some of the migratory birds such as the Great White Pelican (Pelecanus onocrotalus), the Black Crowned Crane (Balearica pavonina), White Stork (Ciconia ciconia) and Black Tern use the Sudd Wetland as an important wintering habitat (Chlidonias niger).

It is a connection between the breeding grounds of Palearctic birds in central Europe and Asia and they enjoy wintering grounds in the South Sudan. Therefore, the Sudd Wetland is considered to be a member ground for the East-Asian/East African flyway (Persico, 2021). The Sudd and the habitats that surround it are important during the dry season for a significant number of migratory birds that fly across African countries.

The cultural and social practices of the nearly one million people who call the Sudd wetland region home are inextricably bound up with the region's ability to maintain its natural balance and ecological systems. The tribes of Nuer (Southern Liech State), Dinka (Eastern Lakes State, Dinka Bor)), the Zaref Valley (Phow Swamps territory), Lou Nuer and Jikany, Shilluk (Upper Nile State) and Anyuak (Akobo and Pochalla); all of which are Nilotic and pastoralist peoples (indigenous) to the Nile Valley and they are the predominant cultural affinities in the Sudd Wetland (Persico, 2021).

These communities have developed traditions that have enabled them to adapt to the inundated and seasonally variable conditions across the Sudd by employing a combination of nomadic agro-pastoralism, collection of non-timber forest products and the fishing. These activities are all carried out in the Sudd Wetland. The seasonal construction of villages on small islands in flooded

areas is one example of a specific practice. Other practices include the use of traditional hunting and fishing methods (Persico, 2021).

The socioeconomic conditions and cultural traditions of the tribes that live along the Sudd Wetlands are sustained by the hydrological processes and patterns of the river. In addition, the cultural groups that make their homes in the Sudd Wetland region continue to uphold beliefs, Norms and customs that serve to protect and preserve the natural environment in which they find themselves. For instance, the communities that lives in the Sudd Wetland region and other non-human animal is an important part of the preservation of the Nile lechwe (an antelope species that is endemic to South Sudan) (Persico, 2021).

The Shilluk live in the environment which considered all types of animals without endangering them and therefore, it is very important to note that some people in that region can live in close distance with animals. Some communities considered the killing of animal species to be taboo, which of course helps in their conservation and sustainable use (WCS, 2017).

It is therefore important to support many of the cultural practises of the communities that live in the Sudd Wetland; knowing that any harmful practice will bring huge disaster to the species and the communities as they are closely intertwined with the natural elements and preserving them also creates and maintains an awareness of the past and traditional knowledge in the general public. This is why it is valuable to support many of the cultural practices of the communities that live in the Sudd Wetland (Persico, 2021). The Sudd Weland is not only the largest tropical wetland in the globe, but it is the largest wetland in all of Africa. It is a large social-ecological and hydrological system that is controlled by the dynamic water regime of the Nile basins. This social-ecological and hydrological system provides support for a wide array of flora and fauna as well as distinct cultural traditions practised by its indigenous tribes (Persico, 2021).

It is easy to see why the author, along with the vast majority of people living in South Sudan, has the opinion that it is unpatriotic and outright irresponsible to advocate for the completion of the Jonglei Canal and the consequent associated practice related to the deepening of the main White Nile River. This is because the entire kingdom of Shilluk, the greater community of Apadang, the Nuer and the facilities of the Oil and Gas will be washed away. This perhaps will endanger the end users of the water because if the oil and Gas facilities are destroyed and washed away by floodwater forces, then chemical will mix up with water and flow toward the Northward directions.

HISTORY OF THE JONGLEI CANAL

Back in 1904, a British Engineer in Cairo had the initial idea for what would later become the Jonglei Canal Project. On the premise that this quantity of water was being lost to evaporation in the Sudd wetland. The objective of the project at the time was to raise the amount of Nile water that was going up northward to Sudan and Egypt from the tributaries and the Nile basins by 4 to 10 billion cubic metres per year (Howell, Lock & Cobb, 1988). The construction of a canal, which was later given the name Jonglei Canal, was planned to be how the water that was lost to evaporation was to be recovered. This canal, which would divert significant amounts of water coming from Lake Victoria, would then flow with high speed and high forces through Jonglei Canal channel into a junction located a few kilometres of Malakal (10 KM north of Kanal City).

