

Defusing a Time Bomb: Sand Mining in Uganda

1.0 Introduction

For thousands of years, sand has been a very important material in construction. It is known that that wet sand was fundamental in the building of Egyptian pyramids as well as the mortar Romans produced in construction of buildings, roads, bridges and harbors over two thousand years ago. Today, more than ever before, sand is not only a critical natural resource in the construction industry but a great economic asset as well. It is a \$70 billion dollar industry globally and the second most consumed natural resource besides water extracted in a range of 50 billion tonnes per year.¹

Sand is a critical ingredient of human activities and livelihoods. It is the primary raw material that modern cities are made from. The concrete used to construct shopping malls, offices, and apartment blocks, along with the asphalt we use to build roads connecting them, are largely just sand and gravel glued together. The glass in a window, windshield, and smart phone screen is made of melted-down sand. The silicon chips inside our phones and computers – alongside many other pieces of electronic equipment in in our homes are made from sand. Sand is also used in setting up coastal areas, beach nourishment and recreation, among others.

Though a substance virtually found in almost every country on earth and thus seemingly limitless, sand has different types and all are not suitable for the purposes to which it is required. Thus sea and desert sands rarely satisfy the requirements of traditional specifications for use as a construction material due to their smother and finer grains.² The more sought after gritty sand is found in sensitive ecosystems such as river beds and river banks, floodplains, lakes and wetlands. The demand for sand is so intense that around the world, riverbeds and beaches are being stripped bare, and farmlands and forests torn up to get at the precious grains.³

In Uganda, the booming construction industry couple with government's infrastructure developments means that sand is now on higher demand than ever before. This has led to the rise of large scale commercial sand mining. The Lake Victoria Basin is endowed with alluvial depositions that contain sand, which is highly sought by the construction industry. Thus 80% of all permitted sand mining projects are in Lwera Wetland in the west part of the Lake Victoria basin.⁴ Despite the economic

¹ Vince Beiser. Why the world is running out of sand. Available at <https://www.bbc.com/future/article/20191108>

² C.K Anbazhagan, Nammakkal, Tamil Nadu, "What is the reason for not using sea and desert sand for construction?" Available at <https://www.hindu.com>arti...>

³ MD Gavriletea, "Environmental Impacts of Sand Exploitation: Analysis of Sand Market". Available at <https://www.mdpi.com>pdf>

⁴ The National Environment Management Authority, "Effects of Sand Mining in Lwera, Uganda (2018). Available at nema.go>media>effects-sand...

importance of sand, its extraction is riddled with several challenges that its use and regulation ought to be critically rethought.

2.0 The Negative Impacts of Sand Mining

The extraction of sand poses a serious challenge to the environment. It massively contributes to pollution and environmental degradation. Commenting on the impacts of sand mining, Professor Podila Sankara Pitchaiah has commented thus;

“The sand mining has several impacts on the river environment. Sand mining disturbs and completely remove the habitat from the mined zones. It leads to changes in its channel form, physical habitats and food webs –the river’s ecosystem. It also increases the velocity of flow in river which destroy flow-regime eventually erodes the river banks.

- Channel widening causes swallowing of the streambed, producing braided flow or subsurface inter-gravel flow in riffle areas, hindering movement of fishes between pools.
- Riverbed becomes dry due to exposure to solar radiation decrease the surface and groundwater
- Depletion of sand in the streambed causes the deepening of rivers and estuaries, and the enlargement of river mouths and coastal inlets.
- It leads to saline water intrusion.
- Removal of vegetation and destruction of the soil profile destroys habitat above and below the ground and faunal population decrease”.⁵

Sand mining poses a challenge to people’s health. It is for example stated to be cause silicosis, a disease associated with the inhalation of silica dust.⁶ The open pits resulting from sand mining are a habitat for disease carrying vectors, such as mosquitoes which puts surrounding communities at the risk of diseases like malaria.

Sand mining also threatens the physical infrastructure. It has been stated for example that sand excavation in Lwera wetland within a distance of two hundred metres from Masaka-Mbarara High way poses a great danger to the stability of the road and may be a recipe to road accidents.⁷ In Ghana, sand miners have dug up so much ground that they have exposed the foundations of hillside buildings, which are at risk of collapse. Sand mining caused a bridge to collapse in Taiwan in 2000, and another the following year in Portugal just as a bus was passing over it, killing 70 people.

⁵ Podila Sankara Pitchaiah, “*Impact of Sand Mining on the Environment- A Review*”. SSRG International Journal of Geo informatics and Geological Science (SSRG-IJGGS) –Volume 4 Issue 1 Jan to April 2017

⁶ <https://en.m.wikipedia.org/wiki/>

⁷ The Observer, “*Sand Mining: Locals worried about floods in Lwera*”. Available at <https://observer.ug/news/.../56728-sand-mining-locals-worried-about-floods-in-lwera>

Furthermore, it is associated with increased flooding in sand mining areas. In areas surrounding Lwera Wetland for example, the local communities have faced the challenge of floods attributed to dredgers where unregulated sand miners suck sand from the middle of the wetland and leave large open pits unrestored.⁸ This destroys the integrity of the wetland to act as natural sponges in absorbing and storing excess water. In December 2017, hundreds of local community members were displaced hundreds of residents from Kamaliba, Kamuwunga and Balatira villages in Lukaya town.⁹

The open sand mining pits are habitats for invasive aquatic plants like the water hyacinth that at one time plagued Lake Victoria.¹⁰ Research suggests that its thick mat over water has the ability to lower light penetration and reduces gas exchange between the water and atmosphere above depriving the water of the oxygen required for the survival of marine life.¹¹ This becomes a threat to growth and survival of fish necessary for nutrition and generation of national revenue. Furthermore, dredging a riverbed can destroy the habitat occupied by bottom-dwelling organisms. The churned-up sediment can cloud the water, suffocating fish and blocking the sunlight that sustains underwater vegetation.

