## WASH PRACTICES IN MOZAMBIQUE

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## **FOOTNOTES**

- Ronaldo Inguane, Jordi Gallego-Ayala, and Dinis Juízo, "Decentralized water resources management in Mozambique: Challenges of implementation at the river basin level," *Physics and Chemistry of the Earth, Parts A/B/C* 67, (2014): 214–225, https://www.researchgate.net/publication/259160995\_Decentralized\_water\_resources\_management\_in\_Mozambique\_Challenges\_of\_implementation\_at\_the\_river\_basin\_level.
- 2. "Maputo," Britannica, accessed April 20, 2022, https://www.britannica.com/place/Maputo.
- 3. "Sanitation," World Health Organization UNICEF, accessed November 13, 2021, https://washdata.org/monitoring/sanitation.
- 4. "Water, Sanitation and Hygiene," United Nations, accessed December 17, 2021, https://www.unwater.org/water-facts/water-sanitation-and-hygiene/.
- 5. "Global Water, Sanitation, and Hygiene," Center for Disease Control and Prevention, accessed November 13, 2021, from https://www.cdc.gov/healthywater/global/sanitation/index.html.
- "Sanitation," World Health Organization UNICEF, accessed November 13, 2021, https://washdata.org/monitoring/sanitation.
- 7. "Hygiene," United Nations International Children's Emergency Fund, accessed November 13, 2021, from https://www.unicef.org/wash/hygiene.
- 8. "Drinking Water," World Health Organization, accessed April 20, 2022, https://www.who.int/news-room/fact-sheets/detail/drinking-water.
- 9. "Global Water, Sanitation, and Hygiene," Center for Disease Control and Prevention, accessed November 13, 2021, from https://www.cdc.gov/healthywater/global/sanitation/index.html.
- **10.** Ibid.
- 11. "Water, sanitation and hygiene (WASH)," United Nations International Children's Emergency Fund, accessed November 13, 2021, https://www.unicef.org/mozambique/en/water-sanitation-and-hygiene-wash.
- **12.** Ibid.
- **13.** Ibid.
- **14.** "Open defecation," World Health Organization UNICEF, accessed December 18, 2021, https://washdata.org/monitoring/inequalities/open-defecation.
- 15. "Menstrual hygiene," United Nations International Children's Emergency Fund, accessed November 13, 2021, https://www.unicef.org/wash/menstrual-hygiene.
- "Water, sanitation and hygiene (WASH)," United Nations International Children's Emergency Fund, accessed November 13, 2021, https://www.unicef.org/mozambique/en/water-sanitation-and-hygiene-wash.
- 17. "10 facts about sanitation in Mozambique," The Borgen Project, accessedNovember 13, 2021, https://borgenproject.org/10-facts-about-sanitation-in-mozambique/.
- 18. "Water, sanitation and hygiene (WASH)," United Nations International Children's Emergency Fund, accessed November 13, 2021, https://www.unicef.org/mozambique/en/water-sanitation-and-hygiene-wash.
- **19.** Ibid.
- **20.** Ibid.