This junction is where the Sobat River joins up with the White Nile before continuing its flow northwards through Sudan and Egypt (el Moghraby, 1982). Local inhabitant argued that it will wash away the Kanal City, Dolep Hill, Tubegi and washed away the Malakal town and the South East of Dolep hill (Mohmed Jaak forest). The concept of the Jonglei project has been reworked and improved upon by succeeding Anglo-Egyptian colonial administrations as well as by post-colonial governments in both Sudan and Egypt; with the goals of reducing flooding in certain regions of Sudan and minimising the negative impacts the project was certain to have on the ecology of the Sudd Wetland. Both of these goals were important considerations but not supported by the local residents (Howell, Lock & Cobb, 1988).

The commissioning of the final design took place in 1974 and the beginning of implementation took place in 1977. It was required that the construction of a canal that was 340 kilometres long should start in the town of Bor. This Jonglei canal was built to connect Bahr Jebel to the White Nile with Sobat River a few kilometres of Malakal (North of Kanal City). This is the location where the Sobat River meets up with the White Nile (el Moghraby, 1982). It was estimated that Egypt and Sudan would get an additional 10 billion cubic metres of water as a result of the construction of the Jonglei Canal.

This quantity of water was to be split evenly between the two countries. It would allow Egypt to cultivate and irrigate an extra 2 million hectares of agricultural land along the Nile and as a result, it would increase food security for Egypt's rising population as well as its industrial development if the plan were properly completed (Allam, et.al, 2018). A dry excavation that is 160 miles long, 250 feet wide, and up to 25 feet deep stretches east of the Sudd and terminates at the Bucketwheel, a 2,300-ton laser-guided excavating machine that is as tall as a five-story skyscraper.

This Machines was one of the types of machines that is very rare to get. A French construction company transported the machine to the site in 1978 and over six years, its twelve enormous spinning buckets methodically excavated the canal (Allam, et.al, 2018). By 1984, they had dug out two-thirds of the canal that they had envisioned. Then, the operators were seized by rebel separatists who were focused on defending the Sudd Wetland and turning the remote southern area of Sudan into the new state of South Sudan. This immediately brought an end to the work that was being done (Allam, et.al, 2018).

The insurgents believed that Egypt was stealing water from the region by building the Jonglei canal, which would deprive the nomadic Dinka, Nuer, Anuak and Shilluk people of the Sudd Wetland and the vast seasonally flooded meadows that are necessary for their livestock. After that, there was a civil war that lasted for another 22 years and it was eventually won by the rebels. However, since South Sudan achieved its independence, several of the new country's officials have had a change of heart and now want to finish building the Jonglei canal. They no longer view the Sudd Wetland as an ecological benefit; rather, they view it as a threat (Allam, et.al, 2018).

In more recent times, Jonglei State had faced serious challenge of floods and this flood is due to climate change or global warming. It is not only the Unity State, Upper Nile State and Jonglei that faces challenges, but the global warming is happening everywhere in the world. We noticed that many once nomadic people have shifted their habits to become more stationary, and building their permanent dwellings centres in locations that are more susceptible to the vicissitudes of the Sudd Wetland.

Because of the increased flooding caused by the climate change globally and the Nile's high flow rates in the previous year, many as 500,000 people were forced to abandon their homes, Jonglei residents were victims but opening the Jonglei Canal and dredging the entire Canal will subjects all the community into a big problem. The growing desire within the government to control the floods and utilise the water from

the Sudd Wetland for economic growth should be structured differently rather than bringing the same company that cause huge concerns in the entire region.

THE CURRENT FLOODING SITUATION

South Sudan is going through a period of extreme floods that has lasted for the past years (citation). In 2022 alone, there were 835,000 people affected by flooding. The mechanics of flooding in South Sudan, in particular in and around the Sudd wetlands, are very complex (Gaduel, 2022). The abnormally high flooding that has become more common in recent years could be traced back to a variety of factors including high intensity of rainfall in the country, high rainfall and water levels in the upstream countries that are adjacent to South Sudan and absence of river system management (Gaduel, 2022).

