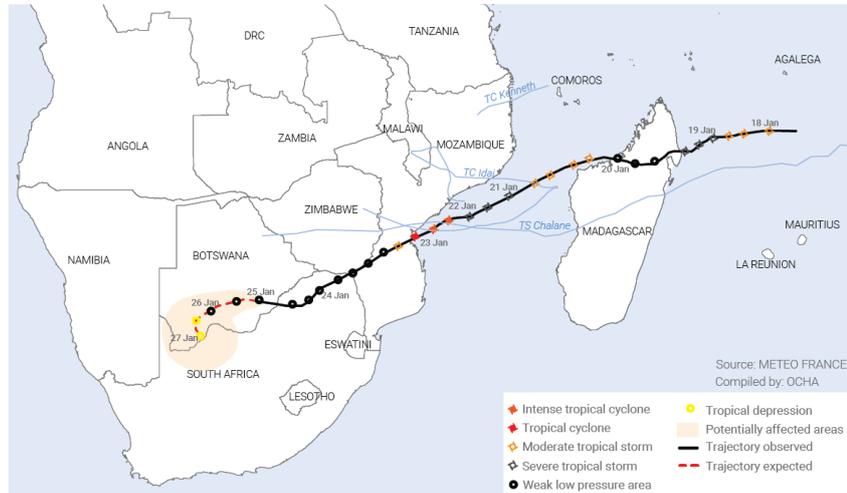


Initial Environmental Issues – Cyclone Eloise

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Introduction: This summary document discusses key environmental issues arising from the passage of Cyclone Eloise over Mozambique. While full details of the storm damage are not yet completed (government and civil society organizations are still conducting assessments), sufficient information is available to project likely environmental impact and issues related to relief, recovery, and reconstruction operations.



Source: OCHA Southern Africa Tropical Cyclone Eloise Flash Update No 8 as of 25 January 2021.

This initial identification of environmental issues draws on the [Initial Environmental Issues – Cyclone Idai](#) report as well as [OCHA Southern Africa Tropical Cyclone Eloise Flash Update No 8 as of 25 January](#), [Information Bulletin #1 Mozambique: Tropical Storm Eloise](#), and [Tropical Cyclone Eloise threatens Mozambique](#).

Context: Part of the area affected by Cyclone Eloise was affected by [Cyclone Idai](#) in 2019 and Cyclone Chalane in 2020, particularly Sofala and Manica Provinces and parts of Beira City (see map). Environmental impacts related to both the impact of and partial recovery by the affected populations to these prior storms (particularly Cyclone Idai) could be worsened by Eloise’s impact.

In addition, recent weather in southern Mozambique, southern Zimbabwe, and northern South Africa appears to have been wetter than normal, leading to water saturation of soils and high dam levels in Zimbabwe and South Africa. These conditions can lead to flooding after Eloise passed downstream from large dams, though those dams are located outside the most severe impact track of the cyclone. The storm-associated impacts on river levels and dam discharge need to be monitored as Eloise moves to the west over watersheds that drain throughout Mozambique, as flood damage may occur days after the passage of the cyclone. Of specific concern are the Buzi, Pungue, Save, and Limpopo watersheds.

Anticipated Environmental Issues: Based on the impacts of previous cyclones in Mozambique (particularly Cyclone Idai), documented impacts of hurricanes and typhoons elsewhere, and input from local environmental experts, response operational staff should anticipate several key issues as described below.

1. Disaster Debris: The cyclone winds caused damage and destruction of buildings and vegetation in Beira City and coastal areas of Sofala Province. Clearing debris is critical to

jump-starting the recovery process and often essential for getting relief to affected areas and populations.

Response staff should collect, reuse, repurpose and recycle debris to the extent possible and appropriate. Debris management actions can support rebuilding and opportunities for cash or food for work activities. Organic debris can be composted or transformed into mulch, which can be used in the recovery. Trees can be processed for timber for use in rebuilding or other commercial purposes. Guidance on debris management is available from the [United Nations Office for the Coordination of Humanitarian Affairs](#). An annotated bibliography of debris management references and additional support on developing debris management programs is available upon request.

2. Liquid Waste: Sewage systems or septic tanks are often filled, overloaded, or damaged by flooding (particularly in urban areas). To reduce the chance of disease, operations staff need to implement programs to collect and safely dispose of sewage and liquids from flooded septic systems early in the response. Well-developed systems for collecting and disposing of sewage are needed if portable toilets or emergency latrines are used.

