



Case Study

PRODECI 2007, Ecuador

Bringing Drinking Water to Hillside Communities



Produced by Engineers Without Borders UK
2nd May 2008
Version 1.1

Located in the province of Imbabura in Ecuador, the area of Intag is a mountainous region with approximately twelve thousand residents living in seventy six communities. Intag receives high rainfall in the winter months and there is an abundance of clean water flowing from springs and in the mains water system.



Intag

The communities of Intag are spread sparsely over the region and access to clean water sources is made difficult by steep mountain paths in poor state of repair. Carrying water back along these paths would be dangerous, time-consuming and restrict water usage to essential purposes only, leaving little spare for sanitation, hygiene or agriculture.



Mountain paths

To avoid this, families have been using sources much closer to home, but these are very susceptible to bacterial contamination from the extensive livestock in the area. Recent tests have shown that almost 90% of the children in the region are infected with parasites, causing sickness approximately every three months and in many cases this has led to early loss of life.



Previously, they drank contaminated water

PRODECI is a local NGO and strategic partner of Ayuda en Acción, a sister Organisation of Action Aid. Since 1994 they have been assisting communities across the province addressing their basic needs and supporting local businesses and industries. As part of their focus on health, sanitation and education they have been improving access to drinking water for the families in the region.

To improve the quality of the water supply PRODECI have provided a number of water treatment and distribution systems. It is difficult however to persuade the communities to make the investment in time and money required to commit to the project, as they do not associate their illnesses with their consumption of the untreated water. The lack of baseline data has also made it difficult to obtain an indication of any improvement the project may have had.

Another issue facing the communities is the state of many buildings in the area. They are suffering from rot, degradation and are consequently developing dangerous structural problems.

These buildings, which mainly include schools and medical centres, have become unpleasant environments to work in and visit.

However, a local mining company has committed to finance reconstruction projects as mitigation for their damage to the area's environment. The President of the region has asked PRODECI for a diagnosis of the public buildings and a cost estimate for the reconstruction work.

EWB-UK volunteers on a different engagement in Ecuador came to meet PRODECI during 2006. A partnership was established based on the clear needs of the community and the sound ability for EWB-UK to contribute sustainably to those needs through PRODECI. Two volunteers, Mark Stanko and Edward Matos were carefully selected on a broad range of criteria, received appropriate training and were seconded to PRODECI between July and September 2007.

The Role of EWB-UK

Following PRODECI's request, Edward and Mark undertook the project management of the family sized water system project:

- 7 bespoke family sized water systems were designed to supply the 66 members of 14 families with clean running drinking water.
- The volunteers ensured the community fully understood the systems and its benefits. As part of their contribution to the project and as a way to support their long-term interests in the improvements, the unskilled labour was carried out by the beneficiaries themselves.
- Coordinated the procurement of materials needed to install these systems.
- Supervised the installation of 4 of these systems, and ensured the quality of the manual labour involved. The remaining 3 systems were to be completed by another local engineer who was briefed appropriately before the departure of the volunteers.



Meticulous planning was required in advance

The volunteers also provided PRODECI and the President of the local region with a detailed cost breakdown for \$45 000 worth of essential building repairs needed in Intag. This information has been used to negotiate an agreement with the local mining company to finance improvements over a number of years.

Benefits



Families now have sufficient safe water readily available

The households targeted by this project were isolated by the terrain and so the systems were designed to supply only one or two families. The cost per beneficiary of the project became acceptable only because the engineering design, project management and site supervision by the EWB-UK volunteers were provided free of charge.

The beneficiaries of the project are expected to contract water-related illnesses less frequently and less severely. The reasoning behind key aspects of the system design has been explained to the families to support good maintenance of the systems. They understand the benefits that clean water can bring and also how they can adapt their water-disposal habits to reduce the occurrence of landslides.

Through the experience the Edward and Mark gained valuable exposure to complex problems in rural development and a sound understanding of how to prevent them. They both improved their respective project management, linguistic skills and developed techniques to avoid corrupt bidding processes while procuring materials cheaply.

Technically, both volunteers now have usable and practical knowledge of gravity-fed water system design, of buildings and their foundations, of the causes of landslides and geological erosion together with sound GPS-surveying skills.

PRODECI were satisfied with the professional standard of work done by Mark and Edward. Future work carried out by PRODECI will benefit from the many technical additions to their existing systems.

The volunteers passed on good engineering practice, project management skills and their ability to negotiate with suppliers. These will be a distinct advantage to PRODECI in the future.



2008 sees the continuation of EWB-UK's partnership with PRODECI to measure the tangible impact of the current water systems and construct further ones for the communities.

If you would like more information about this project, PRODECI or Engineers Without Borders UK in general please get in touch via our website.

http://www.ewb-uk.org/contact_us

We look forward to hearing from you.