The Politics of Sudd Swamp and Oil formation in South Sudan

By Fidel Mareng Makwei, Juba, South Sudan

Tuesday, 05 July 2022 (PW) -- There has been a fierce debate in recent months regarding the dredging of Naam river and resumption of digging of Jonglei Canal on social media. This has forced the government officials to acknowledge that the government of South Sudan has approved the dredging of rivers in South Sudan and resumption of Jonglei Canal project. The fierce criticism of the projects from citizens who believed they were of national significant but undertaken in the darkness angered government officials. They referred to South Sundaneses with negative views on the dredging of rivers and digging of Jonglei Canal as social media criminals.

This was a sign of frustration from those who believe the project should be implemented and public opposition appears to be a treat to their interest. However, all South Sudanese have interest in the resumption of the Jonglei, and as such, they should be entitled to present their views of the project. As concern South Sudanese, I would like also to present my view in the light of Sudd swamp and formation of oil and potential consequences of destruction of Sudd swamp on future formation of oil resources. This article will emphases impacts of digging of Jonglei Canal.

First and foremost, the literature indicates that the digging of Jonglei canal was the brainchild of former British colonial condominium ruling of Sudan and it is not the intention to review the literature on the Jonglei Canal and we know very well that it was one of the reasons of rebellion and a cause of 21 years civil war in Sudan. The Jonglei Canal was to deviate volume of waters that flow to Sudd wetland and increase the flow of water downstream to Sudan and Egypt (Allam et al.,2018). The Nile River branches into Bahr el Jebel and Bahr el Zaraf where its empty large volume of water into floodplain forming the Sudd Swamp. The intention of the Jonglei Canal was to bypassed Sudd Swamp (the largest water body in the world) by digging of canal from Mongalla and joint Nile at Malakal (Figure 1).

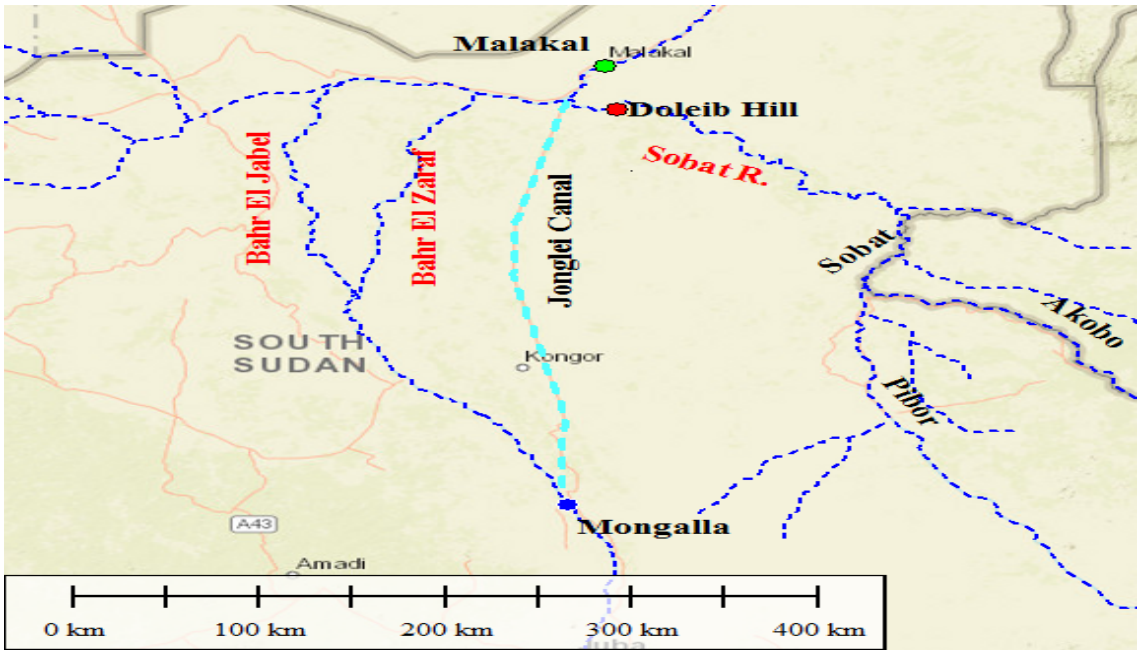

Figure 1. Map of the Sudd region showing the route of Jonglei Canal. Allam et al (2018).

Allam et al. (2018) review the advantages and disadvantages of the Jonglei. The follow are advantages and disadvantages:

A. Advantages

1. save significant amounts of water lost to evaporation and transpiration.
2. reduce the risk of flooding of the neighbouring region
3. increase the availability of grazing land
4. provide a navigation link between the three countries
5. provide an all-weather road along one bank of the canal
6. Enhance trade between the three countries and provide job opportunities for local people
7. reduce the prevalence of disease vectors
8. boost socio-economic development.