The large expanse of land required for the sand mining activities has the potential to affect the livelihoods of the communities in which such activities are conducted. Land which was originally used for grazing and cultivation is reduced to pits and ponds that are a threat to human and animal life. Save for the casual jobs of loading sand on the trucks, the surrounding communities usually have no other take no benefits.

3.0 The Legal Frame Work

In providing for petroleum and minerals, Article 244 of the Constitution of the Republic of Uganda, 1995 excludes sand.¹² However in view of the obvious socio environmental effects, the Constitution provides that natural resources must be managed in a way that meets the development and developmental needs of the present and future generations.¹³ The state is directed to take possible measures to prevent and minimize pollution and damage and destruction to land, air and water. Arguably, therefore, the Constitution prohibits extraction that may lead to negative consequences to the environment.

The National Environment Act of 2019 requires that wetlands be utilized in a manner that guarantees their continued presence and guarantees their continuous hydrological functions and services. An

⁸ Ibid.

⁹ Ibid.

¹⁰ Supra note 4.

¹¹ Ibid.

¹² Article 244(5) provides that mineral does not include clay, murram, sand or any stone commonly used for building or similar purposes.

¹³ See objective xxvii (ii) of the National Objectives and Directives principles of State Policy

environmental and social impact assessment must be carried out for all activities that are likely to have an adverse impact to wetlands.¹⁴

The Act does not define what amounts to adverse impact. It is left to lead agencies (district, authorities, government agencies, etc.) to determine if a particular activity is likely to have adverse impacts on the wetland. Section 55 of the Act prohibits certain activities in wetlands without approval. The restricted activities include; reclaiming or draining a wetland, drilling or tunneling a wetland, among others. A person who contravenes this section commits an offence and liable on conviction to a fine not exceeding thirty thousand currency points translating into Uganda shillings six hundred million shillings (600,000,000) and imprisonment not exceeding twelve years or both. This section should be enforced strictly against persons who carry out sand mining in wetlands.

Sand mining is one of the regulated activities in wetlands under schedule 6 of the National Environment Act. Under schedule 4, part 2 of the National Environment Act, a project brief must be carried out and submitted to the Lead Agency for Extraction of sand, murrum and clay of less than 2m³ per day. The kind of sand mining taking place in Lwera Wetlands has the potential to cause a significant negative impact on human health and the environment and must be subjected to a strategic environmental impact assessment.

The courts have offered guidance on protection of wetlands and associated environs. The Supreme Court in ***Godfrey Nyakaana Vs NEMA -Constitutional Appeal No. 05 of 2011***, where the appellant was challenging the destruction of his house that had been constructed in Bugolobi wetland pronounced itself as follows on the environmental principles of polluter pays and precautionary approach;

“Sustainable Development” The “Precautionary Principle” – in the context of municipal law – means:

(i) The Environmental measures – by the State Government and the statutory authorities must anticipate, prevent and attack the causes of environmental degradation.

(ii) Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

(iii) The “Onus of proof” is on the actor or the developer/industrialist to show that his action is environmentally benign.”

On “the Polluter Pays Principle”, *“The “Polluter Pays Principle” as interpreted by this Court means that the absolute liability for harm to the environment extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Remediation of the damaged environment is part of the process of “sustainable*

¹⁴ See section 54 of the National Environment Act

Development” and as such the Polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology.”

Putting such a legal position in practice would require a systematic assessment and valuation of the social economic functions and services lost due to sand mining in critical ecosystems. Then a basis would be formed to determine the nature and amount of compensation due from the polluters. The assessment must follow an ecological approach bearing in mind that nature and the environment has a right to exist and regenerate her vital cycles¹⁵. To ensure enjoyment of nature’s rights the assessment must for example consider the impact of the sand mining project on the life cycle of the affected ecology, restoration process and restoration costs of the natural environment.

4.0 Conclusion

The current drive for greater urbanization fueled by the creation of new cities implies that more construction is envisaged in the country and thus more demand for sand. In the absence of clear sand mining laws, this means that the country is likely to experience degradation levels not seen before. It is important that miners are conditioned to deposit performance bonds because this compels them to rehabilitate mined areas.

Furthermore, the increased demand for the resource is a recipe for social economic conflicts. Already, there are complaints in sand rich areas that sand is being used to benefit foreigners at the expense of Ugandan citizens.¹⁶ Without clear provisions on issues like local content for example, this discontent may turn volatile and lead to racial based violence.

Whereas, the importance of sand on the infrastructure development of this country cannot be overstated, if its extraction continues unabated without proper regulation, the country will in a short period of time suffer irreversible negative impacts of sand mining. It is also important to note that sand is not an infinite resource. There is an urgent need to think about the alternatives to sand in the construction industry.

Currently, there is research towards replacing sand with other materials, including fly ash, the material left over by coal-fired power stations, shredded plastic, and even crushed oil palm shells and rice husks. Another option is developing concrete that requires less sand, and finding effective ways to grind down and recycle concrete and change in design of building structures. Without alternatives to sand being found and adopted in construction industry, there is a greater likelihood that the present and future generations will in a short period lose the potential benefits derived from our fragile ecosystems.

¹⁵ See section 4 of the National Environment Act 2019.

¹⁶ Fulgencio Kayiso, “*Illegal Sand Mining danger to Lake Victoria basin*”. The Daily Monitor (March 6th 2018). Available at <https://www.monitor.co.ug/news>

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