

# SODIS - WATER QUALITY IMPROVEMENT AT HOUSEHOLD LEVEL

## A CASE EXAMPLE FROM PERU

### SUMMARY

In the year 2001, an earthquake struck the region of Arequipa, Peru, which destroyed not only buildings but also the existing water distribution networks. The Peruvian Red Cross intervened in the disaster region and, after a phase of primary attention and re-construction of buildings, determined that there was a need for safe water by the local population.

The communities participated in planning workshops, and they coordinated with the Red Cross in order to prepare a project for safe water. Financed by the Institution 'Fondo de las Americas', the Project benefited 416 families in 11 rural communities (1610 persons). The duration of the project was 10 months. Core elements of the project were the teaching and practise of the SODIS method, improved hygiene and health, and organisational strengthening of the communities. In weekly community meetings the planning, training and awareness rising process was carried out.

At the end of the project, 75% of the beneficiary population was using SODIS for water disinfection. This resulted in a considerable reduction of the incidents of waterborne diseases.



### THE CONTEXT

#### Location of the project

The project was implemented in 11 communities in the Department of Arequipa in the coastal zone of Southern Peru. The climate in this region is dry; the temperature - depending on the altitude - varies between mild and hot. This fertile region is often struck by earthquakes, the latest happened on June 23, 2001, which affected 10,000 buildings.

#### Water supply and quality

- 80% of the rural communities lack water supply systems.
- Most people get their water from irrigation channels, rivers, rivulets, and springs.
- The water in the existing systems is not being treated.

#### Health situation

The diarrhoea rates were found to be very high in the project zone. They are the second most important cause for child morbidity. Additionally, many cases of diarrhoea are not registered with the health posts for several reasons:

- Some villagers prefer to treat diarrhoea at home and with natural medications.
- People try to avoid the costs related to an official treatment (medications, transport, etc.).
- Many families live at a long distance to the health posts.

In 2001, the officially reported numbers indicated that 6.97% of the population in the district of Mollebaya had diarrhoea

and 12.36% in the district of Polobaya. Taken into account the factors mentioned above, these numbers are in reality probably much higher.

#### Social Aspects

The majority of the people in the selected communities live in conditions of extreme poverty; the level of education is low. Most of the people dedicate themselves to subsistence agriculture, informal business and unskilled labour.

All these factors lead to difficult living conditions, which are also reflected in the health status of many families. People do not have access to safe water, and they are not in conditions to cope with the effects of this situation - medication is costly and many people live far away from the health posts.



Fig. 1: Solar Water Disinfection is a low-cost solution to improve the drinking water

## THE PROJECT

### Objectives

Improve the sanitary conditions of the families living in 11 rural communities of the Provinces of Arequipa and Islay through the improvement of drinking water, healthy habits and formulation of health brigades.

### Strategy

The strategy applied for this Project was based on the following core elements:

- **Training:** Weekly training and discussion meetings were organised. The villagers decided on the day and time when these sessions took place. By using participatory methodologies, the interaction between the local population and the project team was maximised.
- **Community Agents:** Elected by the local population, these persons were the ones who formed the Health Brigades which support the families in their task to learn new habits.
- **Training Material:** The material produced during the Project enabled the Health Brigades to carry out the process of community education. For example, booklets were elaborated using simple language and drawings depicting daily situations and traditions of the families. These materials helped to generate change of attitude in a desired way. Likewise, stickers and calendars were elaborated for a wide diffusion of the technology.
- **Household visits:** Volunteers of the Red Cross, along with the Health Brigades, carried out visits at the household level. This has helped to clarify practical questions of the families and support them during their learning process.
- **Community organization:** By the formation of Health



Fig. 2: Bottle collection campaigns were organized in cities or at the beach



Fig. 3: Health Brigades train the community in hygiene and SODIS

Brigades, the community organization was strengthened considerably. The Health Brigades were responsible for training and follow-up of the families by realizing preventative, promotional and health care activities.

