

The impact of poor governance on water and sediment quality: a case study in the Pitimbu River, Brazil

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Abstract Applying a collaborative approach under a power-sharing institutional structure, coupled with a shift in paradigms, sustainable water resources management often requires political-institutional reform to achieve its goals. Most of Brazil's river basins are subject to rapid urbanization; however, basin stakeholders generally lack sufficient institutional capacity to address the attending water resource issues. Subject to urbanisation, the Pitimbu River basin supplies potable water to approximately 280 000 people in Brazil's Natal region. This study investigated how current institutional models influence both water management and fluvial contamination by metals. Sediment samples collected at eight sites along the river revealed elevated levels of Pb, Fe, Al, Ni and Zn, whose sources were linked to industries, vehicles, as well as agricultural and construction wastes. Aluminium enrichment of surface waters was mainly linked to inadequate sanitation infrastructure. In light of this, the region's poor institutional capacity must be addressed through institutional reform, including a new management structure open to public collective water management planning. In so doing, Brazil's water policies should acknowledge capacity building as a critical element of institutional reform.

Key words water governance; Pitimbu River; urbanization; land use management; institutional reform; institutional capacity