- 21. Kathryn Reid, "10 worst countries for access to clean water," World Vision, accessed November 13, 2021,
  - https://www.worldvision.org/clean-water-news-stories/10-worst-countries-access-clean-water.
- 22. "WaterAid report reveals nations with lowest access to water," WaterAid, March 21, 2018, https://www.wateraid.org/au/articles/wateraid-report-reveals-nations-with-lowest-access-to-water
- 23. "Global WASH Fast Facts," Centers for Disease Control and Prevention, accessed November 13, 2021, https://www.cdc.gov/healthywater/global/wash\_statistics.html.
- 24. Camille, Morgan et al., "Water, sanitation, and hygiene in schools: Status and implications of low coverage in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," *International Journal of Hygiene and Environmental Health* 220, no. 6 (2017): 950–959, https://doi.org/10.1016/j.ijheh.2017.03.015.
- 25. Ronaldo Inguane, Jordi Gallego-Ayala, and Dinis Juízo, "Decentralized water resources management in Mozambique: Challenges of implementation at the river basin level," *Physics and Chemistry of the Earth, Parts A/B/C* 67, (2014): 214–225, https://www.researchgate.net/publication/259160995\_Decentralized\_water\_resources\_management in Mozambique Challenges of implementation at the river basin level.
- 26. Clemêncio M. Carlos Nhantumbo, "Key issues for water quality monitoring in the Zambezi River Basin in Mozambique in the context of mining development," *Journal of Water Resource and Protection* 7, no. 5 (2015): 430, https://www.scirp.org/html/6-9402461 55105.htm.
- **27**. Ibid.
- 28. Ronaldo Inguane, Jordi Gallego-Ayala, and Dinis Juízo, "Decentralized water resources management in Mozambique: Challenges of implementation at the river basin level," *Physics and Chemistry of the Earth, Parts A/B/C* 67, (2014): 214–225, https://www.researchgate.net/publication/259160995\_Decentralized\_water\_resources\_management in Mozambique Challenges of implementation at the river basin level.
- 29. "Mozambique Country Plan," United States Agency for International Development, accessed December 18, 2021, https://www.globalwaters.org/sites/default/files/wfw mozambique country plan.pdf.
- **30.** Ibid.
- **31.** Ibid.
- 32. Alana Potter and John Butterworth, "Mainstreaming anti-corruption initiatives: Development of a water sector strategy in Mozambique," *U4 Practice Insight* 2014, no. 2 (2014), https://www.cmi.no/publications/file/5308-mainstreaming-anti-corruption-initiatives.pdf
- **33.** "Mozambique's Water Crisis," Drop4Drop, accessed April 20, 2022, https://drop4drop.org/mozambiques-water-crisis/.
- 34. Paola Verlicchi and Vittoria Grillini, "Surface Water and Groundwater Quality in South Africa and Mozambique—Analysis of the Most Critical Pollutants for Drinking Purposes and Challenges in Water Treatment Selection," *Water* 12, no. 1 (2020): 305, https://www.mdpi.com/2073-4441/12/1/305/.
- **35.** Mozambique Country Profile . (n.d.). *USA Aid From The American People*. Retrieved from https://winrock.org/wp-content/uploads/2021/08/Mozambique Country Profile-Final.pdf.
- 36. "Sustainable Groundwater," United States Geological Survey, accessed December 18, 2021, https://ca.water.usgs.gov/sustainable-groundwater-management/interconnected-surface-water-depletion.html.
- 37. "Mozambique," World Bank Climate Change Knowledge Portal, accessed September 24, 2021, https://climateknowledgeportal.worldbank.org/country/mozambique/climate-data-historical.
- 38. Lamin Mai Touray, "Desertification: Climate Desertification: Climate And Water Resources and Water Resources Perspectives Perspectives," Department of Water Resources, accessed April

