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Training for using constructed wetlands to treat landfill leachate in Anta-Cusco

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INTRODUCTION

The work aims at designing and implementing a demonstrative pilot plant to treat landfill leachate to:

- i. Encourage of the use the constructed wetlands for water quality improvement
- ii. To improve technical training programs in constructed wetlands
- iii. To cooperate with local authorities to promote the use of constructed wetlands to treat landfill leachate in areas with particular natural and cultural interests in Perú.

To achieve these objectives, we have design and implemented a program to strengthen human capacity in the design, operation, monitoring and maintenance of constructed wetlands. Universidad Nacional Agrícola la Molina (UNALM) has provided infrastructure, equipment, and library facilities to develop programs that include training, research, innovation and public awareness. The program for science is strengthening to improve the education, promote researchers, and encourage mobility of technical staff and students within the doctoral program at the UNESCO Chair of the UPC. The project also includes the production of training manuals as well as web tool for teaching, training, and dissemination. The program also includes the education of Environmental promoters that will train high school students on issues related to wastewater in schools.

Has built a prototype artificial wetland and ecological toilet module. The prototype is fully operational and is expected to be a model for local actors. Moreover, it is expected that this work will contribute to local governments to implement strategies to improve water quality through constructed wetlands, and promote the use of artificial wetlands in isolated communities, increasing the quality of the environment and reduce the impact on human health.

METHODOLOGY

I. Educational and Methodological design of the following programs

In the time frame of the project a Sustainable Sanitation Course is being done to instruct about comprehensive management of water, . Through this course training has been provided to participants in the design, management and maintenance of systems dealing with Sustainable Sanitation.

II. Adaptation of infrastructure and endowment equipment

Two experimental plants for the treatment of domestic wastewater were implemented using technology adaptable to the socio economic situation in Peru. A dry bathroom was installed, as a demonstrative model, for training and studing. Lab equipment for a water evaluation was acquired to improve research capacity

III. Dissemination and call for the training programs. Preparation of training material and visibility. Production of the web

Similar to the dissemination material for the specialization course, a leaflet and a poster for the course in sustainable sanitation have been prepared.

The training manual for the use and management of the dry bathroom was prepared as teaching material for the training workshop for the users of the dry bathroom.

Academic material for researchers, professors, and technician and university students was elaborated.

IV. Training of technical staff of the municipality of Anta in the UNESCO Chair of sustainability at UPC and UNALM

The technical staff of the municipality of Anta made visit to the facilities of the UPC and UNALM, in order to see operative pilot plants, and the research programs, training and to raise awareness targeting the civil society

RESULTS

- 1) Invest in the UNALM of Peru's infrastructure, equipment, instruments specialized library to be able to develop programs for training, research, innovation and increased sensitivity.
- 2) Elaboration of training manual and website as a tool for teaching, training, dissemination and to increased sensitivity.

FINAL REMARK

We have demonstrated that the dynamics and the methodology of the program have contributed to join forces among the central governmental entities: The Environmental Ministry of Peru, The Waste Agency of Catalonia, TYPESA Group and Universities.

It has been established that the knowledge transference of related to sustainable technologies for the purification of contaminated water is of special importance. It has been confirmed that the increasing sensitivity run by the civil society enhances the results and has favoured the generation of strategic alliances.

The use of social media sites has allowed, the dissemination of the program and has given visibility of the diverse actions fulfilled.

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