

Sewage treatment and reuse in agriculture

Vitória da Conquista, Bahia - Brazil

1. Objective

The main objective of this innovation pilot is to implement a wastewater treatment and reuse system for the municipality of Vitória da Conquista, with two identified users of the treated effluent: the Fazenda Miraflores (rural property) and the Settlement Project (PA) of Amaralina (INCRA). This Pilot Project under EMBASA will serve as an example for other ventures and collaborations to address existing needs for reuse throughout the State of Bahia.

2. The water supply system

EMBASA, the State of Bahia's water and sanitation utility company, provides water services to 367 municipalities (88% of total) and sewerage services to 106 municipalities (25% of total), with a total of 3.3 million billed connections. Most of the State of Bahia is located in the water-scarce semiarid region of Brazil. With the increase in population in urban regions and the impacts of climate change, there is an urgent need to address growing water demands, in addition to improving sewage services. According to the wastewater reuse study being conducted by EMBASA, the state of Bahia has a high potential for reusing treated effluents due to several factors including: reduced availability and water stress, diminishing water quality of existing sources, high industrial and agricultural water demand, and growing interest in establishing the necessary water quality regulation for reuse in industrial, agricultural and forestry activities. EMBASA has identified the municipality of Vitória da Conquista as the ideal location for the implementation of a reuse pilot, from which one will be able to draw lessons and scale-up to the rest of the State.

The existing sewage treatment plant at Vitória da Conquista operates with an average flow of 613 L/s and the treated effluent is discharged into the Verruga River. At first, half of the effluent flow (307 L/s) could be treated for reuse with two potential agricultural users: (i) Fazenda Miraflores (rural property) and (ii) the Settlement Project (PA) of Amaralina (INCRA). The use of this effluent, for now restricted agricultural reuse, stands out as a great opportunity for reducing pressures in the systems and for improving the livelihood of the local residents.

3. The Challenge

The implementation of the solution in the municipality of Vitória da Conquista could include the following activities, among others: identify needs for improvements in the existing treatment methods, taking into account technical, operational and economic conditions; adjustment of the monitoring parameters of water quality of the treated effluent; operational adjustments throughout the treatment process, including the last disinfection stage; create storage capacity that may include a reservoir; and

solutions to distribute treated effluent, including pumping stations and a water distribution network to serve Fazenda Miraflores and Amaralina.

4. Pilot Project General Structure

EMBASA is looking to develop a pilot demonstration project for improving the treatment process at the Vitória da Conquista facility, aiming at the reuse of part of its effluent in agricultural activities. The activities should include, among others:

- Review of existing study carried out by EMBASA for the reuse of treated effluent at the Vitória da Conquista facility.
- Analysis of existing treatment process, and proposed changes and adjustments for reuse of treated effluents, including technical, economic and environmental justification.
- Implementation of innovative treatment and reuse pilot, with demonstration of results.
- On-site testing of treatment improvements and water quality results for reuse.
- Development of technical specifications and expansion of testing activity for demonstrable results.
- Training and dissemination of results at EMBASA and Vitória da Conquista

5. Relevant Company/program information.

Study for reuse of wastewater effluents, by EMBASA and Municipality of Vitória da Conquista

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