

Ecology: Another side of floods

By Richard Wetaya

Floods wreak havoc. They occur at irregular intervals, vary in size, area of extent and duration and often times leave a destructive trails on plants,

human populations, infrastructure, ecosystems, property and livestock.

In many ways, floods will lead to outbreaks of water-borne diseases such as typhoid fever, cholera and hepatitis.

The International Flood Initiative says floods cost the world economy more than \$60b.

According to the World Bank, floods and other natural disasters annually cost the global economy \$520.

According to the 2017 United Nations World Water development report, ecological costs arising from floods worldwide will increase twentyfold by the end of the 21st century, if no further actions on flood risk reductions are taken.

The organisation for Economic Cooperation and Development says the cost of flood damage in urban areas across the globe could reach \$0.7-1.8 trillion per year by 2080, if no measures against climate change events are enforced.



A woman walks through a flooded area in Bwale Kampala

ACCORDING TO THE INTERNAL DISPLACEMENT MONITORING CENTRE, AN AVERAGE OF 12,000 UGANDANS WERE DISPLACED BY FLOODS AND OTHER NATURAL DISASTERS BETWEEN THE YEARS 2006-2016

should be underscored and laid great store upon.

"Flood mitigation dams reduce water run-offs when devastating floods occur. Dams decrease peak water flows during times of floods. The impounded floodwaters can be used for irrigation hence improved agricultural production," Lugumira says.

Nature's renewal process?

For the most part, floods are destructive, but on occasion, there is a silver lining to their occurrence.

"In the case of agricultural production in drier areas, for example, floods rejuvenate soil fertility with the silt [alluvium] that they deposit in their wake.

Flood silt deposition serves a useful purpose in the sense that it provides a fertile growing medium for crops. Silt is rich in minerals, nutrients and organic matter. The silt deposited makes the soils more fertile, thereby increasing agro production," Bruce Rukundo, an environment management specialist says.

Fred Omollo, 53, was one of the over 2,000 people who were displaced by floods in northern Uganda, last year.

Omollo's were laid to waste as the floods swept through his home village of Ogur.

Weeks later, after the waters from the floods had receded, Omollo and his family returned back to their village; only to find their crops decimated.

Initially, Omollo thought of leveling his land, but a friend dissuaded him from it; noting that the sediments would actually make his soil more prolific and productive.

"I tilled the silt sediments into the soil as I had been advised. The crops I grew later like cassava, millet, sorghum and maize all blossomed and I was able to make one of my best harvests, some few months later," Omollo says.

"Flooding spreads nutrients to lakes and rivers, which in turn leads to increased biomass and improved fish stocks. Fish and other forms of aquatic life are dependent on the nutrients supplied from soils during annual floods. These nutrients improve the health of fish and the other forms of marine life, hence increased fish

stocks. Regular floods also provide abundant water resources that replenish lakes and ponds, which in turn can support irrigation or fish farming," Rukundo explains.

Floods are also integral to the ecology of wetlands.

"Floods contribute to the health of ecologically important wetland areas and other natural ecosystems.

They also carry and deposit nutrient-rich sediments that support both plant and animal life in wetlands. In addition, flooding adds nutrients to lakes and streams that help support healthy fisheries," Rukundo says.

Ecologists at Oregon State University released a report last year that suggests that floods play an important role in maintaining ecosystems in river corridors and are a key factor in maintaining floodplain biodiversity.

"Floods are an essential part of nature's renewal process. Lakes and rivers that are receding can gain from water inflows as a result of floods. Floods can increase on the water levels of open water systems," Rukundo says.

Environmentalists also contend that floods are essential for groundwater recharging.

"This happens when a significant portion of land absorbs flood water into the earth. In this way, the levels of groundwater [water found under the ground] are restored. The underground water aquifers then supply natural springs, wells, rivers, lakes and other water bodies with fresh water," Herbert Mpagi Kalibala, an environment impact assessment expert, says.

For good measure, floods also increase on forest cover.

"When a river overflows in a forested area, it spreads and carries the seeds of different plants from one place to another.

When to plant

For farmers in flood-prone areas, it is important to know when to plant and when not to plant.

"Seasonal observance is key. Plant fewer crops when heavy rain months are imminent to minimise losses. In the garden, it is important to create run off pathways for water, so that in the event of a flood, water does not stagnate. For farmers in Butaleja, flood-based farming works because the area is replete with water and because they grow flood tolerant crops like rice," Owach advises.

Owach says there is need to improve early flood warning systems.

"In line with government policy on floods, there is a need to provide effective flood warning systems, especially for seasonal flash flooding hotspots in the country. There is currently a gap in that area. A meaningful warning system will enable communities in flood-prone areas such as Butaleja, Bulambuli, Teso and Ntoroko, among others to prepare early so as to steer clear of harm or loss. The National Emergency Co-ordination and Operations Centre should also be strengthened," he says.

Future dangers

Climate forecasts at present make for grim reading as they seem to foreshadow more flood occurrences in the future.

"For the foreseeable future, increasing human population pressures, continuous degradation of ecosystems, climate variability and change will exacerbate flood risks in several flood prone countries, worldwide and in Uganda and the risks will continue to grow, given the inadequacies in flood planning, warning and management."

Displacing people

According to the Internal Displacement Monitoring Centre, an NGO that is a leading source of news, data and analysis on internally displaced persons (IDPs) worldwide, an average of 12,000 Ugandans were displaced by floods and other natural disasters between the years 2006-2016.

The United Nations Development Programme says since 2007 to date, 3.6 million Ugandans have been affected by natural and other human induced disasters.

Environmental experts warn that floods will continue to impact negatively on the country, unless there are long drawn out efforts to strengthen the country's disaster preparedness and management capacities.

"There is a lot of leeway to be made up if Uganda is to hit the 2030 sustainable goal target of reducing the economic burden caused by natural disasters. For floods, efforts must be concentrated on strengthening the ability of communities living in flood-risk areas to manage their impact when they strike. Communities need to be trained on how to manage the risks that come with flooding. Without that being done, it raises the spectre of more calamities," Jerome Lugumira, the natural resources manager at the National Environment Management Authority (NEMA), says.

Measures to contain floods

In Kampala for instance, floods will continue to wreck havoc on people's lives, unless proper measures are put in place to improve on physical waste water infrastructure.

There is a need to construct and widen the drainage channels. People must also be stopped from dumping

waste and silt into the drainage channels," Lugumira says.

Experts as well have spoken out on the need to stop the encroachment on wetlands in Kampala in line with government policy calling for their protection.

"Protection of wetlands is of

paramount importance. Wetlands are nature's best flood control mechanism. They act as sponges which slowdown water overflows when there are heavy downpours or when rivers overflow. Their degradation has had far reaching consequences on Kampala's low

lying areas, which are invariably inundated by floods whenever there are heavy rains in the city," environmental scientist, Sam Owach, says.

Construction of flood mitigation dams in flood prone areas of the country is a control measure th-