- **Integral health care campaigns:** During the Project, 3 such campaigns were carried out, benefiting around 750 people from the region.
- **Bottle collection campaigns:** 12 times during the Project, bottles were collected at strategic points, mostly in cities or at the beach. 80% of the bottles were used for distribution to the families; others were used for constructing irrigation tubes, pen holders and handicrafts.
- **Water sampling:** At strategic moments, water samples were taken from the actual water sources as well as from bottles which had been exposed to sunlight. The results of this sampling demonstrated to the community that 100% of the faecal coliforms were inactivated by the SODIS method. The local people were able to confirm that SODIS is a simple, cheap, and effective method to disinfect water.
- **Volunteers:** Red Cross volunteers were involved for the training and backstopping of the local Health Brigades.
- **Inter-Institutional coordination:** The Red Cross coordinated its activities with the local authorities, with the health posts, and with the Health Brigades.

### Duration and Financing

The project had duration of 12 months. The Institution "Fondo de las Americas" was the main donor for the Project. The Peruvian Red Cross contributed in kind and labour, and the SODIS Foundation by training and backstopping activities.

## ACHIEVEMENTS AND FACTORS OF SUCCESS

### Participation at household level

Thanks to the strategies applied, it was achieved that the people were highly motivated to improve their health. They participated in the project from the beginning, starting with promotional activities and assuming SODIS more and more as part of their daily routine.

The high degree to which the Health Brigades assumed their tasks is proof of the impact generated at the community level. This also helped to include other practices such as improved personal hygiene. Additionally, the members of the Health Brigades were able to develop a set of inter-personal skills and their ability to work as a team, strengthening their leadership role during and after the intervention.

At the end of the project, 75% of the target population was regularly using SODIS for disinfecting their water. This indicates that this method was brought into mainstream of daily practise in this region, based on its simplicity, its low costs and proven effectiveness.

### Institutional cooperation

- The agreements signed with the Municipalities created the needed support of these institutions. They highlighted the importance of the local Health Brigades, and increasingly were recognized at the district level as a model for organizational strengthening.
- The agreements signed with the community councils helped to establish formal acceptance of the project and the activities carried out by the Red Cross and the Health Brigades.

### Water Quality & Health improvements

At the end of the Project,

- 75% of the population were using SODIS, thus drinking safe water
- 84% of the water storage vessels used by the local population were clean
- 88% of the population had some sort of detergent or soap available at their home
- 79% of the kitchen utensils were stored on elevated places (not on the ground)
- 84% of the kitchen utensils were clean

### Awareness Building

Capacity strengthening at the individual and collective level was core part of the strategy applied. Combined with the activities of the Health Brigades, this strategy proved highly effective and achieved a high level of awareness within the community. The Health Brigades acted as local points of reference to the population, and their work was also recognized by the regional health posts, giving them access to free health care at these establishments.

