



Shared responsibilities: flood risk management in Mozambique's Lower Incomati region

How Tetra Tech's Climate Resilient Infrastructure Development Facility (CRIDF) supports climate resilience in Mozambique's Lower Incomati region

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Climate change makes Mozambique highly vulnerable to extreme heavy weather events. Over the last 20 years, floods in the Lower Incomati River region have had increasingly severe impacts on community farmers that struggle to cope with these disasters.

The existing large-scale sugar Estates along the Incomati have built flood embankments and are diverting the river flows to protect critical areas and prevent the considerable financial losses caused by floods. These measures, however, have resulted in increased flooding in other areas, damaged wetland systems and created tensions between the private sector and the neighbouring communities.

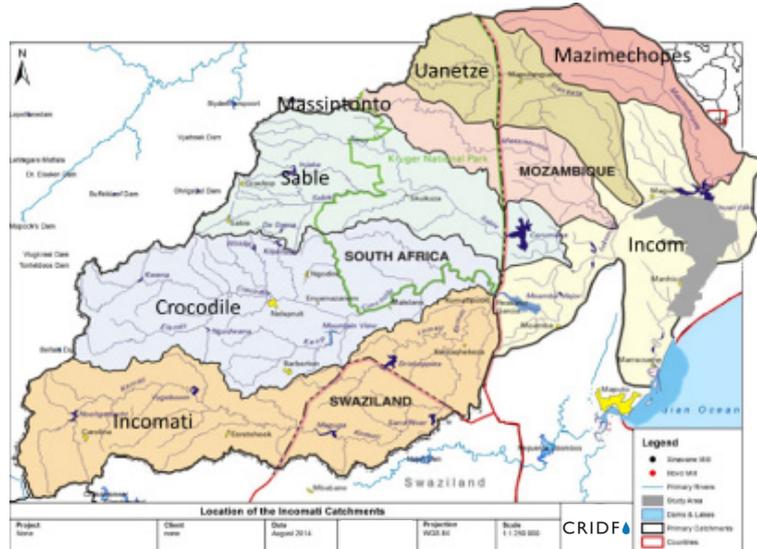
Climate resilience through strong cooperation

As part of the UK's Foreign, Commonwealth and Development Office (FCDO)-funded Climate Resilient Infrastructure Development Facility (CRIDF) programme, Tetra Tech International Development is leading the Lower Incomati Flood Risk Management project. A prime candidate for investment, our project team brings together the public and private sectors to improve flood risk management infrastructure across the Lower Incomati Basin. By establishing a flood risk management steering group for the region – chaired by Mozambique's river government authority, ARA-Sul – we are bringing onboard key stakeholders, including the private sector sugar estates of Tongaat Hulett and Illovo Sugar.

The project aims to make farmers less vulnerable to flooding and more resilient to climate change, encouraging cooperation in building, managing and operating the infrastructure and engaging stakeholders at all levels.

The CRIDF team has delivered a number of project phases:

- **Phase 1:** Produce a flood risk management (FRM) assessment of the lower Incomati with socio-economic analysis to support reform and define infrastructure options.
- **Phase 2:** Develop the flood risk management approach in more detail and include an early warning flood forecast system (EWFFS) for the Incomati basin.
- **Phase 3:** Develop large scale infrastructure operations framework including dam operation rules.



Incomati Basin showing extent of the EWFFS and location of the lower Incomati study area

Protecting lives and livelihoods

We have been working closely with Illovo Sugar and Tongaat Hulett, ARA-Sul and local authorities and communities since 2014. During this time, CRIDF developed a 2D hydraulic flood model of the Lower Incomati to better understand the impact of floods in the basin and identify flood management infrastructure. We have also carried out a Cost Benefit Assessment (CBA).

We designed and developed a flood embankment with sluice gates – the most effective infrastructure option for flood risk management – to divert the water during the more extreme flooding events that happen every five to ten years.

Parallel to this, we further established an early warning flood forecast system for the entire Incomati basin which is able to provide in real-time data to the riparian member states of Eswatini, Mozambique and South Africa.

The benefits of these measures are considerable: our cost-benefit analysis predicts that operation and maintenance costs in the amounts of approximately £20,000 per year are likely to produce annual benefits of £700,000.

A safe and prosperous future

Through our continuous support, stakeholders have realised the EWFFS’s substantial progress, seeing the benefits the system will have for most of the key stakeholders and over 250,000 beneficiaries. The system could provide up to five days’ warning before a major flood occurs and allow communities to plan for the event, keeping more people safe and preventing damage to their livelihoods.

The project is now at the stage where it is ready for investment to build the infrastructure and develop the institutional arrangements among all parties.