- 20, 2022,
- http://www.unoosa.org/documents/pdf/psa/activities/2007/morocco/presentations/3-1.pdf.
- 39. "Mozambique's Water Crisis," Drop4Drop, accessed April 20, 2022, https://drop4drop.org/mozambiques-water-crisis/.
- 40. Natasha Ribeiro and Aniceto Chaúque. "Gender and Climate Change: Mozambique Case Study," Heinrich Böll Stiftung Southern Africa, accessed April 20, 2022, https://ees.kuleuven.be/klimos/toolkit/documents/210 mozambique.pdf.
- 41. Paul Pavelic et al, "Groundwater Availability and Use in Sub-Saharan Africa: a Review of 15 Countries," International Water Management Institute, accessed April 20, 2022, https://www.iwmi.cgiar.org/Publications/Books/PDF/groundwater\_availability\_and\_use\_in\_sub-sa haran africa a review of 15 countries.pdf.
- 42. "Water Quality Report," City of Hartsville, South Carolina, accessed April 20, 2022, https://www.hartsvillesc.gov/wp-content/uploads/2013/06/WaterQuality\_Report\_2017.pdf.
- 43. Jeffrey K. Lazo, "Survey of Mozambique Public on Weather, Water, and Climate Information," National Center for Atmospheric Research Technical Notes NCAR/TN-521+ STR, accessed April 20, 2022, https://opensky.ucar.edu/islandora/object/technotes%3A533.
- 44. Aidan A. Cronin et al., "Monitoring source and domestic water quality in parallel with sanitary risk identification in Northern Mozambique to prioritise protection interventions," *Journal of Water and Health* 4, no. 3 (2006): 333–345, https://iwaponline.com/jwh/article/4/3/333/31296/Monitoring-source-and-domestic-water-quality-in
- **45.** Merritt Partridge, "Cloudy water after rainstorm," Partridge Well Drilling, August 28, 2017, https://partridgewell.com/cloudy-water-after-rainstorm/.
- **46.** "Water scarcity and desertification," UNCCD thematic fact sheet series No. 2, accessed April 20, 2022, https://catalogue.unccd.int/24\_loose\_leaf\_Desertification\_water.pdf.
- 47. Amy Guo et al. "Water, sanitation, and hygiene in rural health-care facilities: A cross-sectional study in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," The American Journal of Tropical Medicine and Hygiene 97, no. 4 (October 11, 2017): 1033–1042, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5637612/.
- **48.** "Water Stress in Sub-Saharan Africa," Council on Foreign Relations, accessed December 18, 2021, https://www.cfr.org/backgrounder/water-stress-sub-saharan-africa.
- 49. Tess Shiras et al, "Shared Sanitation Management and the Role of Social Capital: Findings from an Urban Sanitation Intervention in Maputo, Mozambique," *International Journal of Environmental Research and Public Health* 15, no. 10 (October 11, 2018): 2222, https://pubmed.ncbi.nlm.nih.gov/30314299/.
- 50. "Water, sanitation and hygiene (WASH)," United Nations International Children's Emergency Fund, accessed November 13, 2021, https://www.unicef.org/mozambigue/en/water-sanitation-and-hygiene-wash.
- 51. Johanna Weststrate et al., "The Regulation of Onsite Sanitation in Maputo, Mozambique," *Utilities Policy* 61, (December 2019),

  https://www.epippodirect.com/epippod/article/pii/S0057478710303343
  - https://www.sciencedirect.com/science/article/pii/S0957178719303212.
- **52.** Ibid.
- "Progress on household drinking water, sanitation and hygiene 2000-2017: special focus on inequalities," World Health Organization, accessed Aprl 20, 2022, https://apps.who.int/iris/handle/10665/329370.
- 54. "Share of global population with access to on-site systems and sewer connections in 2020, by region," Statista, accessed April 20, 2022, https://www-statista-com.erl.lib.byu.edu/statistics/1258932/global-population-access-sewer-connections-by-region/.

