

# Socioeconomic Consequences of Cyanobacteria Harmful Algal Blooms in Lake Victoria (Kenya), African Great Lakes

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## Background

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- Excessive algal growth in freshwater and marine ecosystems. Natural causes or anthropogenic - links to drivers like nutrients (nitrogen and phosphate)
- The challenge of harmful algal blooms (HABs) presents a serious health and livelihood threat to riparian communities worldwide.
- Small-scale fishing communities, who are amongst the world's poorest, live close to some contaminated water bodies and depend greatly on their associated resources for livelihood, hence are highly vulnerable.



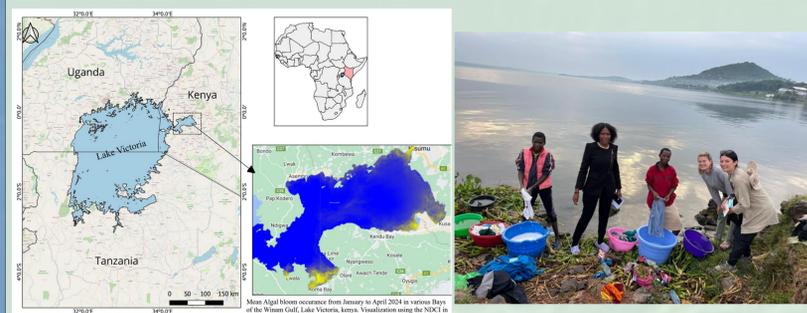
Algal blooms in Homabay shoreline

### Research Aims:

- What are the existing sociocultural knowledge and beliefs about cyanobacterial Harmful Algal Blooms (cHABs) among the small-scale fishing communities?
- How do individuals in at-risk communities respond to and adapt their behaviors and practices in the face of frequent exposure to cHABs?

## Methodology

### Data collection:



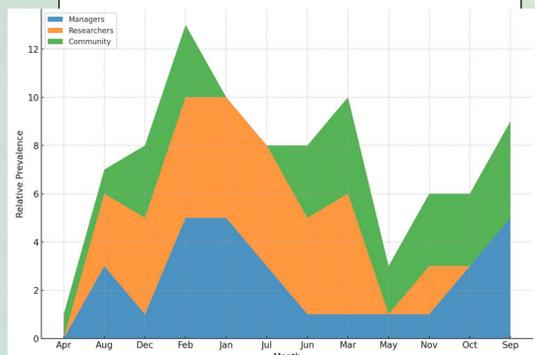
### Tools

Methodology



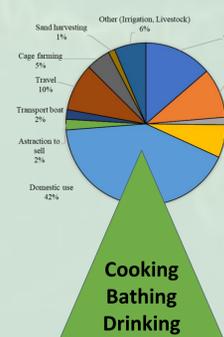
- 76 household surveys
- 2 Focus Group Discussions
- 5 Key informant Interviews

## Perceived Bloom Seasons

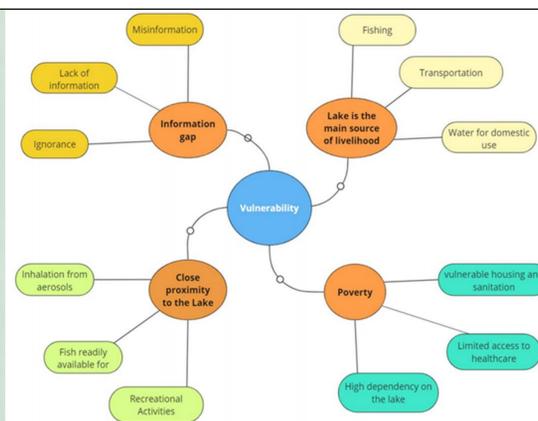


How local stakeholders perceive the seasonality of blooms

## Local lake uses



## Vulnerability of the local communities



- No health infrastructure for handling HABs
- Geographical proximity
- No alternatives
- High dependence on lake resources

## Implications

- High awareness, low knowledge gap** – While most community members recognize the presence of cyanobacterial harmful algal blooms (cHABs) in Lake Victoria, they lack adequate knowledge about their causes, health risks, and long-term impacts.
- Significant health and economic consequences** – cHABs negatively affect small-scale fishing communities by reducing fish catches, increasing financial strain, and exposing residents to health risks through direct water use.
- Limited access to reliable information** – Most community members rely on informal sources, such as fisherfolk and village elders, for cHAB-related information, leading to misinformation and ineffective response strategies.
- Ineffective water treatment strategies** – many residents continue to use lake water with inadequate treatment methods, such as boiling and filtration, which do not effectively remove cyanotoxins.

## Acknowledgements

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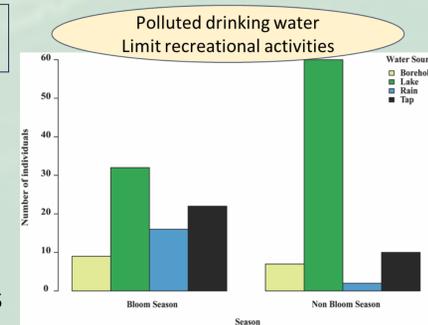
## Findings

## HABs Impacts

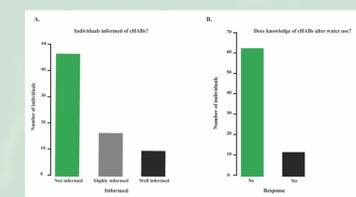
### Human Health

#### Reported cases

- Gastrointestinal - Diarrhea
- Skin Irritation
- Respiratory illness



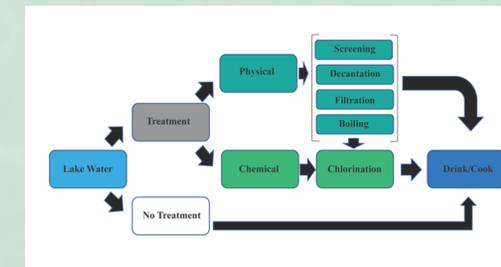
## HABs Awareness



| Categories           | $\chi^2$                               |
|----------------------|--|
| Awareness/Gender     | $\chi^2 = 2.8243, df = 1, p = 0.09285$ |
| Awareness/Occupation | $\chi^2 = 4.1903, df = 3, p = 0.2416$  |
| Awareness/Education  | $\chi^2 = 4.1903, df = 3, p = 0.2416$  |
| Awareness/Income     | $\chi^2 = 2.9817, df = 3, p = 0.3945$  |

\*General (93.67% of respondents are aware)

## Current mitigation strategies for cHABs



Community water management strategies



- Ongoing research collaboration on HABs monitoring (Remote sensing)
- Awareness creation and community sensitization

## Future Directions

- Can we leverage on indigenous knowledge and fisher experiences to enhance HABs prediction, preparedness and management?
- How can we use emerging technologies like remote sensing and GIS to understand the ecological vulnerability to HABs?
- How can we understand HABs-related health impacts among the communities?
- What are the most effective methods for disseminating HABs information to local communities?