Flooding and saturated soils make it unlikely that open field disposal of sewage will be effective. Constructed primary treatment facilities may be a necessary near-term solution if functional sewage treatment systems are not operational or cannot handle the volume of sewage generated in urban areas or removed from flooded septic tanks.

3. Vector Control: Poor sanitation and standing water may lead to an increase in the number of disease vectors and pests, primarily in urban areas but also rural areas with long-standing pools of water. While initial response programs may include the use of pesticides to control the vectors, integrated pest management options are more effective over the long term and avoid the loss of beneficial insects associated with pesticides. Vector control can also involve cash or food for work clean-up campaigns in urban areas, which can help support livelihoods. Guidance on integrated pest management for humanitarian operations is available upon request from the Environment and Disaster Management [HelpDesk](#).

4. Livelihoods: The cyclone's flooding and winds are likely to have severely affected food security and livelihoods in rural and urban areas. Attention is needed to how disaster survivors replace or supplement their income, particularly as they will need additional resources to rebuild.

Survivors will most likely turn to the environment to secure short-term income and environment-based resources, including wood, rocks, sand and other materials needed for rebuilding, and charcoal for fuel. Loss of crops this growing season may force some to turn to short-term income from natural resources, such as hunting, fishing, and charcoal-making. Excessive techniques involved with resource extraction can lead to increased risk of disease, injury, death, and/or secondary impacts such as flooding, landslides, and food insecurity. Areas affected by Cyclones Idai and Chalene, particularly in Sofala Province, are experiencing compounding environmental, social, and economic

COVID 19 and PPE

Personal protective equipment (PPE), particularly masks, are needed in accommodation centers to reduce the risk from COVID-19. An immediate environmental challenge is most personal protective equipment is intended to be disposable, leading to bio-hazard waste and plastics disposal challenges. Considerable guidance on managing COVID-related issues during a humanitarian response can be found at the [Environmental Emergencies Centre](#).

impacts of resource extraction and climate-related extreme events.¹

This risk can be reduced by (1) maximizing the level of assets – as income or goods – transferred to survivors as part of the relief and recovery process and (2) monitoring demand on natural resources and employing better management practices.

Efforts to support livelihoods should also consider the trade-offs between local procurements and imports, as well as the impact of cash payments on the environment. [Guidance is available here](#).

Lessons regarding rebuilding livelihoods are available from multiple sources, including livelihood recovery after past armed conflict when rural households have had to re-establish their lives and agriculture. Further information is available from the Environment and Disaster Management [HelpDesk](#).

5. Technological Hazards: Cyclone damage to Beira City may include factories and businesses which handle hazardous chemicals or generate hazardous waste. These potential sources of environmental damage need to be assessed locally. Further, asbestos has been used as roofing in the Mozambique impact area and poses specific challenges in dealing with debris collection and disposal. [Guidance on asbestos management](#), developed following Cyclone Idai, can be used for the Eloise response.

6. Climate-Risk Informed Rebuilding: Flooding, high winds, and drought are normal climate-related hazards for the areas affected by Cyclone Eloise. Relief and rebuilding activities need to recognize these hazards by, for instance, ensuring that roofs are correctly attached and roof water is harvested. Anticipated changes to weather and climate conditions need to be recognized and incorporated into relief and recovery to reduce future vulnerability and increase resilience. Natural infrastructure and ecosystem services such as maintaining or restoring mangroves and wetlands to reduce storm surge and flood risk, as well as sound river basin management, including dam management and appropriate land use to manage flood risk, should be incorporated in all disaster recovery and reconstruction. [Useful information on climate change in Mozambique is available from USAID here](#).

Local environmental experts in Mozambique: Expertise on environmental issues is available from:

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Note: The WWF Environment and Disaster Management [HelpDesk](#) is available to respond to any requests for information or advice on the response to Cyclone Eloise. Additional information is available from:

1) **WWF Environment and Disaster Management** - <http://envirodm.org>

2) **EHA Connect - Connecting Environment and Humanitarian Action** - <https://ehaconnect.org/>.

¹ <https://www.climatelinks.org/resources/climate-change-and-health-mozambique-impacts-diarrheal-disease-and-malaria-0>