- 55. "Toilets & Latrines," Centers for Disease Control and Prevention, accessed December 18, 2021, https://www.cdc.gov/healthywater/global/sanitation/toilets.html.
- **56.** "Pit Toilets (Latrines)," Global Water Pathogen Project., accessed December 18, 2021, https://www.waterpathogens.org/book/pit-toilets-latrines.
- 57. Amy Guo et al. "Water, sanitation, and hygiene in rural health-care facilities: A cross-sectional study in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," The American Journal of Tropical Medicine and Hygiene 97, no. 4 (October 11, 2017): 1033–1042, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5637612/.
- 58. Alana Potter and John Butterworth, "Mainstreaming anti-corruption initiatives: Development of a water sector strategy in Mozambique," *U4 Practice Insight* 2014, no. 2 (2014), https://www.cmi.no/publications/file/5308-mainstreaming-anti-corruption-initiatives.pdf
- 59. Janelle Plummer and Piers Cross, "Tackling Corruption in the Water and Sanitation Sector in Africa," Water and Sanitation Program, accessed April 20, 2022, https://www.wsp.org/sites/wsp/files/publications/712200782528\_Tackling\_Corruption\_in\_the\_Water and Sanitation Sector in Africa.pdf
- **60.** Ibid.
- **61.** Ibid.
- 62. Inge Tvedten and Rachi Picardo, "Goats eat where they are tied up': illicit and habitual corruption in Mozambique," Review of African Political Economy 45, no. 158 (March 1, 2019): 541–557, https://www.tandfonline.com/doi/full/10.1080/03056244.2018.1546686?casa\_token=EpbftSyG0Q kAAAAA%3AwrwIMaOQ3Y44UWuU\_3oR0phJGSaerOsnrLfHn6numy2mZVTYeuuHF3KJdto6f2D vilpFCmOli66Nig.
- 63. Alana Potter and John Butterworth, "Mainstreaming anti-corruption initiatives: Development of a water sector strategy in Mozambique," *U4 Practice Insight* 2014, no. 2 (2014), https://www.cmi.no/publications/file/5308-mainstreaming-anti-corruption-initiatives.pdf
- 64. Silas Mvulirwenande and Uta Wehn, "Dynamics of water innovation in African cities: Insights from Kenya, Ghana and Mozambique," *Environmental Science & Policy* 114, (December 2020): 96–108, https://www.sciencedirect.com/science/article/pii/S1462901119309645.
- 65. Janelle Plummer and Piers Cross, "Tackling Corruption in the Water and Sanitation Sector in Africa," Water and Sanitation Program, accessed April 20, 2022, https://www.wsp.org/sites/wsp/files/publications/712200782528\_Tackling\_Corruption\_in\_the\_Water and Sanitation Sector in Africa.pdf.
- 66. Alana Potter and John Butterworth, "Mainstreaming anti-corruption initiatives: Development of a water sector strategy in Mozambique," *U4 Practice Insight* 2014, no. 2 (2014), https://www.cmi.no/publications/file/5308-mainstreaming-anti-corruption-initiatives.pdf
- 67. "Gender, Water and Sanitation: A Policy Brief." United Nations Water, accessed April 20, 2022, https://www.un.org/waterforlifedecade/pdf/un\_water\_policy\_brief\_2\_gender.pdf.
- **68.** Edgar Cambaza et al., "Outbreak of cholera due to Cyclone Kenneth in northern Mozambique, 2019," *International Journal of Environmental Research and Public Health* 16, no. 16 (August 2019): 2925,
  - $https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6720437/\#: \sim :text=Mozambique\%20is\%20endemic\%20to\%20tropical, rotavirus\%20and\%20cholera\%20\%5B8\%5D.$
- 69. "Drinking Water," United States Environmental Protection Agency, accessed December 18, 2021, https://www.epa.gov/report-environment/drinking-water.
- **70.** H. H. Patel, "Water-Borne Diseases," News Medical Life Sciences, accessed December 18, 2021, https://www.news-medical.net/health/Water-Borne-Diseases.aspx.
- 71. Anita Ramesh et al., "Evidence on the Effectiveness of Water, Sanitation, and Hygiene (WASH) Interventions on Health Outcomes in Humanitarian Crises: A Systematic Review," *PLOS ONE* 10,