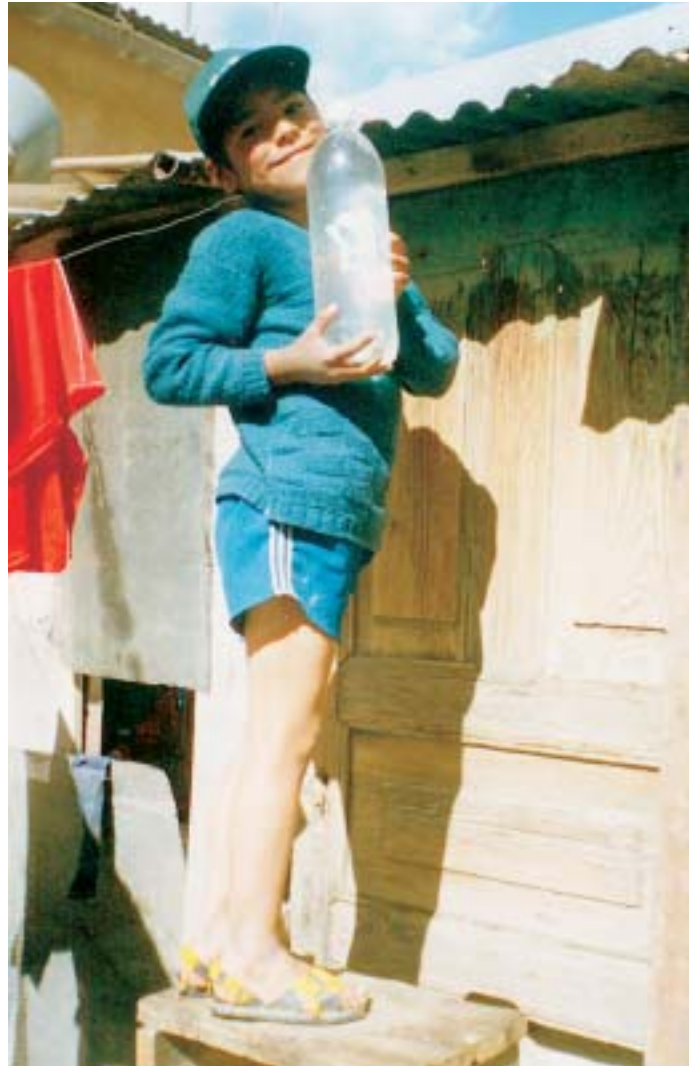


Fig. 4: 75% of the population use SODIS for the treatment of their drinking water.

### Factors that facilitated above achievements

- The involvement of the Ministry of Health in the project helped to include the Health Brigades in the activities of health promotion of each district by carrying out promotional and surveillance activities. This coordination was very important for the sustainability of the intervention.
- The integral approach of the training workshops achieved a general health improvement of the target population by establishing different barriers to the transmittance of diarrhoea.
- The volunteers of the Red Cross established a close relationship to the local population and the Health Brigades through the household visits and training workshops.
- The support of the University of San Agustín in Arequipa, who carried out the analysis of the water samples (raw and treated) for free.

## THE CHALLENGES

### Constraints

- During the election campaign, the level of assistance to the community meetings dropped and the local leaders hesitated in signing agreements. This was overcome once the results of the election were known.
- Initially, the water utility company of Arequipa (Capital of the Department) was foreseen to carry out the analysis of the water samples. Due to their limited capacity, they had to be replaced by the local University.
- During harvest, farmers did not have time to participate in community meetings.
- In the beginning of the intervention, people were not used to work in an organised and planned manner, and it took a while for them to accommodate to this form of work.
- Blockades and strikes frequently hindered the access of the mobile teams of volunteers to the communities. This was overcome by staying in the same area for a longer time, thus reducing the number of movements needed.

### Potential for scaling up

- The Southern Coast of Peru has a very favourable climate for the practise of SODIS: sunshine is intensive and clouds scarce.
- The majority of the rural communities do not have water supply systems. Where they exist, the water is not being treated.
- Diarrhoea rates indicate that the quality of the drinking water is taking a high toll on the health of the local population.
- There are no cultural barriers to be overcome for establishing a generalized practise of SODIS in this region.
- The coordination with the Ministry of Health at the district level could generate impact on a much larger scale.
- Further awareness building and promotion are needed.

### Lessons learnt

- Practical demonstrations of the effectiveness of SODIS helped to achieve high levels of acceptance within the local population.
- Awareness building was an important part of the project in order to achieve changes in daily habits
- The schedule for the community meetings had to be defined by the local people in order to secure their participation.



*Fig. 5: SODIS reduces diarrhoea especially among children below 5 years.*

- Household visits, combined with frequent community meetings, helped not only to bring about a specific change in habits, but also to strengthen the communities in general.
- The role of the Health Brigades was very important in order to visit the families household by household.
- Additional activities were generated by the availability of used bottles (construction of pipes for irrigation, elaboration of handicrafts, etc.).
- 10 months of project duration is fairly short in order to bring about changes in daily habits.

## REFERENCES & PARTNERS

The Peruvian Red Cross Society is a private non-profit institution of public service, assuming auxiliary activities to the Government in the areas of Humanitarian Aid. Its work is based on the fundamental principals of the institution and carried out by volunteers within a national network of offices.  
<http://www.cruzroja.org.pe/>

The SODIS Foundation is a non-profit organisation working on the diffusion of low-cost methods to improve health of people in Latin America.  
[www.fundacionsodis.org](http://www.fundacionsodis.org)