All of these factors have immensely contributed to the situation and in addition to other hazards of climate or global warming. However, due to the inadequate data and the presence of errors, it has not been possible to establish any definitive connections between specific elements such as rainfall and catastrophic flooding. Hundreds of thousands of people who have been forced from their homes in at least four different states of South Sudan are at an increased risk of starvation and disease because they lack access to sufficient medical treatment. An estimated 5.3 million people (including refugees and IDPs) are expected to experience severe food shortage/insecurity by the peak of the lean season (May – August 2022), which is 7 percent more than in 2021 (reference is needed here).

The level of food insecurity that the people of South Sudan are experiencing right now is the higher it has ever been in the history (Ambroso, Janz & Lee, 2019). In addition to the risks of health hazards, the flooding has had additional knock-on impacts such as forcing individuals to live in confined communal housing, which is another risk during COVID-19. It also puts South Sudan's already vulnerable education system in peril because many schools have been forced to close because they are being used as shelters for those who have been displaced (Ambroso, Janz & Lee, 2019).

Recent flooding in South Sudan shows the country's long-term climatic threats. Worst flooding in 50 years. According to a review of rainfall trends over the past six years, 2021's flooding was not the consequence of above-average rainfall, but rather a trend that began in 2018. Higher-than-normal rainfall in 2018-19, 2020, and 2021 impaired the natural environment's ability to absorb water, causing disastrous flooding in 2021. Despite growing natural catastrophe vulnerability, many communities resist disaster mitigation. Economic, social, and political barriers are often viewed as restricting, expensive, and incompatible with economic growth goals.

Mitigation may entail solutions that are technically sound but are unpopular in the political arena. In this environment, elected officials are frequently hesitant to pursue mitigation programs in a zealous manner. Mitigation and plan should involve lot of things including changing location to high altitude zones. Community commitment for instant, recognition of constraints and barriers, and the development of innovative solutions will be required to make significant progress toward the adoption of mitigation practices.

Flood-prone areas, for example, could be transformed into community-enhancing open space, wildlife and recreation attractions or hiking and physical fitness trails to benefit the entire community. The development of new awareness and education programs is required to encourage the incorporation of the lessons learned from disasters as well as the findings of social research into disaster mitigation practice. Above all, mitigation initiatives must involve the key groups that are involved in developing, adopting and implementing. It is necessary to use a multidisciplinary team approach to mitigation that is not dominated by any one special interest group; each discipline has a role and a contribution to make in order to be effective. It is more likely that effective mitigation programs will be implemented if researchers, practitioners and policymakers work together closely.

POTENTIAL NEGATIVE IMPACTS OF DREDGING THE JONGLEI CANAL

The idea of dredging to prevent severe floods is analogous to trying to cram the amount of water that can be contained by a floodplain into the amount of water that can be held by a river channel (Ayuen Dot, 2022). Because the volume of the floodplain is typically much more than the capacity of the channel. The notion becomes a significant undertaking for the engineering community and a significant shift in the natural environment.

The capacity of a river is negligible when measured against the catchment area from which it obtains its water. Dredging a river to make it flow more quickly is possible, but it will almost always result in floods that are both more severe and more widespread when the water eventually reaches the closest populated region (Ayuen Dot, 2022).

If the government isolates it from its flood plain by transforming it into a deep trench, you might be able to increase its capacity from, say 2 per cent to 4 per cent of the water that is travelling through the catchment. You will not have solved anything, but you will have created a whole host of new issues (Aruai Bol, 2022). Dredging harms biodiversity as well as the turbidity of the water and the levels of the water table. Additionally, it may be detrimental to fisheries and agricultural fields.

It can contribute to the erosion of riverbanks and results in the unanticipated loss of land, both of which can make flooding significantly more severe. These are some of the repercussions that can occur as a result of dredging rivers (Ayuen Dot, 2022). The Nilotic culture is defined by a significant emphasis on livestock and functions in such a way that it maintains a healthy balance between the consumption of natural resources and the preservation of the environment in an area that is characterised by severe ecological circumstances (Aruai Bol, 2022).

The construction and dredging of Jonglei Canal will harm both the Nilotic economy and culture and wave them off from the face of the community. As a direct result of the removal of 25 million cubic litres of water, the level of water in the Sudd will fall, which is one of the immediate effects that will occur.

