

RNLI | Research Project

Climate change and drowning risk in Bangladesh and Tanzania and the implications for RNLI programmes

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Overview

The risk of drowning in Bangladesh and Tanzania is impacted by a wide range of environmental and socio-economic factors, such as proximity to water, extreme weather events, poverty, and limited access to resources. Climate change is likely to have an impact on several of these factors, with the potential to change the risk profile of drowning in areas where the RNLI currently works.

The prospect of more varied weather events in a wider range of rural and urban locations may expose a greater number of people to unexpected drowning risks. Climactic changes may also intensify the impact of social and economic factors, such as poverty and livelihood instability, with the possibility of an increase in unsafe conditions and practices.

Concerned about how climate change will impact its drowning prevention programmes, the RNLI commissioned the University of East Anglia and the Avoidable Deaths Network to identify the link between climate change and drowning risk in Bangladesh and Tanzania, with a focus on how this may impact ongoing interventions. The study found that overall, there remains good rationale for continuing RNLI drowning prevention projects as presently designed, with potential for expansion to address new and emerging drowning risks. In both countries, there could be an additional focus on the possibility of rural to urban migration, as well as an expansion of child-focused drowning prevention.



The RNLI's International Approach

The untold truth about drowning is that every other minute someone drowns around the world. The RNLI has a clear vision to 'save every one', therefore we won't stand by while any one, anywhere drowns. Our work internationally contributes towards our vision by making drowning prevention a higher priority and better resourced than it has been before - especially in areas with the greatest burden.

We are proud to share our lifesaving knowledge and expertise to help make a difference. We aim to be a catalyst for drowning prevention, working with partners globally and in countries where drowning is a significant problem to raise awareness, widen the research base, and help develop solutions to save more lives.

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Climate change and drowning risk

Bangladesh

Some impacts of climate change in Bangladesh have already been recorded, including increased temperatures and a higher frequency of extreme heat events. While these trends are expected to continue, additional increases in precipitation, sea level, and extreme weather events have also been predicted over the next 20 years.

It is expected that coastal areas will be affected by gradual sea level rise and increased tropical cyclone intensity. This has a strong likelihood of raising drowning risk across settlements in these zones, particularly for marginalised groups living outside coastal flood protection structures.

Climate-related displacement is expected to greatly increase in Bangladesh, with anticipated migration from low-level coastal communities. This will likely lead to a greater shift of people living in major urban centres, with poor people concentrated largely in informal settlements with less protection from, and more exposure to, inland flooding.

Riverine and pluvial flood risk is likely to intensify across much of the country, leading to more flood hazard inland. Drowning risk may be exacerbated by different types of weather events in a wider range of rural and urban locations but is expected to remain closely associated with poverty, lack of community cohesion, poor housing, and limited supervision of children.

Tanzania

While the impact of climate change in East Africa is less certain, due to an overall lack of climate data, predictions identify a number of environmental and weather changes likely to impact Tanzania. Temperature increases have already been observed across the region, and an increase in extreme heat events, sea level, and precipitation is anticipated over the next 20 years.

The impact of climate change on the intensity and frequency of storms is unclear, but reports suggest a likely increase in exposure to, and intensity of, extreme climactic events. This is predicted to increase drowning risk for fishers and their communities. A rise in both coastal and inland flooding will also create additional drowning hazards throughout the country.

Temperature increases are predicted to impact livestock and crop yield, potentially creating more economic demand for fish and an expansion of the fishing sector. This may lead to additional competition, increasing the tendency toward unsafe work practices in the absence of better regulation.

Climate change may also exacerbate ecological pressures on the lake ecosystems, impacting the productivity of the sector. This has the possibility of reducing the size of the sector, subsequently lowering drowning risk, but smaller profit margins may also reduce the ability to invest in safe practices and equipment.

As is predicted in Bangladesh, the RNLI should be aware of the possible risk created by migration to informal urban settings. This is likely to increase exposure to hazards, particularly with the uncertainty surrounding precipitation patterns and the likelihood of increased inland flood risk.

Current RNLI programmes

Bangladesh

Project Bhasa began in 2016 and is led by the Centre for Injury Prevention and Research, Bangladesh (CIPRB) to reduce child drowning in the Barishal division of Bangladesh. As well as an abundance of artificial and natural ponds, the region is highly exposed to natural hazards and climate-related disasters due to the convergence of several large rivers, leading to an increase in drowning risk, particularly of unsupervised children. To reduce child drowning, Project Bhasa comprises of three main interventions: the provision of Anchals (community day care centres) to increase supervision for children aged 1–5 years old, SwimSafe training in survival swimming and water safety skills for children aged 6–10 years old, and training in water-based rescue and first response for community volunteers. The project also promotes community awareness and national action through water safety activities and engagement at the local and national level.

