



THE SUEZ ENVIRONNEMENT WATER FOR ALL FOUNDATION

2010 GRAND PRIZE WINNER

YAOUNDÉ HIGHER POLYTECHNIC SCHOOL OF ENGINEERING

The SUEZ ENVIRONNEMENT Water for All Foundation has awarded the Grand Prize to the Yaoundé Higher Polytechnic School of Engineering (ENSPY) for its innovation dubbed "LESEAU", developed by Dr. Emmanuel Ngnikam, professor and researcher at the ENSPY.

THE INSTITUTION PRESENTING THE PROJECT: YAOUNDÉ NATIONAL HIGHER POLYTECHNIC SCHOOL OF ENGINEERING

Yaoundé Higher Polytechnic School of Engineering (ENSP) was founded in 1971 and is part of the University of Yaoundé 1.

To date, the school has trained some 3,000 engineers in the following sectors: civil engineering, mechanical engineering, industrial engineering, computer engineering, electrical engineering and telecommunications. The ENSP also offers an MA in Research, an MA in Statistics and since 2007, a distance training course for an MA in Telecommunications.

The school has about 80 teachers and 5 departments. The Department of Urban and Civil Engineering provides most of the courses on access to safe water and sanitation (fluid mechanics, hydrology and urban hydraulics, sanitation, road systems and networks).

The ENSP started the Bachelor-Master-Doctorate system (LMD) system in the 2007/2008 academic year. It hosts over 500 students each year and aims to put on the market about 300 engineers per year by 2013.

The ENSP maintains relations with companies, national and international organisations and research institutions through internships, research contracts, appraisals, etc.

It has a large number of partners including AUF, INSA Lyons, ENSEM Nancy PARISTECH, CDRI, Orange, HYSACAM, ADC, IEPF, CIRAD, Brasseries du Cameroun, MIT, Nantes Métropole.

ENSP Yaoundé hosts nationals from Chad, Central African Republic, Congo, Gabon, Rwanda, and Benin and remains open to other countries in the sub-region and Africa as a whole. The school intends to confirm its regional status with the establishment of a University Free Zone that will put an emphasis on training critical masses of high-level specialists in leading-edge business streams.

PROJECT LEADER: DR EMMANUEL NGNIKAM

With a PhD in Engineering from the ENSP, Emmanuel Ngnikam wears several hats and divides his time between working as a teaching researcher at the ENSP, where he directs the Environment and Water Sciences Laboratory, the Urban Business Lines Centre which helps urban authorities acquire all the skills required for genuine decentralisation, but also for the NGO "Cameroon ERA" (Environment Research Action), for which he is the coordinator.

A well-known teacher and leading expert in the fields of water, sanitation and waste, he helped develop the National Strategy Document for Poverty Reduction in Urban Cameroon.

Emmanuel Ngnikam is the joint author with Emile Tanawa of "African cities and their waste", a reference work on the management of urban waste in Africa published in 2006 by Utbm & Auf. He is also the author of "Sanitation, clean water and children's health. A pilot experiment in Yaoundé", to be published in 2010.

THE LESEAU PROJECT

Nearly 50% of the water used by households comes from traditional wells and springs in which the water is unsafe, involving a high risk of diarrhoea, parasites and disease for users. But water cuts, which sometimes last a week, force households connected to the drinking water supply to frequently use water from wells and springs.

In addition, the quality of the drinking water that is available to households from communal stand pipes or through private connections significantly deteriorates during its transport to and storage in the home, due to the use of uncovered containers, cups and mugs being dipped into the storage containers etc.

The overall objective of the "LESEAU" project developed by the team of Dr. Ngnikam at the ENSP is to improve the quality of water supplied to the people who have no access to mains water, especially in the squatter districts of cities and their suburbs, or only who have intermittent access to water because of cuts in the mains supply.

"LESEAU" is a project to manufacture and distribute drinkable water containers, consisting of a bucket with a lid and a draw-off faucet to protect the water from contamination, and an integrated rudimentary filter composed of a mixture of clay, sawdust and colloidal silver (a germicide) to eliminate pathogens and suspended matter.

Prototypes of the buckets but without any filter have been tested since 2005 in Cameroun in Yaoundé Municipal District 6. These pilot areas covered 13 densely populated squatter districts with some 25,000 inhabitants, and two suburban districts with about 15,000 inhabitants. Two generations of containers were tested by the households and analyses on the quality of the water stored in these containers were carried out in parallel. In health terms, the use of these containers by the households, together with awareness-raising and educational measures, have caused a remarkable drop in the rate of cases of diarrhoea and intestinal parasite infestation among children less than 5 years old.

At the end of 2009, this experimental phase resulted in the design of a new prototype, transparent so that the water level can be seen, of greater volume, with a dismountable tap, operating instructions, etc., plus an integrated filter to improve the quality of the water.

The prototype filter was tested in the laboratory with very satisfactory results as regards water quality. The combination of the filter and the water storage container will allow each household using the device to produce at least 20 litres of drinking water a day over an average service life of 2.5 years. From an economic point of view, this solution is relatively affordable: the investment required to obtain the water storage container alone ranges from 5000 to 6000 FCFA according to its volume, while the container plus filter costs 10000 FCFA (€15).

Today, the project has switched to the development phase: 2,000 samples of the new storage container fitted with a filter will be produced and tested in Yaoundé district 6 and in 9 other municipal districts of the Mbam-et-Inoubou department. The ENSP is working with various partners to set up a manufacturing, assembly and distribution circuit for the containers, taps and filters, backed by training for local companies and intermediaries and by awareness-raising campaigns for households.

Over and above the health benefits of the "LESEAU" project and its inexpensive water storage solution for households, Dr. Ngnikam's team intends to launch an activity that creates jobs and increases the skills of local stakeholders.