

Changing estuary water flows

Understanding global and local environmental mechanisms is a good thing. Even better is using them to make a real difference to people's everyday lives. What follows is the perfect example.



Returning from fishing on the Incomati Estuary, Mozambique.

In the Incomati Estuary in Mozambique, freshwater is in short supply because it is being held upstream in South Africa by hydroelectric dams and used for sugar cane and eucalyptus plantations. As a result, the flow of the Incomati has been reduced 100-fold over the last 75 years. Very little water reaches the estuary, despite hard negotiations with South Africa as part of a treaty whose terms are to be re-examined soon.

The flow is currently insufficient to prevent the salinisation of the farmland used by the small-scale fishermen living in the delta, whose are struggling to have their voices heard. A transdisciplinary programme has therefore been set up to develop methods for better assessing the estuary's water needs, from both an ecological and a societal point of view.

To do this, researchers modelled saltwater and freshwater flows in the estuary. They then compared this model with the number of fish-eating birds in the area. This indicator, which gives an idea of the state of health of the ecosystem (presence of fish and shrimp), is recorded on a participatory platform that collects observations from professional and amateur ornithologists throughout the year.

Interviews were also conducted with fishermen in the estuary. Over a period of two years, 15 local people from different parts of the delta

“I live in Marracuene, near Matsinane. I go out in the morning to catch crabs and fish. The problem with the river is the changing waters. It used to be fresh water, but now it's salt water. Because of this change, the fish we used to catch are no longer there and it has become difficult to catch them. The fish have disappeared upstream.”

Horacio Manhica, fisherman in the Incomati Estuary, Mozambique

... Transdisciplinary work has culminated
in recommendations for managing the water of a river flowing
into the Indian Ocean in Mozambique ...



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Collared Pratincole flying over the plains of the Incomati Delta, Mozambique.

were asked to keep photographic logbooks to record their fishing and farming strategies in relation to the water flows. These methods made it possible to document their difficulties and their strategies for adapting when the estuary is flooded by fresh water or, conversely, when it becomes saline.

By combining all these data, the researchers have demonstrated that, instead of negotiating an annual volume of water, Mozambique would benefit from negotiating a schedule for flows reaching the coast. The recommendation is that the country should obtain more water between September and October to soften the waters of the great equinox tides, which are responsible for the salinisation of the land, making the delta more productive in terms of fish, prawns, crabs, agricultural produce, plants and pastures.

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Children fishing on a reef flat in Reao, French Polynesia. © IRD/S.Andréfouët

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