

Building public engagement in developing an ecosystem health assessment in Guanabara Bay (State of Rio de Janeiro, Brazil)

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Guanabara Bay is a beautiful natural harbor that forms the identity of the Rio de Janeiro region in Brazil. The Bay supports the Brazilian economy with shipping, recreation, and tourism, but urban development from 8.6 million people living in the basin results in significant impacts including litter and untreated sewage. This project brought together stakeholders from the government, municipalities, nonprofits, universities, local communities, private sectors, and fisheries groups to develop a scientifically rigorous, transparent assessment of health for Guanabara Bay. Many challenges occurred throughout the process, including competing interests, political instability, financial hurdles, cultural differences, and capacity constraints. For this environmental health assessment, the Bay was divided into five regions, based on the flow and water circulation patterns. The overall score for Guanabara Bay water quality was a D. The highest scoring indicator in the Bay was dissolved inorganic nitrogen, with a B. The lowest scoring indicator in the Bay was total phosphorus, with an F. When in excess, these nutrients contribute to algal blooms. Surface dissolved oxygen scored a B and biological oxygen demand scored a D. Fecal coliform scored an F, which indicates the presence of untreated sewage in the water. The differences between areas of the Basin are distinguished by development pressure around the cities, resulting in poorer water quality, and significant changes to the landscape. Moderate scores were found in the region where development pressures were low and federally protected landscapes and waters were prevalent.

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