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Why Ghana needs a new approach to stop the erosion of its coastline

By Kwasi Addo Appeaning

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Ghana's economic growth rate is expected to pick up again next year after two years of slowdown following the country's stellar 7% growth in 2013. But this success has come at a price, particularly to country's 550km coastline. The coastal zone is inhabited by more than one-quarter of Ghana's population and about 80% of its industrial establishment.

Groynes at the Keta Sea Defense Project on Ghana's coast. Kwasi Addo Appeaning

The coastline is home to activities that contribute significantly to the national economy. These include oil and gas production, port operations, thermal electricity generation, coastal agriculture, hydroelectricity generation and fishing.

Some of these activities have led to the erosion of Ghana's coast. Coastal erosion threatens heritage sites dotted along the coast, natural landing sites of the local fishermen and nesting sites of endangered marine turtles, and hinders developing the full potential of the coastal tourism industry.

Small scale mining like this is leading to the eroding of Ghana's coast.Kwasi Appeaning Addo

What's doing the damage

The coastal zone is divided into three sections - western, central and eastern. Several activities in these three sections have resulted in changes in the demographic patterns in the coastal zones.

Although the entire coastline is eroding at varying intensity, the eastern section has been identified as the most vulnerable. The area is influenced by the Volta Delta system. Erosion rates reached 8m/year after the construction of the Akosombo dam on the Volta river in 1965, which covers an area of 8502 square km.

Oil and gas production in the western section has resulted in increased migration of people to the area in search of jobs. This has increased stress on the coastal environment and has facilitated changes in the coastal ecology systems.

The migration of people into the area and destruction of vegetation like mangrove swamps exacerbate the erosion problems. Mining of precious minerals along portions of the coast destroys the equilibrium of the beach system and either initiates or intensifies the erosion situation.

Sand mining, which is banned but is still practised along the entire coast for construction purposes, is also having a negative effect.

Environmentally unfriendly interventions

Coastal erosion management in Ghana is reactive, site-specific and usually involves using hard engineering approaches. The current approaches adopted by the government are unsustainable and environmentally unfriendly.

Groynes is one such approach. This is a form of coastal protection in which barriers are built into the sea to prevent erosion. They essentially trap the sand and stop them from moving too far from the coast.

Concrete or wooden structures, known as revetments, have also been built to act as a barrier against sea waves in a bid to stop the effects of coastal erosion. The revetments absorb the waves energy preventing the cliffs from eroding.

Ghana's government usually offers groynes and revetments to communities when there has been a complaint. While they stabilise the shoreline at the protected section, they increase erosion elsewhere.

In addition, major sea defence projects have been carried out by government on sites considered to be highly vulnerable. These include the Keta Sea Defence Project, Ada Sea Defence Project, Sakumono Sea Defence Project and the New Toakoradi Sea Defence Project, among others.

These projects involved a combination of revetment and groynes. But the site-specific interventions are having knock-on effects in most cases. The construction of the Keta sea defence, using a combination of groynes and revetments, has led to increased coastal erosion on the down-drift coast towards the Ghana-Togo border by over 50%.

What's missing

What is lacking is a comprehensive management policy. This has prevented the development of a sustainable strategy in managing coastal erosion.

Future projections of erosion along the coast of Ghana indicate that the present coastal buffer zones would be completely eroded by 2100. Also, between 2052 and 2082, coastal erosion is projected to catch-up with important landmark features such as the Christiansburg Castle, Ghana's independence square and the Densu Ramser site in Accra - which are all located within the coastal zone.

The vulnerability of the coastal zone is expected to increase significantly as a result of climate change and its associated sea level rise. Sea level rise will increase the direct inundation of low-lying areas, facilitate rapid erosion of the soft shores and increase offshore loss of sediment as well as flooding. It is estimated that a one metre increase in sea level will inundate a significant portion of the Volta Delta system in the eastern section.

There is therefore the need to tackle coastal erosion management from an integrated approach using the green concept of managing with nature and not against it. Adopting the shoreline management plans will enable a large-scale assessment of the risks associated with coastal processes and present a long-term policy framework to reduce these risks to people and the environment.

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