

Abstract: Third International Conference on Ecological Sanitation

Title	The ECODESS, a integrated microsystem of Sanitary with focus ECOSAN, for Healthy Districts in Lima-Perú.
Keywords	ECODESS : Ecology and Development with Sustainable Sanitation CENCA : The Urban Development Intitute GT - ECOSAN PERU : The Work Group of Ecological Sanitation in Peru
Author(s)	Arquitecto : Juan Carlos Calizaya Luna
Address	Calle Coronel Zegarra 426, Jesus Maria, Lima-Peru
Telephone	Office: (0511) 421-5866/471-4361; House : (0511) 541-0716
Fax	(0511) 266-0012
Mobile	(0511) 9677-0886
E-mail	jcarloscenca@terra.com.pe cenca@terra.com.pe ; ecosanperu_gt@yahoo.es
Abstract ID no	J/3

The ECODESS, a integrated microsystem of Sanitary with focus ECOSAN, for Healthy Districts in Lima-Perú.

The basic services of water and sanitation in a suitable house and a worthy habitat are fundamental human rights. Providing these basic services it will reduce the health problems of more than 6 million people in Peru. According to statistical data, 31 countries with an approximate population of 480 million inhabitants have chronic lack of fresh or drinkable water. By 2025, 48 countries would face this lack and the Peruvian coast is among the most affected along with Ethiopia, India, Kenya, and Nigeria (Population Reports). Lima, located in the central coast of the country on an extremely barren strip of South America desert will not stop being a case needing urgent attention.

Studies indicate that by 2025 only 5.100 m³/hab/year will be available in the world; for the Peruvian coast by 2025 only 1.000 m³/hab/year of fresh water available will exist. What's more, exists 6.5 million people will be living without water and sanitation service -- 1.8 million in urban areas and 4.7 million in rural areas. The investment required to provide adequate water and sanitation service through 2015 and to fulfill the objectives of the Millennium in Peru is \$3,591,000; \$1,441,000 for water and \$2,150,000 for sanitation (hydraulic drag). The problem gets worse if we consider that 60% of the rural population lives in poverty and 24% in extreme poverty.

In Peru more than 2.6MMC (thousands of millions of cubic meters) of residual water/day are produced of which 1,5 MMC are produced in Lima. Most of the water and sanitation facilities have not invested in treatment infrastructure and for that reason, no more than the 20% is treated; the 4% in Lima. The rest is thrown in the river, ocean or ground. Sixteen of the 53 rivers of the coast are contaminated by mining company waste and garbage dumps of the population. At the moment there is a rationed distribution of water in Lima; nevertheless, irrigation systems still use potable water for parks while there are urban areas around Lima with lack drinkable water.

THE NECESSITY TO INCORPORATE SHORT-TERM STRATEGIES INTO A LONG-TERM STRATEGY

These significant systemic problems need a long-term, progressive and sustainable solution. The Peruvian government needs to promote policies based on the fact that fresh water for human consumption is an exhaustible resource that will require a national collective will to modify personal behavior as well as structural changes in the government's management of water and sanitation (addressing both consumption and treatment). This is the objective that motivated CENCA (the Urban Development Institute) and later in partnership with GT. ECOSAN PERU to promote the ECOSAN since 1997 in Peru as a strategy to solve the problems stated earlier. We have made demonstration experiences and later pilot projects that have begun to impact the users and have also been adopted and implemented by other non-governmental institutions (NGOs). Currently the Peruvian Household Ministry has shown strong interest on the experiences done until now and we are talking to see the viability of the system to try to find a way to implement it in the country.

ECODESS, Ecology and Development with Sustainable Sanitation, is a technological system based on an ecological approach to sanitation -- an integrated micro-system of collection, treatment and re-use of domestic solid and liquid waste. It is based on three basic principles that are completely opposite to the conventional system of hydraulic drag. The principles are 1) avoid the contamination of used water that means, stop using drinkable water to flush toilets (this means a reduction of more than 50% of potable water consumption per person per day); and 2) re-use the domestic liquid and solid waste to irrigate and fertilize green areas. ECODESS is divided in two sub-systems:

- **A domestic system**, located entirely in the house, that includes a complete bathroom, a laundry and collector network of grey water that ends at a "fat-keeper container" (that retains fats and suspended solids) and a channel to the local system.
- **A neighborhood system**, with a second collector network which collects the water coming from all of the units that use the ECODESS system and channels to another filter before storing it in a cistern, from which it will go to an underground irrigation network to maintain the green areas. ECODESS re-uses greywaters in urban irrigation closing the loop of consumption thus avoids using drinkable water for irrigation purposes.

A pilot project, since 1998, was implemented in the district of San Juan de Lurigancho, one of the most populated districts of Lima (more than 800,000 inhabitants), which included 48 ecological toilets in individual homes and an irrigation system for 700 square meters of green area. Since then, an additional project including 55 ecological toilets has been implemented in Los Topacios of Nieveria and Casa Huerta la Campilla of Cajamarquilla (an area on the east side of Lima) and the treated greywater is used to irrigate trees. CENCA has also consulted with other groups who have implemented ecological toilets in institutions and households outside of Lima in the mountains.

All together more than 300 ecological dry toilets have been installed in Lima and in the countryside. Local and regional governments as well as state institutions and base organizations are interested in the benefits ecological dry toilets can make in their communities. There are 5 university dissertations that have included the ECOSAN approach in their recommendations, creating young professionals with this vision.

The pilot project was selected by the program APGEP SENREM/USAID from more than 150 projects to be executed. Its successful execution has demonstrated another viable alternative for development of a worthy, healthy and sustainable environmental and economic habitat. In 2002 this project was recognized and awarded the VI edition of the ECO-Efficiency Prize by the Pontificia Universidad Particular Católica of Perú and COCA COLA.

We currently have constituted the National Work Group of Ecological Sanitation ECOSAN PERU, made up of 30 institutions including 3 universities, 2 local governments, and non-governmental institutions and organizations. Our objective is to promote and spread the Ecological Sanitation in Peru by developing experiences that generate policy proposals in the agriculture and sanitation sectors (i.e. propose laws that promote the advantages of using the organic nutrients of urines and treated sewage for agriculture, re-using treated greywater for the irrigation of green areas, constructing ecological toilets and implementing alternative sanitation programs which will make urban areas healthier and more ecologically sustainable).

Challenges for the future

Given our objective, ECOSAN has defined the following challenges:

- To strengthen and consolidate the National Work Group of Ecological Sanitation in Peru – ECOSAN PERU as a place for reflection and the production of actions related to ECOSAN
- To promote the advantages of the system at all socio-economic levels (the system has benefits for all of society and should not be implemented in only extreme poverty sectors).
- To create technological qualification standards for civil employees and technicians of the different institutions on water, sanitation, health, food security and local urban environmental management.
- To influence what becomes the norm in sanitation and water systems; for example, laws should allow for the exploration of alternative systems, like the ecological sanitation system; pilot experiences should contribute to tangible experience which will demonstrate that laws need to allow for this alternative system on increasing scales.
- To educate that sustainable development includes ecologically sound practices with regard to water and sanitation systems and to demonstrate that personal change in attitude must be one of the main elements for structural change in environmental management.