



West Africa Coastal Areas
Management Program

KNOWLEDGE SHEET 7B

What can be done about West Africa’s Disappearing Sand?

As demand for sand grows, beaches are depleted and communities face aggravated erosion. Increased awareness, enforcement of illegal mining, and sand alternatives can help.



The beach in Togo. Photos: Miguel Antonio Toquica Onzaga

Sand mining is just what it sounds like, and has been the essential ingredient for the building of cities since civilization began. Workers dig quarries, or take sand from riverbeds and beaches or dredge sand from the ocean floor. The global construction industry depends on sand for concrete and glass. It is estimated that globally 50 billion tons of coastal sand is mined and extracted every year, and 30 billion of that used in concrete, according to recent global analyses. Almost every apartment tower, from Miami to Lagos, and Mumbai to Sydney, is made with sand. Along with the high demand from the booming construction industry, mining has an official and grey economy, with companies, cartels, informal workers and entrepreneurs.

- **Sand is the second most consumed natural resource** after water.
- The **traditional building** of one average-sized house **requires 200 tons of sand**; a hospital requires 3,000 tons of sand; each kilometer of highway built requires 30,000 tons of sand.
- **Demand for sand is increasing** with the construction boom in West Africa.

In West Africa, some beaches already appear to be stripped bare. Sand mining has implications from every point of view, including environmental, economic, political and social. Although it is regulated by law in much of West Africa, governments are increasingly aware that mining is often practiced illegally. None of us are fully aware of the damage done from sand extraction.

However West African coastal countries are beginning to raise a unified voice to combat coastal erosion and particularly sand mining. Governments can do more to halt the devastating effects by working with the sand

miners to find alternative sand resources and alternative source of income. Policy makers can ensure that laws and legislation is brought in that if beneficial to the local economy, community and the environment.



This photo of the Palm Hotel is iconic; the collapse of the Benin hotel in 2002 has been attributed to erosion, in part due to sandmining (BBC).

Challenges

The demand for sand is increasing across a wide range of sectors, from construction (cement, glass, and asphalt), to electronics and aeronautics. Benin’s economic capital, Cotonou, has in recent years experienced increased demand for sand from the construction sector—a trend that can be seen across West Africa. At the same time that demand has increased, governments have begun to enforce bans on sand mining, pushing sand excavation underground. Sand extraction has a number of negative impacts related to:

- Biodiversity
- Water turbidity
- Water table levels
- Storm defense
- Rising sea levels
- Landscapes
- Air pollution through carbon dioxide emissions from transportation

The theft of beach and dunes is a direct cause of erosion according to research and data collected by Coastal Care (coastalcare.org); this accelerated erosion is damaging to wildlife and biodiversity. Studies from Ghana have shown that the annual coastal erosion rates of 1.13m in Accra and 1.10m in Moree and Cape Coast are much higher than the natural coastal erosion rate, mainly as a result of coastal sand mining (Jonah and Adu-Boahen, 2016). This wreaks

havoc with fish, marine and tourism sectors as well as the safety of coastal infrastructure and the security of coastal residents. Until recently, most sand was extracted from land quarries and riverbeds. But with high demand, suppliers have started dredging for sand in coastal waters, with a tremendous environmental impact.

Many governments have taken the initial steps to ban sand mining in many countries in West Africa, yet in some areas it still takes place unabated. The lack of regulation and weak enforcement of the few laws that are in place have opened the door to illegal mining. If guiding policies are not sustainably managed and implemented in West African coastal cities and towns, the extraction of sand and its subsequent transportation can have detrimental effects not only on the environment, the population but also on the economy.

Often, one of the greatest challenges is that laws and regulations against sand mining cannot be well enforced. Although many activities are illegal there is only an emerging, nascent awareness of the situation and there are few alternatives yet proposed by civil society, academia or national governments.

The crux of this problem is that sand trading is in fact a lucrative business, not just for the big mining conglomerates, but for the informal workers and grey economies in places with abject poverty, high unemployment and no other immediate means of economic income.

Sand mining creates a range of informal jobs and local income with resultant socio-economic opportunities. Although the industry is still male dominated, there are a number of women and youth who are engaged in small business enterprises in sand and gravel mining in West Africa. The practice can be lucrative. For example, sand diggers in Benin are paid on average between US\$87 and US\$125 per truckload.

Sand mining accelerates severe coastal erosion, extensive environmental degradation and an increase in risk from the forces of the sea on coastal communities. This in turn can lead to decreased economic activity and extensive long-term costs to the national economy in the long term.