It is very possible that there would be massive ecological changes as well as losses in dry season pasture and fisheries. The eastern embarkment will lower the amount of dry-season grazing that is available as well as the flow of rainwater and creeping flow. It will also restrict the occupation of permanent villages that are located close to the bank during the wet season for example, Kanal, Tubegi, Malakal, Akoka, Melut, Paanomdit, Jalhak and so forth. In addition, it is anticipated that the water level in the hydrological system will fall, which will lead to a decrease in annual inundation and in the rate at which groundwater will be recharged.

On the other hand, the water level will rise behind the Aswan Dam, which will lead to an increase in the rate at which water will evaporate (Aruai Bol, 2022). The anticipated crossing points have not been provided as of yet, even though the canal is very close to being finished. The construction of the canal has resulted in an efficient barrier being erected in the path of migrating animals and livestock that are on the lookout for water and pasture.

Animals that migrate are unable to pass through the 4-metre-deep ditch because it either forces them to race south along the rim of the ditch until they pass out from exhaustion or forces them to jump into the ditch, where they become imprisoned and are unable to climb back up the other side (Aruai Bol, 2022).

Numerous hydrologists have stated on the record that, the fundamental concept of the canal was to reduce the amount of water lost and flawed (citation). At least half of the area's precipitation is eventually supplied by evaporation from the land, according to the findings of comprehensive hydrological modelling research that was conducted and published in 2010 by Ruud van der Ent of the Delft University of Technology (Ayuen Dot, 2022). The waters that evaporate from the marsh are blown south by the winds and are what is responsible for keeping a "green belt" across the majority of the southern region of South Sudan as well as into the neighbouring countries of the Democratic Republic of Congo and Uganda. According to research, reducing the size of the Sudd Wetland could prevent rain from falling throughout the year in this region.

Additionally, greenhouse gases would be produced if the Sudd were to be dried. It is estimated that the swamp contains peat covering 6,200 square miles, which stores more than ten times the amount of carbon that would be found in an area of rainforest with the same surface area. It is estimated to retain up to 4 billion tonnes of carbon, a significant portion of which may be released if the canal is built (Ayuen Dot, 2022).

MOVING FORWARD: A DOUBLE EDGED SOLUTION SWORD

River obstruction is currently one of the most significant factors contributing to blockage of the inland transportation in Unity State. Naam River is completely blocked and the residents of the area couldnot receive food supply or move anywhere through the river (author's opinion). This is attributed to the accumulation of debris from older boats, waste material from humans and plant life that grows in the water weeds (reference). These things impede the flow of water and the easy movement of people become impossible while the blockages increase every month due to the rainy season water that bring debris all along (Ullal & Estrella, 2022).

The relocation of residents living along the riverbanks that have been encroached upon is the second project proposal that the Unity state government should look into as an alternative mechanism. They should preferably be located to high-altitude places that are not susceptible to floods if the surrounding banks are overrun. It is essential that these natural waterways should be kept clean and open the pathways for people to survive. The author had noticed that people are building homes in areas that are prone to flooding and downpours because they wish to live near the water (Ullal & Estrella, 2022).

If they are relocated, they will have no much issue as the distance will be very far and perhaps the same government in the state will build the roads that will help them to get food supply. This will not only make it safer for them but also makes room for the river to flow in its normal direction as the water level rises, which results in less damage being caused by flooding (Ullal & Estrella, 2022).

For instance, when new infrastructure is constructed, it is essential to make certain that roadways are not constructed in a way that may hinder water drainage. In addition to this, it is necessary to perform routine maintenance of the dykes. Next to the flooding that occurred in 2018, we had seen citizens contributing to build the dykes across the country. These group of young people came together to fill sandbags; however, despite the construction of dikes, the area flooded once more the following year.

In some parts, the sandbags were damaged by livestock, and in the other places, erosion caused damage to the dikes. Therefore, you need to have the ability to defend and maintain the dikes. People can learn about a wide variety of technology solutions that can make it possible; nevertheless, it is also necessary that it is economically viable.

