

Environment – Nicaragua

Lake Managua: from cesspool to popular getaway

Nicaragua's capital Managua is situated by a lake of the same name. However, the lake contributed little to residents' quality of life, as it had been heavily polluted for some time. The people in the poor districts directly on its shores became ill because they used the water to cook and wash. Deployment of an innovative wastewater treatment plant, which was built on behalf of the German Federal Government with assistance from KfW Development Bank, has cleaned the lake.

Context

The lake by which the city of Managua sits was once known as the world's largest cesspool. For more than 80 years, untreated wastewater from households and industry was discharged into the lake.

It is primarily poorer families that live right on the bank of the lake. They take water from Lake Managua to wash, cook and irrigate their fields. Fish from the lake are also eaten – but for a long time, these were contaminated with pollutants and made people ill.

To bring this untenable situation to an end, the Nicaraguan government rolled out an environmental protection programme back in the 1990s. In 2005, it was extended to include water and wastewater management measures, and its expansion continues to this day.

Project approach

On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), KfW is supporting the Nicaraguan government as it cleans Lake Managua. In 2009, a wastewater treatment plant began operations, cleaning sewage from the capital's over one million

residents. The treatment plant continues to offer the region innovative solutions. Nicaragua also found new ways to dispose of the sewage sludge that was generated: the plant has been extended to include innovative solar drying equipment that dries the sludge. This makes effective use of Nicaragua's high levels of solar radiation. The groundbreaking facility is currently the largest of its kind in the world.

The sludge is dried and some is disposed of in the local landfill site; however, some is turned into granules that are rich in nitrates and phosphates. These are used as agricultural fertiliser. Using sewage sludge as fertiliser releases far fewer emissions than the standard fertiliser manufacturing process.

Nicaragua's national water utility operates the programme. It has concluded a management agreement with a well-known wastewater treatment plant operator.

Project title	Protecting Lake Managua
Commissioned by	German Federal Ministry for Economic Cooperation and Development (BMZ)
Country/Region	Nicaragua
Lead executing agency	National water utility (ENACAL)





Lake Managua has become a recreational space at the gateway to the capital. Source: BIWATER (Bewater International Ltd), photographer: Hayley Thompson

The treatment plant has now reached its load limit. This is why KfW is financing measures to optimise its purification capacity and increase its sludge drying capability. There are also plans to use the biogas generated in the plant to supply it with power. That would help to save on energy costs – and it is environmentally friendly, too. In addition, more suburbs of Managua and nearby towns will be connected to the plant to ensure that their waste water is properly removed and cleaned going forward as well.

The wastewater treatment plant currently cleans an average of 160,000 cubic metres of waste water per day. On behalf of the Federal Ministry for Economic Cooperation and Development, and using its funds, KfW Development Bank contributed EUR 33.95 million to the project, which cost EUR 51 million overall. Part of this was a grant, and part was as loans from budgetary funds.

Impact

The water quality in Lake Managua has improved significantly over the past decade. Its levels of solids and phosphates have fallen. Just looking at it, you can see that the water is clear once again.

Cleaning the lake has significantly improved the capital city. The water has ceased to give off an unpleasant stench. The former port area of “Salvador Allende” has been transformed. The old industrial docks are a thing of the past. A promenade with restaurants attracts visitors, while playgrounds have been built for children. It is the departure point for Managua’s residents and tourists

to enjoy boat trips on the lake. Around 150,000 people visit every month to stroll along the waterfront, which serves an important recreational function in the heavily populated city.

The clean-up effort has particularly benefited the 120,000 people who live right on the shores of the lake and are generally from poorer sections of the population. They use the water to wash. Fish are among their main sources of food. The fish in Lake Managua are now less contaminated with pollutants and are no longer harmful to eat. This means that cleaning the lake has positively impacted residents’ health.

The world’s largest plant for drying sewage sludge using solar power in Managua sets an example to other countries with a similar climate. This is why the company BEFESA recognised the sustainable programme to treat waste water in Managua with its Global Water Award.

Optimising the treatment plant and connecting additional residential areas means that suburban residents also benefit from the sewage treatment process.



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