

## Limnologists Warn of Impacts of an Interoceanic Canal Across Lake Nicaragua

China's Hong Kong Nicaragua Canal Development Investment Company (HKND) recently began construction of a canal linking the Pacific and Atlantic oceans through Nicaragua. The "Interoceanic Canal" route will include a 105-km swath across Lake Nicaragua, also known as Lake Cocibolca (see map). The approximately 500-m-wide and 30-m-deep channel will require the removal of around 1.2 billion tons of sediment from the lake bottom.



In November 2014, the Academy of Sciences of Nicaragua invited the InterAmerican Network of Academies of Science (IANAS) and the International Council for Science - Regional Office for Latin American and the Caribbean (ICSU-LAC) to co-sponsor a workshop to identify the potential environmental and social impacts of the canal ([www.cienciasdenicaragua.org](http://www.cienciasdenicaragua.org)). The workshop participants concluded that the channel through the lake would severely affect the ecology of the system mainly due to sediment resuspension and disposal during the construction phase, as well as from navigation through the lake. Resuspension will add nutrients and contaminants in this shallow (mean depth 13.2 m) and naturally polymictic lake, leading to an increased risk in of eutrophication, hypoxia, and degraded fisheries.

Lake Nicaragua has the second largest surface area of tropical lakes in the Americas and is presently an important source of drinking water and subsistence fisheries, as well as a hotspot of cultural and biological diversity (Huete-Pérez, et al. 2013, Meyer and Huete-Perez 2014). Currently, Lake Nicaragua has good water quality, and it is borderline mesotrophic-eutrophic according to chlorophyll and phosphorus levels (CIRA/UNAN, 2014). The lake also has oxygen concentrations that are near saturation throughout the water column (Vammen et al. 2006). Lake

Nicaragua is located within 30 km of the Pacific Ocean, but it discharges to the Caribbean Sea and contains several euryhaline fish such as tarpon and sawfish. The canal construction and operation would compromise Lake Nicaragua for providing high-quality drinking water and irrigation, and for maintaining biodiversity. These adverse impacts could also be amplified in the future by increased periods of drought due to climate change.

Many thousands of people will be displaced along the Canal route due to expropriations of their family lands because most people in rural areas do not have adequate property deeds. Likewise, opening a corridor through several natural reserves and indigenous areas will increase pressure on already threatened natural areas and tribal homelands.

The HKND has commissioned an Environmental Impact Study by the British firm Environmental Resources Management (ERM) on the long-term environmental, social and economic consequences of this project. Neither the HKND nor ERM has released any of the details of this assessment, although work on the canal has already begun (Meyer and Huete-Perez 2014). The economic viability of Interoceanic Canal is also questionable due to competition from the soon to be expanded Panama Canal and the opening of alternative maritime routes through the North Pole as arctic ice melts. Because the potential economic value of the lake and biodiversity along the canal route has also not been evaluated, a full accounting of costs and benefits of the project is lacking.

**Well-established international best practices require that environmental assessments be completed, vetted, and published before work begins. The government's actions are leading to an atmosphere of mistrust, confrontation and repression. We call on the Nicaraguan government to halt the project until these studies are completed and publicly debated.**

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