CONCLUSIONS

This time, however, no feasibility and no Environmental Impact Assessment were conducted before Egypt's dredging machines arrived in Unity State; reviving plans to dredge rivers and possibly resume construction of the Jonglei canal, which would carry water from the enormous Sudd wetlands into the Nile. The public has not been asked to participate despite being the most important stakeholder in the wise utilization of their God-given resources and neither have environmentalists, hydrologists or geologists were involved in the process. South Sudan would be sacrificing its people and future generations for the sake of Egypt. If the dredging of rivers and canals were to be carried out by Egyptians without any feasibility, environment and social effect assessment.

The reason being diversion of water from the Sudd wetland that would have disastrous and worrying consequences in the ecology and livelihood of the pastoralists. When the canal is fully operational, the Sudd wetland in South Sudan will be completely dried out, having dried between 34% and 43% in the first phase. If the Sudd wetland dries up, the fate of the people of South Sudan will be foregone conclusion.

The loss of grazing land is one of the most devastating repercussions. Millions of herds of cattle in South Sudan rely on access to grass and water throughout the year. When the wetland disappears, there won't be nearly as much room for the animals to graze. Therefore, competition for water and pasture will increase. Young people will move with their cattle to other Wetland regions, and communal fighting will begin in the wetland zones.

The fishing industry is another that stands to lose after rivers are dredged and the canal is constructed. Many people's daily lives and survival depend on the success of the fishing industry. The Jonglei Canal will not only drive them out of business but also decrease people's access to food. Famines will become increasingly common in South Sudan as a result of reduced climate resilience caused by the elimination of fisheries in the face of changing rainfall patterns, which in turn affects rain-fed agriculture. The results on wild creatures are another impending disaster. The largest animal migration in the world occurs in the Sudd, often known as the wetlands.

When the rainy season ends, the white-eared Kob, Tiang antelopes, and gazelle will all migrate north and east from the wetlands on the eastern bank of the White Nile to Boma National Park and across the border into Ethiopia or Kenya. Needless to say, these hundreds of creatures will have nowhere to migrate when the north dries up, bringing about one of the worst environmental disasters in the world. Reduced rainfall shall be felt by all the community members in South Sudan and Sudan as well.

The evaporation from the Sudd wetland is vital to the region's rainfall. It generates the moist winds that carry rain to faraway places, even our nearest neighbours. Because of this massive disruption, not only will South Sudan suffer from a lack of rainfall but so will the countries that South Sudan. Wetlands like the Sudd store rainwater during the wet season and gently release it back into the ground during the dry seasons. Since rainfall has decreased and the marsh has dried up, springs and boreholes are no longer reliable sources of water.

This then means that the number of people affected by the already planned dredging of rivers and Jonglei Canal is not just the people who live between the Upper Nile region and Bahr el Ghazal region, but the whole of South Sudan will feel the effects of this canal along with their neighbouring countries who shall suffer from the reduced rainfall and the animals will migrating to other countries once South Sudan becomes more decertified.

Being one of the largest wetlands in Africa, the Sudd wetland supports a diversity of fragile ecosystems with a rich flora and fauna. The Sudd has huge natural resources that support agriculture, livestock, fisheries and wildlife. Avoiding the Jonglei Canal Project is one of the ways the Sudd Wetland can be salvaged.

Again, no one needs to be informed that this is a formula for conflict. Conflict over the pasture and loosing proper wetland will bring the youth from different communities closer. Tensions will arise in the areas that have received some precipitation. Discord is a result of the loss of a means of subsistence such as cattle farming or fishing. And all this for what? Environmental damage in South Sudan for what? So that Egypt extends its area under agriculture by 2 million acres. The people of South Sudan are dying and confronting each other political to enrich a country that is doing well for itself.

For those concerned about flooding that affects the Upper Nile region among others, there are so many different environmentally acceptable choices that can deal with the floods without diminishing rainfall and drying out the greatest wetland in Africa. These include the construction of dams, bridges and constructing dykes.

Not only will these steps control floods, but they will benefit the people of South Sudan and for years to come. It is thus my official stance as an environmentalist and Policy Analyst that the dredging of Jonglei Canal and likely resumption of the Canal cannot be entertained until a proper environmental and social impact assessment (EIA) has been done. And even then, should the EIA conclude that the negative repercussions of the canal surpass the stated benefits, the project should not be allowed to continue in Jonglei State.

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