Tourism can also be affected through beach erosion. Sand is often removed from beaches to build hotels, roads and other infrastructures. In some locations, continued construction is likely to lead to an unsustainable situation and destruction of natural attractions for visitors.



A former community well now stands at the shoreline. Photos: Miguel Antonio Toquica Onzaga

Fishing — both traditional and commercial — is also negatively affected through the destruction of biodiversity, from fish stocks to the coastal vegetation that supports them. Traditional sectors related to coastal and river areas are not the only ones affected. The insurance sector is impacted through the exacerbation of extreme events such as floods, droughts and storm surges.

Potential Solutions

- In 2013, the government of Togo shut down 90% of the illegal sand quarries, justifying the closures through new environmental protections.
- In recent years, a number of policies, legislation and regulations have been passed, and countries such as Sao Tome & Principe have pushed for greater enforcement.
- Yet sand mining takes new forms as a grey economy. Sustainable alternatives to sand, such as basalt rock, can be developed.
- Since 2008, the government of Benin has been searching for alternative sand supplies, digging up sand at more than 30 places along rivers and lakes in Cotonou and the surrounding inland cities of Abomey Calavi, So-Ava, Ouidah and Seme Kpodji. They have weighed the risks of mining coastal vs. non-coastal sand and found that the latter is more manageable, with fewer risks. However, before these decisions are made, local environments should be studied to define the limits of acceptable change.
- Governments can potentially tax the extraction of aggregates (sands). Because sand is a natural resource there is little incentive to transform extraction practices. Togo is currently drafting legislation for a tax on sand (including coastal sand) and gravel used as aggregates. If governments work together with stakeholders (the organizations that will be involved in sand mining and registered with the relevant government and international monitoring institutions) to develop new laws and policies, the aim could be to promoting sustainable extraction by obtaining a balance between environmental conservation and business proceeds (Ayoti, 2008). Licensing can be implemented for the sand mining business to companies legally committed to carry out environmental impact assessments. Governments need to take further action with policies, legislation and enforcement, while developing a new consciousness and approach to sand mining.

HOW CAN WE HELP?

In Dakar and Mbour coastal housing was in peril to coastal flooding caused by the sand mined from the beaches. The flooding forced the local populations to relocate further inland. The coastal erosion also impacted the local economy in relation to a reduction in hotel and tourism facilities.

Yet local residents took action and got involved in the construction of physical barriers in collaboration with the local and national government institutions.

Awareness campaigns were initiated to draw attention to the illegal sand mining practices by local government initiatives (as part of the PEPAM program: Millennium Water and Sanitation Program). These campaigns were implemented in collaboration with the local community's assistance. The local communities planted native trees to improve the coastal ecosystems to halt coastal erosion and to protect the coastline.

The local coastal governments in Dakar has taken further actions by implementing laws to prohibit the extraction of sand. However, the monitoring and enforcement of these laws has proved challenging

due to the lack of governmental capacity. The local community took action and formed surveillance brigades to aid the government in monitoring the illegal activities and reporting them.

As a concerned citizen, you can take action and get involved in reducing the impacts of coastal sand mining in your area, by:

- Participating in workshops to help local governments to come up with alternatives to coastal sand mining
- Plant native trees to prevent coastal erosion and improve biodiversity
- Take the example from Dakar and form a surveillance brigade to help enforce the sand mining laws in your area and in collaboration with the local government.
- Help raise awareness of the problem and its consequences in your local community.

REFERENCE

- UASCLME (2012). *National Marine Ecosystem Diagnostic Analysis*. Comoros.
- Beiser, Vince. The New York Times "The Disappearing Sand", June 23, 2016
- Coastal Care <http://coastalcare.org>
- Jonah, F.E. and Adu-Boahen, K., 2016. *Coastal environmental injustice in Ghana: the activities of coastal sediment miners in the Elmina, Cape Coast and Moree area*. *GeoJournal*, 81(2), pp.185-196.
- Hegde, A.V., 2010. *Coastal erosion and mitigation methods—Global state of art*. <http://nopr.niscair.res.in/bitstream/123456789/10799/1/IJMS%2039%284%29%20521-530.pdf>
- Owen, David, The New Yorker, "The World is Running Out of Sand", May 29, 2017
- Steinberger, J.K., Krausmann, F., Eisenmenger, N. 2010. *Global Patterns of materials use: a socioeconomic and geophysical analysis*.

The West Africa Coastal Areas Management Program (WACA) is a convening platform that aims to assist West African countries to sustainably manage their coastal areas and enhance socio-economic resilience to the effects of climate change. The program also seeks to facilitate access to technical expertise and financial resources for participating countries.



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