- no. 9 (September 23, 2015),
- https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0124688.
- 72. "Drinking Water," World Health Organization, accessed April 20, 2022, https://www.who.int/news-room/fact-sheets/detail/drinking-water.
- 73. Assucênio Chissaque et al., "The Epidemiology of Diarrhea in Children Under 5 Years of Age in Mozambique," *Current Tropical Medicine Reports* 5, no. 3 (2018): 115–124, https://link.springer.com/article/10.1007/s40475-018-0146-6.
- 74. Rajanbir Kaur, Kanwaljit Kaur, Rajinder Kaur, "Menstrual Hygiene, Management, and Waste Disposal: Practices and Challenges Faced by Girls/Women of Developing Countries," *Journal of Environmental and Public Health* 2018, (2018), https://www.hindawi.com/journals/jeph/2018/1730964/.
- 75. Camille, Morgan et al., "Water, sanitation, and hygiene in schools: Status and implications of low coverage in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," *International Journal of Hygiene and Environmental Health* 220, no. 6 (2017): 950–959, https://doi.org/10.1016/j.ijheh.2017.03.015.
- 76. Myles F. Elledge et al., "Menstrual Hygiene Management and Waste Disposal in Low and Middle Income Countries—A Review of the Literature," *International Journal of Environmental Research and Public Health* 15, no. 11 (November 2018): 2562, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6266558/.
- 77. Camille, Morgan et al., "Water, sanitation, and hygiene in schools: Status and implications of low coverage in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," *International Journal of Hygiene and Environmental Health* 220, no. 6 (2017): 950–959, https://doi.org/10.1016/j.ijheh.2017.03.015.
- Ian Ross et al., "How does sanitation influence people's quality of life? Qualitative research in low-income areas of Maputo, Mozambique," Social Science & Medicine 272, (March 2021): 113709, https://doi.org/10.1016/j.socscimed.2021.113709.
- 79. "Sanitation for Women: The Problem and Solution," Lifewater, accessed October 25, 2020, https://lifewater.org/blog/sanitation-for-women/.
- "Female genital schistosomiasis," Schistosomiasis Control Initiative Foundation, accessed December 18, 2021, https://schistosomiasiscontrolinitiative.org/ntds-female-genital-schistosomiasis.
- **81.** Julie L. Gerberding, "Women and Infectious Diseases," *Emerging Infectious Diseases* 10, no. 11 (November 2004): 1965–1967, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3329060/.
- 82. "Female genital schistosomiasis," Schistosomiasis Control Initiative Foundation, accessed December 18, 2021, https://schistosomiasiscontrolinitiative.org/ntds-female-genital-schistosomiasis.
- 83. Ibid.
- 84. "Single Ventilated Improved Pit," Swiss Federal Institute of Aquatic Science and Technology, accessed April 20, 2022, https://sswm.info/factsheet/single-ventilated-improved-pit-%28vip%29.
- 85. Cátia Salamandane et al., "Handling of Fresh Vegetables: Knowledge, Hygienic Behavior of Vendors, Public Health in Maputo Markets, Mozambique," *International Journal of Environmental Research and Public Health* 17, no. 17 (2020): 6302, https://www.mdpi.com/1660-4601/17/17/6302/htm.
- 86. "Water pollution from and to agriculture," Water Action Decade, accessed December 18, 2021, https://wateractiondecade.org/2017/12/09/water-pollution-from-and-to-agriculture/.
- 87. Aidan A. Cronin et al., "Monitoring source and domestic water quality in parallel with sanitary risk identification in Northern Mozambique to prioritise protection interventions," *Journal of Water and Health* 4, no. 3 (2006): 333–345,

https://iwaponline.com/jwh/article/4/3/333/31296/Monitoring-source-and-domestic-water-quality-includes a constraint of the contraction of the co

- 88. Cátia Salamandane et al., "Handling of Fresh Vegetables: Knowledge, Hygienic Behavior of Vendors, Public Health in Maputo Markets, Mozambique," *International Journal of Environmental Research and Public Health* 17, no. 17 (2020): 6302, https://www.mdpi.com/1660-4601/17/17/6302/htm.
- 89. Edgar Cambaza, et al., "Lettuce (Lactuca sativa) handling features and coliform levels in markets of Maputo City," Preprints, accessed April 20, 2022, https://www.preprints.org/manuscript/201806.0428/v1#:~:text=Average%20levels%20were%2014.43%20MPN,and%20the%20lack%20of%20gloves.
- 90. Corinna Hawkes and Marie Ruel, "The links between Agriculture and Health: An intersectoral opportunity to improve the health and livelihoods of the poor," *Bulletin of the World Health Organization* 84, no. 12 (December 2006): 984–990, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2627573/.
- 91. Nadim Matta, "Uganda: Turn-around of the National Water and Sewerage Corporation" *Africa Region Findings & Good Practice Infobriefs*, no. 228 (2003), https://openknowledge.worldbank.org/handle/10986/9729.
- **92.** Ibid.
- 93. Silver Mugisha, "Sustaining High Performing Public Enterprises: Case Study of National Water and Sewerage Corporation, Uganda," IWA Publishing, accessed December 18, 2021, https://iwaponline.com/ebooks/book/736/Sustaining-High-Performing-Public-Enterprises-Case?re directedFrom=PDF.
- **94.** "National Water & Sewerage Corporation," accessed December 18, 2021, https://www.nwsc.co.ug/.
- 95. Nadim Matta, "Uganda: Turn-around of the National Water and Sewerage Corporation" *Africa Region Findings & Good Practice Infobriefs*, no. 228 (2003), https://openknowledge.worldbank.org/handle/10986/9729.
- **96.** Ibid.
- **97.** Ibid
- 98. Ibid.
- 99. Ibid.