

IAEA Helps Parched Santa

The thirsty residents of Manglaralto on the Santa Elena peninsula on Ecuador's southern central coast have been feeling a gush of relief. A joint IAEA project to find water in the area has led to an abundant water flow where before there was barely a trickle.



At the Chemical Institute of the Escuela Superior Politécnica del Litoral, the IAEA's partner in isotope hydrology, Fernando Morante, PhD, Head of the Laboratory, Priscila Valverde and Byron Galarza, conduct research in the water and environmental laboratory, February, 2010, Guayaquil, Ecuador.

"Thanks to studies ESPOL (the university, Escuela Superior Politécnica del Litoral) has given us and to adaptation of the aquifers, we now have four more wells. Since 2009, we have had water 24 hours a day," says Miler Muñoz, president of the local group Junta de Agua Manglaralto (the Manglaralto regional water board). Prior to this, there were only three wells supplying water for a limited number of hours per day.

"We have received several seminars from the IAEA and expert visits. This is our salvation because we need water in the area. The seminars have helped us to find solutions to obtain water.

"It has benefitted us. We have a permanent water supply. For example, the cabins where people sell food at the seaside could not operate because they did not have water. We have trained ourselves, and requested outside help...to solve our problems related to groundwater, Muñoz said."

The problems facing the Santa Elena Peninsula and the 250 000 inhabitants of the area — 100 000 in the countryside are particularly hard hit — are not uncommon in many parts of the world. The study area is characterized by arid to semi-arid tropical climate conditions, where more water is lost through evaporation and transpired by plants,—so-called evapotranspiration— than can be replaced through annual precipitation. Rivers are seasonal and recharge to aquifers is limited, so dependence on groundwater is rising. Local aquifers are affected by seawater intrusion, with the salinity of soil water and groundwater increasing due to intensive pumping. In some areas the groundwater is no longer fit for human consumption, and the situation has been distressing for both residents and farmers.

ESPOL applied for an IAEA Technical Cooperation project and the first project — implemented in collaboration with local groups — began in 2007. The IAEA has contributed to training, provided experts, equipment, mapping tools, as well as a solid foundation for the project.

But the project has been able to accomplish something beyond a standard water assessment.

"For the first time it belongs to them," says Luis Araguás Araguás, a scientific officer from the IAEA's Isotope Hydrology Section involved in the project. "It is not something the government does for them; this is why they are deeply committed."

"We have done a standard assessment of water resources in the area, and are still in the earlier stages of characterization. From a scientific point of view it is not extraordinary," says Araguás Araguás. "What makes it different is the social component."

What is different is that ESPOL has equipped the communities at a local level to test their own water quality. IAEA experts informed local people about the science of isotope hydrology. "Wells are only drilled after ESPOL has tested a site," says Araguás Araguás. "There is a kind of ownership by the community, and they are interested in monitoring. Now the community asks ESPOL to come. ESPOL has produced specific management instructions for each sector."

Elena Find Water

by Maureen MacNeill

The communities have been integrated in this programme, says Emilio Rodríguez, president of the local Junta Regional de Agua Olón (the Olón regional water board). "They are an active component of this process. These studies are not easy to perform due to high costs and lack of equipment."

Many changes have occurred as a result of two IAEA projects underway in the peninsula, according to Gricelda Herrera Franco an ESPOL counterpart. "First the communities worked in association with the university and they use technology and techniques. The communities then worked on the projects and they developed a new culture for working in teams. Finally, the communities now have a permanent water supply (365 days a year). Before this was not possible.

"This programme is for everybody in the community. With a permanent water supply they think about possible business for tourism development in the areas. They also believe in new opportunities for agriculture. They feel very happy and have confidence in themselves. They see themselves as entrepreneurs."

IAEA Director General Yukiya Amano visited the site in July 2011 and was impressed by the results he found there. He told the local counterparts, "In our culture we say one arrow is weak, you can bend it, you can break it. If there are two it's very difficult. If three are combined, you can't break it, it's very strong. We now have the IAEA, an international organization, we have ESPOL, a university, and we have the local community of Santa Elena. With the cooperation of these three partners, I am very certain we can have a successful project."

The project provides solutions, yet the main challenge lies ahead, to ensure that the results the communities have achieved can be sustained with the support of ESPOL and IAEA. ☼

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Photos: ESPOL



Miller Muñoz and Victor Hugo Yagual show the IAEA Director General Yukiya Amano (taking water from the tap) a new well whose sustainable siting was supported through the IAEA's expertise in isotope hydrology and its Technical Cooperation Programme. (Manglaralto Commune, Santa Elena Province, Ecuador, July 2011.)



People queue for water at the communal well in the Valdivia Commune, Santa Elena Province, Ecuador.