

WASTEWATER TREATMENT WITH CONSTRUCTED WETLAND IN A FRAGILE ECOSYSTEM AND ASSESSMENT OF POTENTIAL FOR REUSE

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ABSTRACT

Currently, environmental, social and economical impacts due to water pollution and scarcity are already severe in many parts of the world due to increasing water demand and pollution of existing supplies. Water reuse and recycling technologies will be certainly needed in a near future. Agriculture is responsible for 60-70% of water consumption and therefore, reuse in such economic sector could bring expressive benefits in a water-scarcity scenario. However, several constraints shall be removed to make possible water reuse. Among them, the treated water shall meet the required standards regarding human and environmental health safety aspects. Risk assessment shall demonstrate no additional risk for human and environmental health due to reuse. The main sources for reuse are saline water, brackish water and treated wastewater. This study evaluates the potential for reusing the effluents of a wastewater treatment plant according to the established guidelines and standards. It describes the process efficiency through physical, chemical and biological parameters in a wastewater treatment system designed for 60 persons per day, operating in an island within an Atlantic Rainforest environmental protected area in Rio de Janeiro, Brazil. The system is formed by septic tank, anaerobic biological filters, and polishing by a constructed wetland. Based on a six month monitoring period, it was shown that the water discharged from the treatment system can be safely used in irrigation. However it is recommended to use it in industrial processed cultures, wood forest, fruit trees and cereals cultures.