AN OVERBURDENED RIVER

Over the course of a 28-day trek down South Africa's Umgeni River, which flows from the pristine wetlands of the Umgeni Vlei Nature Reserve to the Durban coastline, Penny Rees, a coordinator for the Duzi uMngeni Conservation Trust, witnessed the polar opposites of river health. The trust is a nonprofit organisation that works to conserve the Umgeni and its tributary, the Msunduzi river.

At the Umgeni River's source the water ran clean and was good enough to drink for Rees, and the four volunteers who joined her in walking the length of the 232-kilometre river and documenting its health. Further downstream, after the river had wound past agricultural land and urban terrain, the water became sludgy and smelly. "Sometimes you can smell it, like [we could] in Durban the last time we crossed the river," Rees told IPS during an interview at her home in Howick, 97 kilometres north of the port city Durban. "You get to know the colour of the water – [it has] this grey, grungy look, and it stinks of sewage."

The Umgeni River supplies drinking water to more than five million people, and is the main source of water for the cities of Durban and Pietermaritzburg town 66 kilometres from the coast. Rees's sojourn further highlights the work of scientists who have pinpointed pollution problems in the river.

Ongoing sewage sagas

Like other rivers in South Africa, the Umgeni is under pressure from untreated sewage entering it. Poor infrastructure and surcharging sewers in places like Mpophomeni, a low-cost housing settlement upstream of Midmar Dam, have led to high levels of E. coli and nutrients flowing into the dam, Simon Bruton, a hydrologist with environmental consulting firm GroundTruth, told IPS. Midmar Dam is a large dam with a capacity of 235 million cubic metres of water on the outskirts of Pietermaritzburg. While Mpophomeni accounts for just 2.4 percent of

Midmar Dam's catchment area, it produces about half of the E. coli and 15 percent of the phosphorous entering the dam, according to a 2009 study by GroundTruth. Projections indicate that the sewage pollution entering the Umgeni River, combined with nutrients from run-off from dairy, pig and poultry farms, could lead to Midmar and the nearby Albert Falls Dam becoming "eutrophic" – rich in nutrients like nitrogen and phosphorous that promote algal growth – by 2019. When dams enter this nutrient-rich state, algae grows in them. "A lot of the algae that blooms can be toxic to human contact so you wouldn't be able to use the water for recreational purposes any more," said Bruton. "The other problem it creates is that it significantly pushes up the water treatment costs because that biomass of algae causes problems for water purification, and it's quite costly to remove."

Overburdened wastewater works

Wastewater treatment plants that empty treated effluent into the river are also oversubscribed, adding to contamination issues. At four of the plants operated by state-owned company Umgeni Water, compliance rates for the quality of treated water pumped into the river dropped to 71.6 percent in June 2013, according to an Umgeni Water audit report. A compliance rate of 95 percent is considered acceptable. The overall lack of compliance was chiefly due to problems at the Darvill plant, which treats industrial and domestic wastewater from the city of Pietermaritzburg. The Darvill plant is overloaded, Shami Harichunder, corporate stakeholder manager for Umgeni Water, told IPS. The company has put out a tender valued at millions of dollars to increase the plant's capacity by over 50 percent, and has spent about 500,000 dollars on additional aeration facilities, which are soon to be commissioned, he said. Companies that pump industrial effluent to the plant, and fail to meet their permit obligations for the quality of effluent they discharge, also "significantly" affect the plant's ability to process wastewater, Harichunder said. However, compliance at the Howick plant, which is running near to full capacity, was at 90 percent for June 2013.

Downstream pollution

Earlier this year, the Umgeni River made headlines as "one of (the) dirtiest" rivers in South Africa, based on the release of a study for South Africa's Water Research Commission. The study analysed levels of viral and bacterial contaminants in the section of the river that stretches from Inanda Dam, close to Hillcrest, to the river mouth in Durban. The researchers found bacteria, including salmonella and shigella, as well as viruses, such as Hepatitis B, in every sample they took. Many of the bacteria and viruses found in the samples are potentially pathogenic to humans and have demonstrated the ability to kill human tissue cultures, one of the study's authors Johnson Lin, who is based at the University of Kwa-Zulu Natal, told IPS. The river water failed to meet the Department of Water Affairs and Forestry's water quality guidelines for recreational and drinking use.

The results “would raise concerns for people who may consume water directly from the river without any form of treatment,” the researchers concluded. Lin points to outbreaks of diarrhoea as a potential risk to those who drink contaminated river water. And the paper highlights that in South Africa, 2.6 percent of all deaths are attributable to unsafe water supplies, and inadequate sanitation facilities and hygiene.

River shows its strength

During their month-long sojourn, Rees and her team documented other negative impacts on the important river. They saw the detrimental effects of sand mining operations, illegal dumping of trash on the river’s banks, along with the proliferation of invasive aquatic plants that thrive in high nutrient conditions created from agricultural run-off and sewage contamination.

Despite this, Rees was struck by the fact that, based on the water sampling the team did, water quality could once again improve in sections of the river that were not impacted by human activity for long stretches.

"The miracle is that if you give [the river] a long enough gap without any impact, the water returns to top quality," she said. With that in mind, Rees is advocating designation of untouched buffer zones between major contamination points along the river. "You're always going to have a spill from a wastewater works, sooner or later," she said. "At least then you know that if there's a problem you need x-number of kilometres where there is no impact and the river will [be] clean."

Source: https://umngeniriverwalk.wordpress.com/2013/08/25/an-overburdened-river/