B. Disadvantages

1. negative effects on flora and fauna in the Sudd region,
2. increased conflict over pasture between tribes,
3. the canal can become a barrier between villages,
4. changing the paths of animal migrations,
5. drop in groundwater levels,
6. affecting hydrological system and reduce rainfall in the region
7. affecting water quality and sediment transportation.

Obviously, this project was designed without consideration of livelihood of people in South Sudan and it was not for the benefits of South Sundaneses. There seem to be more advantages than disadvantages, however, what matters is the severity of the consequences.

Let us look at paradox of hydrological system of Sudd Swamp. First, the impetus of Jonglei Canal was to give water to Egypt and Sudan. It is claimed that the canal would prevent loss of water in the Sudd region through evapotranspiration and therefore channelling of water through the canal to Sudan and Egypt would be a solution.

The studies also concluded that the implementation of canal will affect Nile and Sudd hydrology and reduce rainfall. That means with canal in place there will be least evapotranspiration and least rainfall in South Sudan and surrounding areas. What is not emphasis on these studies on the Jonglei canal is that evapotranspiration is inherently part of water recycle and water that is loss through these processes comes back as rain, and in real sense, it is not loss.

This water would be lost completely when it is channelled through canal to Egypt and into Mediterranean Sea. I do not have information on convectional rainfall contribution to South Sudan from Mediterranean seas. But I believe it does not exceed rainfall contribution from Sudd Swamp. The convectional rainfall from Sudd Swamp account for much of rainfall in the region of South Sudan.

Figure 2 Water recycling in the Sudd Region

By passing of Sudd Swamp will have severe consequences to the people of South Sudan than those in Sudan and Egypt. The loss of ecosystem and disappearance of biodiversity of Sudd swamp, drought induced famine due to lack of convectional rainfall and lost Sudd of wetland will have ripple effects on human population and wildlife in South Sudan and neighbouring countries. The literature indicates that Sudd swamp could shrink by up to 30% if it is bypass by Jonglei canal. Other studies indicated the swamp could only shrink by 10%.

However, the method used for estimation of these figures are only hydrological models and have significant errors of uncertainties. It is possible that the Sudd wetland could loss more than 50% of its coverage. This is possible because if you look at the Jonglei (Figure 1), it bypasses Sudd. The flow of Nile will be deviated after Mongalla. It is likely that the flow to the Sudd could be reduce by almost 50% if the design is 50/50 split of the flow. Another risk that could further reduce this flow is development in the upstream countries like Kenya, Uganda, Tanzania, Rwanda, and Burundi that will utilise the Nile water for domestic consumption like irrigation and damping.

If we look at the design of Jonglei Canal, it is passes through the countryside from Kongor through to Malakal. The studies by Allam et al. (2018) have failed to indicate potential flooding and displacement of people by flood from canal. It is in my opinion that the canal could induced flooding which it intended to solve in the first place. Therefore, canal induced flooding is likely disadvantage that should be in the list against Jonglei canal.

Although many impacts of Jonglei canal are obvious and have been present by many researchers, some impacts have subsequence subtle impacts. One of these subtle impacts is associated with the loss of Sudd wetland flora and fauna and potential consequence on formation of oil resources in South Sudan for future generations.

Petroleum is fossil fuel that result from decomposition under high temperatures and pressures of dead organisms that have been buried underground for millions of years. The high

temperatures and pressures heat up organic matter to produce liquid and gaseous hydrocarbon. Majority of gases are loss to the atmosphere and liquid hydrocarbon (petroleum) then flows to voids in the earth crust, in this case Nubian Sandstone aquifers underlying that region, to form oil deposits.

It important to note that plant materials are responsible to geological formation of two important fossil fuel, that is coal which is formed from hard woody plant materials and oil which is formed from zooplankton, algae, pollens, spores, and soft plant tissues like leaves. It is known that a lot of oil deposits are from ancient lakes or coastline. The Sudd swamp was vital for formation of petroleum deposits in South Sudan due to its abundant flora and fauna millions of years ago.

If we look at the current oil rich region in South Sudan (Figure 3), they are mainly concentrated along "toch" area around the Nile and Sudd region. This is not just coincidence, it is likely that over millions of years ago, the Sudd extended to those regions. One can postulate that the formation of petroleum oil in South Sudan is due to accumulation dead vegetations from Sudd wetland over millions of years ago. Currently, the Sudd wetland has one of the greatest biomass generations and its entire ecosystem was the source of petroleum oil that we have today in South Sudan.

