MANAGING WATER SUPPLY UNDER CLIMATE CHANGE: THE CASE FOR SMALL WATER UTILITIES

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Lake Victoria Basin – the context

Basin Area: 283,168 sq.km.
Forest: 9%
Population Density: 160 people per sq.km.
Cropland: 40%
Urban Growth Rate: 4.7%
Cropland Irrigated: 0%
Large Cities: 4
Developed: ~1%
Total Fish Species: 343 (introduced 5)
Shrub: 10%
Fish Endemics: 309
Grassland: 37%
Threatened Fish Species: 26
Barren: 2%
Endemic Bird Areas: 4
Loss of Original Forest: 89%
Deforestation Rate: 7%
Protected Areas: 17%
Eroded Area: 8%
Wetlands: 31%
Large Dams: 1
Arid: 26%

Water demand coverage is ~70% in Masaka and Bukoba, and less than 50% in Kisii.
Key Climate Findings

• ↑ - Increase in annual average temperature of $3.2 \pm 1.8^\circ$ Celsius by 2100

• ↑ - Increase in net annual rainfall of 7% between 2030 and 2060

• ↑ - Increase in monthly variation of lake water levels between 2030 and 2060
Climate change impacts

• The effects of climate change in the L. Victoria region are pervasive and challenging to overcome. For water utilities in Bukoba (Tanzania), Masaka (Uganda) and Kisii (Kenya) the myriad effects of climate change make it difficult to approach it as a stand-alone issue.
• Climate change brings added costs: energy bills are high; extreme weather events damage infrastructure; and degraded water quality challenges the capabilities of water treatment facilities. Faced with these challenges, utility operators must make strategic choices about improving infrastructure and expanding their system to meet water demands.
Adaptation/Mitigation Measures

Step 1: Propose appropriate adaptation/mitigation measures

Step 2: Assess whether the adaptation is a 'no regret' or 'low regret'

Step 3: Detail initial tasks to be completed in implementing each adaptation/mitigation measure

Step 4: State whether the adaptation/mitigation measure is an Operational or Infrastructure type investment

Step 5: Establish a measurement protocol with relevant benchmarks and performance indicators

Step 6: Provide an initial cost estimate for each proposed adaptation/mitigation measure

Step 7: Prioritise adaptation/mitigation measures for implementation
Thank you! Merci! Asanteni! Wa Caleykum salaam!

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