Opinion

Sanitation for cleaner, healthier future

By Dr Bjorn Lomborg

PROPER sanitation practices protect communities from diseases and maintain a clean and safe environment to promote the social, economic and physical wellbeing of the population.

In Ghana, liquid waste management has been largely neglected and remains an urgent issue with nationwide implications.

In 2017, there were 41 million cases of diarrhoea and 7,300 related deaths in Ghana, much of it due to poor sanitation. It has been estimated that as much as 88 per cent of diarrhoeal disease in Accra and 75 per cent of child deaths from cholera and diarrhoea in the country can be traced to this factor.

Every cedi spent would yield benefits worth GH¢4.4 cedis.

The economic burden is also considerable: in 2012, poor sanitation was estimated to have cost Ghana over $290 million, or 1.6 per cent of GDP.

On-site sanitation systems, where full receptacles are collected and treated before discharging into the environment, are a common practice in Ghana, with a prevalence rate of over 85 per cent. Unfortunately, there are few waste treatment plants and faecal sludge is typically dumped into water bodies, drains, trenches and other unauthorised places.

Faecal sludge treatment plants, when properly maintained and managed, can improve sanitation conditions and health outcomes. Several attempts have been made to rollout these facilities, but lack of skilled labour and resources for operation and maintenance has resulted in the plants remaining operational much less than their actual feasible operating lives.

New ideas are needed on the best ways to improve waste management, but with so many areas requiring the government's attention, prioritising the initiatives with the biggest impact is crucial.

Ghana Priorities

Ghana Priorities, a collaboration between the National Development Planning Commission (NDPC) and the award-winning think tank Copenhagen Consensus, aims to find the smartest ways to spend limited public resources by providing evidence-based studies on the economic, social and environmental costs and benefits of policy interventions.

Since last year, 28 teams of economists have worked on over 80 initiatives for Ghana in areas ranging from health to education, to find out which policies would do the most good for every cedi spent.

To target the urgent issue of correct sanitation practices, Esi Awuah, Ahmed Issahaku, Sampson Oduro-Kwarteng and Micheal Addo Aziatsi from the Kwame Nkrumah University of Science and Technology, Martha Osei-Marfo from the University of Cape Coast and Brad Wong of Copenhagen Consensus studied three interventions to improve liquid waste management: comprehensive treatment facilities, advanced stabilisation ponds and resource recovery plants that convert waste into energy.

Comprehensive

Comprehensive faecal sludge treatment plants remove settleable solids and improve the wastewater quality before it is reused, recycled or discharged into the environment.

All generated sludge is pressed and can be used for biochar, activated carbon, or for processing sludge to electricity.

The researchers examined building 18 treatment plants in the large urban areas of all regions of Ghana.

This intervention would reach 6.8 million people at the cost of GH¢1,350 million and help avoid 1.9 million cases of diarrhoea and 329 deaths in the first year. Given that Ghana has a history of waste treatment plants gradually becoming non-operational due to lack of maintenance, the researchers also accounted for this in their calculation.

Still, the total benefit would reach nearly GH¢ 4,000 million over the course of 15 years, meaning every cedi spent would yield a return nearly three times higher than the original investment.

The researchers also studied the cost-effectiveness of building traditional waste stabilisation ponds for grit removal and effective disinfection. This intervention would be implemented in 46 locations across Ghana and would help avoid 1.9 million cases of diarrhoea and 263 deaths in the first year.

The cost was estimated at GH¢ 930 million over 15 years, and the total benefits at GH¢ 4,100 million. Every cedi spent would yield benefits worth GH¢4.4.

Most effective

The researchers found resource recovery plants for converting biogas or sludge to electricity to be the most cost-effective solution.

Building these plants across 64 locations throughout the country for the benefit of 14 million people was estimated to cost GH¢1,400 million for sludge to energy and GH¢1,600 million for biogas to energy, but the estimated benefits are much higher.

As many as 3.8 million cases of diarrhoea and almost 600 deaths could be avoided in the first year, and the total economic benefits reach nearly GH¢7,500 million for each technology. Each cedi of investment would yield a return of around ¢5.

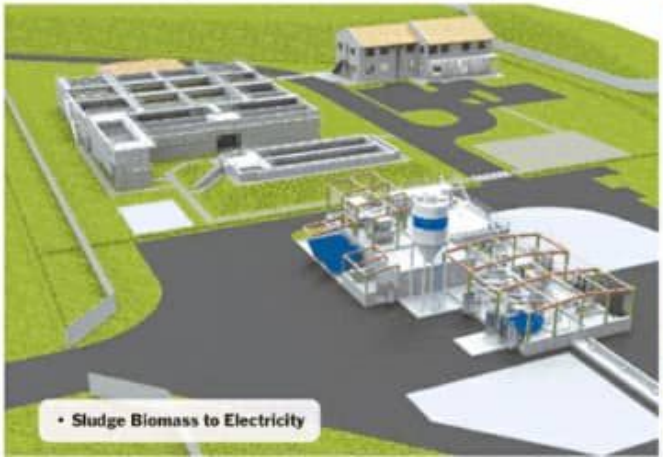
Poor end-of-pipe waste management poses a serious health challenge for Ghana, and better faecal sludge treatment technologies could significantly improve the quality of life for millions of Ghanaians.

The writer is the President of the Copenhagen Consensus & Visiting Professor at Copenhagen Business School.

BCR Summary Table

Intervention	Benefit (GHc, millions)	Cost (GHc, millions)	Benefit-cost ratio
Sludge to energy	7,451	1,395	5.3
Biogas to energy	7,485	1,579	4.7
Stabilisation ponds	4,113	926	4.4
Comprehensive treatment plants	3,962	1,349	2.9

Note: All figures assume an 8 per cent discount rate



• Sludge Biomass to Electricity

• Comprehensive FSTP for Kumasi by PURECO