



COSTEA Workshop on Water reuse

Wastewater reuse in Bolivia

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I. General situation of the reuse of water treated for irrigation in Bolivia

The population of Bolivia is concentrated in areas of water deficit



70% Residual water is discharged to rivers

Difficulties in the operation and maintenance of the Wastewater Treatment Plant

Residual discharge of 135 MM of m³ / year



7000 Ha irrigated with treated or partially treated water

Irrigation combined with other water sources

Forage, cereals, tubers and vegetables (100 - 200 USD / Tn)

II. Identified problems



- Non-compliance with regulations
- Health risks
- Soil salinization
- Absence of wastewater treatment (collapsed Wastewater Treatment Plants)
- Organizational weaknesses

III. Emblematic projects



Improvement of the Albarancho Residual Water Treatment Plant
Primary and secondary lagoons and three UASB tanks and tertiary treatment with disinfection tank by chlorination
Project in execution 1000 l/s

Study: Reuse with treated water for irrigation area of Albarancho
Irrigation by gravity and pumping to benefit 1754 families and irrigation of 960 ha., Irrigated optimally, forage crops such as corn, alfalfa, oats and lolium grass. flow rate of 1200 l / s



VI. Research topics and projects

- Support in the planned reuse of treated water for irrigation
- Soil recovery
- impact of pollutants on agricultural production
- Analysis of the usual irrigation practices in underground aquifers
- Choice of type of tertiary treatment
- Operation and maintenance of Wastewater Treatment Plants
- Incentive mechanisms for the sustainability of Wastewater Treatment Plants
- Effect of the reuse of treated water for irrigation in agricultural yields



V. Developpement perspective – Projects

ROCHA RIVER SANITATION PROGRAM 41,6 MM EUR

- high **water stress and climate change** in Cochabamba region (water crisis in Bolivia, December 2016)
- **High levels of population growth** in metropolitan region (7 municipalities), 1,5 million of habitants) that will be 3 millions in 2036.
- **National and regional public policies:** national policies (universal access to water and sanitation), Basin national plan, Metropolitan director plan (water and sewerage), Integral water management in watersheds (Rio Rocha), National strategy for wastewater treatment (under preparation)....



Investments and technical cooperation:

- **Financing of 41.6 MEUR.** Stations of waste water treatment construction in 7 municipalities of Cochabamba metropole. Approach REUSE. Contribution of national and regional policies.
- **Technical assistance to increased institutional capacities** and public polices support: national strategy for wastewater treatment, planning tools to encourage REUSE approach).
- Triangular cooperation between Mexico, Germany and Bolivia, in its third phase, project that integrated learning related to the reuse of water treated for irrigation, through exchanges of experience and training processes with participation of public entities of Mexico and Bolivia financed by Germany .



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