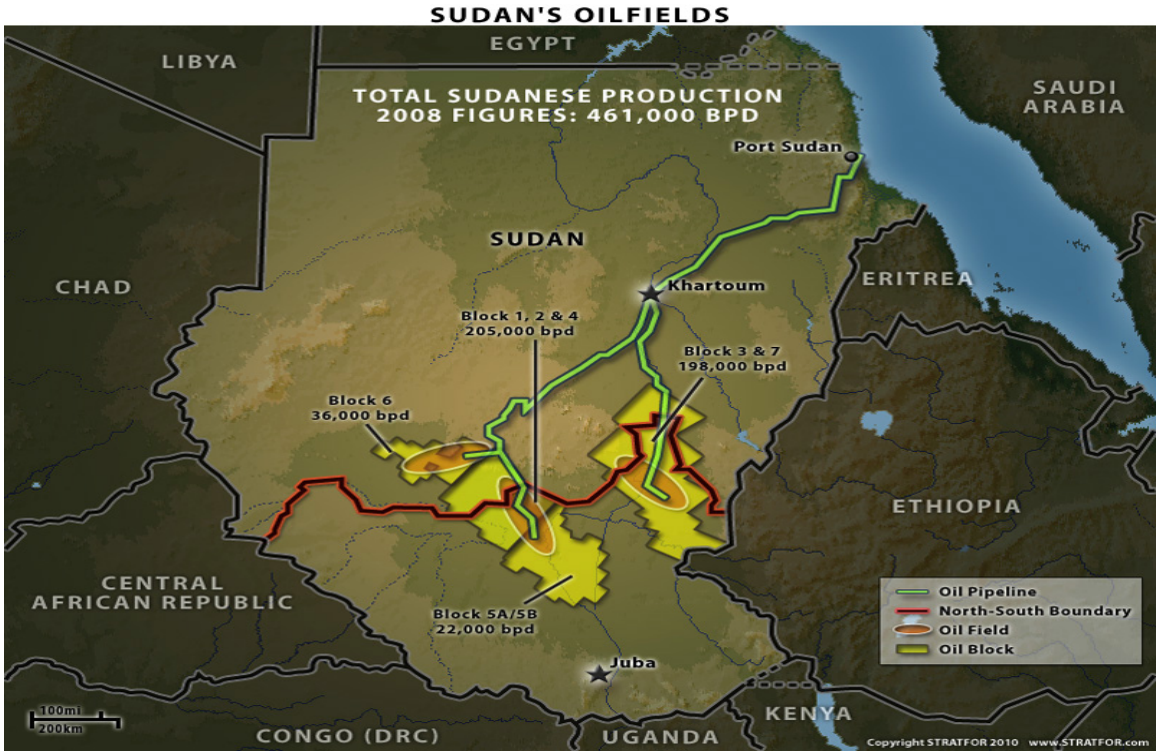

Figure 2. South Sudan oil fields (01-sudan_oilfields_800.jpg (800×697) (dehai.org)

Therefore, natural endowment of Sudd wetland to South Sudan is not a curse but a blessing. The destruction of that ecosystem means the destruction of the resources for future generations. This argument aligned with sustainability and responsibility use of natural resources. The current generation of South Sudan should use the natural resources for their benefits without destroying them so that the next generation can also use them.

The formation of oil deposit in South Sudan for the next millions of years would not benefits the current generations. But one cannot say for sure that there will be no human in South Sudan at that time to benefits from it.

Therefore, it can be concluded that:

- The evapotranspiration does not result into complete loss of water because it is hydrological process that sustain Sudd wetland and Nile (water cycle), the loss will occur when this water is drain to Mediterranean Sea.
- Sudd wetland was the source of oil resources, it is the real gift of Nile to South Sudan and the implementation of Jonglei Canal will likely result to loss of Sudd swamp and as a result, it can lead to loss of natural process responsible for oil formation in the Sudd region.
- The severity of disadvantages outweighs the benefits of this project to South Sudan.
- The canal could induce flooding which it intended to control in the first place.

It is recommended that:

- The resumption of digging of Jonglei canal be stopped and subjected to a serious study because the severity of disadvantages is far greater than advantages.
- The Sudd swamp is the national heritage and it only its kind in the world and should be heritage listed with UNESCO if it this not happened.
- The heritage listing of the Sudd Wetland will protect it from destruction. The Egypt have interest in water only not the welfare of South Sudan and Sudd wetland and the destruction of Sudd Swamp is akin to destruction of Egyptian Pyramids.
- The Sudd wetland should be protected even from national developmental projects that are deemed destructive to the ecosystem of wetland as indicated by impacts assessment.

References

Mariam M. Allam, **Hesham Bekhit**, **Alaa M. Elzawahry** and **Mohamed Nasr Allam** (2018). Jonglei Canal Project Under Potential Developments in the Upper Nile States Cairo University. https://doi.org/10.14796/JWMM.C448

The author, Fidele Mareng Makuei, is he concern citizen of South Sudan who like to share his views on the issue of Jonglei canal. He can be reached at fmareng@yahoo.co.uk