

Title:

Petrosix Environmental Management

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The PETROBRAS oil shale processing unit (UN-SIX) started operations in the 1970 s, with a pilot plant. The industrial unit has been a successful commercial operation since 1991, producing shale-oil, fuel gas, LPG and other by-products. The facility is located in the southern part of Brazil, with pluvial temperate climate, annual rainfall in the order of 1700 mm, diversified fauna and vegetation dominated by Araucaria Forests.

Since the project start up, Petrobras staff faced numerous environmental challenges. Mined areas reclamation was initiated in 1974. So far, around 5.8 million square meters, from a total of 6.8 million square meters of disturbed land, have been reclaimed with good results.

Spent shale disposal was a major concern in the beginning, due to the possibility of metals leaching, and spontaneous combustion risk. After evaluating the alternatives, Petrobras decided to return the spent shale to the pits. This practice resulted in environment benefits, reducing the extension of disturbed land and creating spaces with high adsorption capacity. Some former pits are being successfully used as controlled land fills, receiving oil solid residues and city garbage.

Water resources management posed a more complex question. The pits dewatering dropped the ground water level approximately 30 meters. The local ground water has high content of dissolved salts, including sulfate, calcium, magnesium, sodium, manganese and iron. Nevertheless, so far, no major impacts were detected in the surrounding areas.

The use of old pits to form lakes and wetlands was also demonstrated to be a good practice. The ponds favor the local fauna development and act as natural filters, depurating oil shale mining effluents.

The Petrosix environmental management program is completing 30 years, looking to support water resources management and confirm environmental regulations compliance. Monitoring also provided useful data to define reclamation criteria and methods, and soil fertility restoration.

Petrosix staff is permanently looking for environmental management improvements. Water use optimization and process water and solids residues final use are the current priority.

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