Tanzania

In 2020, the RNLI commenced a programme of work aimed at reducing drowning risk in artisanal fishing communities on Lake Victoria. The region has an exceptionally high drowning rate, particularly among fishers, but also linked to transport and recreational activities. The programme is working with community-based organisations and individuals committed to drowning prevention and supports the development of a national drowning prevention network, alongside researching data gaps and scoping an intervention project at the lakeside using human-centred design techniques. The RNLI also works with coastal communities in Zanzibar, to implement drowning prevention interventions in high-risk groups such as children and aquaculture workers.

Implication for RNLI programmes

In most cases, climate change is expected to intensify existing risk sites where drowning incidence is inherently associated with proximity to, and utilisation of, water bodies. Therefore, the current focus of RNLI programmes in Bangladesh and Tanzania remains justified in planning ongoing intervention. Should finance and capacity be available, the following avenues may be explored for expansion of ongoing support.

Bangladesh

The existing support to minimise drowning risk for children in low-lying coastal districts should continue to be a priority, and should maintain a focus on those facing multi-dimensional poverty.

Projected increase in riverine and pluvial flooding will likely increase drowning risk inland, including in urban areas. Given migration predictions, drowning risk in informal settlements in urban areas should be better understood, and at-risk groups living these areas should be considered during expansion of activities.



Swimsafe training is part of Project Bhasa, providing survival swimming and water safety skills for children



The impact of climate change is predicted to increase the drowning risk for fishing communities

Tanzania

The existing support for communities in Lake Victoria should continue, while anticipating a potential rise in migration to the area. The possibility of increased exposure to extreme weather events, along with the prospect of additional fishing competition is likely to maintain fishing communities as a high priority for drowning prevention. The predicted increase in competition and decrease in profit margins must be noted as potentially leading to additional risk taking and a reduction of investment in safety.

Given the unpredictable impact of climate change on severe storms, programme designers may wish to consider broadening interventions to include disaster risk reduction related interventions, including the development of early warning systems for weather events.

While Lake Victoria will likely continue to be a priority, the anticipated increase in migration to urban informal settlements may expose many vulnerable groups to new flood risks. Due to the lack of high-resolution data on climate change for Tanzania, a periodic needs assessment of each region could be considered to mitigate additional and emerging drowning risks.



In 2020, the RNLI implemented a programme aimed at reducing the drowning risk on Lake Victoria

Likely drowning prevention related climactic changes by 2040

Bangladesh	Tanzania
Increase in high rainfall intensity events	Increase in high-rainfall-intensity events
Increase in human exposure to river floods	Some increase in human exposure to river and coastal floods
Displacement from low-lying areas in the south due to sea level rise	
Increase in human exposure to coastal floods	
Increase in exposure to intense cyclones	

Demographic and economic trends and projections

Bangladesh	Tanzania
Population stabilising at about 190 million by 2050	Population doubling between 2022 and 2050, from 63 million in 2022 to 129 million in 2050
Percentage of urban population increasing from 40% in 2021 to 60% in 2050	Percentage of urban population increasing from 36% in 2021 to 55% in 2050
Poverty likely to remain high until 2040 but the proportion of poor likely to steadily but slowly reduce	Poverty likely to remain high until 2040 but the proportion of poor may reduce slightly
High but variable numbers of people displaced per year by disasters, sometimes exceptionally high but most not for long-term periods	Moderate, variable numbers of people displaced per year by disasters
Projected twofold increase in disaster-induced displacement (based on figures for 2010–2018)	Projected fivefold increase in disaster-induced displacement (based on figures for 2014–2019)

Further reading

Few, R., Omasete, J., Geere, J., and Ray-Bennett, N. (2023) Climate change and drowning risk in Bangladesh and Tanzania and the implications for RNLI programmes. DEV Reports and Policy Papers Series 24, The School of International Development, University of East Anglia, UK.

The World Health Organization (2017). Preventing Drowning: An Implementation Guide.

Next steps

While this research is focused on the predicted impacts of climate change, environmental changes are already impacting the lives of people in Bangladesh and Tanzania. As such, community-based research may provide insight into the immediate impacts of climate change and how this is already affecting drowning risk and water safety.

The RNLI should continue to expand its network and work with additional organisations with expertise in climate change and disaster risk mitigation, to ensure its work is effective within the wider environmental and social context.

Research methods

Using a near- to mid-term view, the research looks predominately at climate predictions within the next two decades, to 2040. The report combines qualitative and quantitative information, triangulating across different sources of data, including in-country expert discussions. This provides a profile of current drowning incidence, trends, risk factors, and the intervention environment in the study countries, which can be examined to estimate the projected implications of climate change. It is important to acknowledge that any predicted climate data contains substantial uncertainties, particularly in areas such as Tanzania, where local and regional climate data is limited.

Photos: GMB Akash, Camera Wala Vaw, RNLI/3 Brothers

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