SODIS - Water Quality Improvement at Household Level

A Case Example from Bolivia

Summary

In seven communities of the Bolivian highland, Project Concern International (PCI) and the SODIS Foundation implemented a SODIS project with a strong focus on the local schools. From the schools, the innovation then entered the households, thanks to the involvement of the health posts, the local authorities and the Water and Sanitation Committees.

After one year of project implementation, the level of acceptance was found to be very high - currently more than 85% of the families are using SODIS on a regular basis. These results have been made possible thanks to the motivated and concerted work of local key actors: the teachers, community health promoters, local authorities, and PCI staff.

The Context

The project is situated in the highland plane of the Andes in Bolivia, the so-called 'Altiplano', in the region of Oruro, a traditional mining centre. The communities involved are situated between 3200 and 4200 meters above sea level, where the climate is cold and sunshine is very intensive. The project is implemented in the communities of Larampujo, Alcamarca, Tarucamarca, Realenga, Sora Sora, Chiwirapi, Janco Janco, covering a population of about 2600 people.

Some of these communities are difficult to reach and public transport is available only once a week.
Culturally, the communities live according to the regional traditions and customs; most people speak Quechua or Aymara and have a strong relationship to their respective language and culture. The educational level is quite basic, and the majority of the inhabitants live in conditions of extreme poverty.
Like in many communities of the Bolivian highland, water is a scarce resource. There is generally no surface water available; people rely mostly on dug wells. In some of the communities, people have built simple water distribution networks with public standpipes or with household connections. The water generally is not being chlorinated and often does not meet the WHO standards for drinking water.

For a long time, people were having difficulties to obtain safe water. Chlorination systems are lacking, and the practice of water boiling implies high costs in a region where any type of fuel, including firewood, is scarce.
In the communities with water supply systems, there also is a local Committee for Water and Sanitation (CWS). These committees are elected by the local population; their members are responsible for the networks and for the drinking water in general. They are supervised by staff of the municipality, the 'Municipal Technical Units'.

Fig. 1: SODIS user from the Altiplano in Bolivia

The Project

Objectives
Help improving the quality of life of people living in seven communities in the region of Oruro, by including the method of Solar Water Disinfection (SODIS) in their daily practices.

Strategy
Initially, the activities had to be approved by local authorities and health posts. Once convinced of the effectiveness of SODIS, they were willing to support the activities and invite the families for an initial meeting. During the meeting, the families were informed about the project and the promotion of SODIS was started.
During the project implementation, the schools in each of the communities were the focal points for the activities. SODIS not only was included in different courses such as environment or mathematics, it also was practiced on a daily basis at the schools. In order to achieve that this healthy habit became a regular practice, 'SODIS corners' were installed in each class room.
From the schools, the activities spread to the communities. The Committees for Water and Sanitation were involved; they took on the responsibility for the household visits and the reporting to their community on the quality of water being consumed.

Actors
The project was implemented by Project Concern International (PCI), an international NGO working in Bolivia since 1980. The staff previously had been trained by the SODIS Foundation, a non-profit organisation in charge of the diffusion of SODIS in Latin America. PCI in turn trained the teachers and staff of the health posts; they informed the local authorities and carried out the initial household visits. At a later phase of the project, it was the Committee for Water and Sanitation in each community taking on the activity of the household visits.

Fig. 3: The schools were the focal point for the SODIS activities.

The teachers were key actors in this project. They not only carried out the teaching activities, they often were also actively promoting SODIS at the community level, making use of special occasions such as school fairs or parents meetings.

Duration
The project started in April 2003 and has duration of 2 years. During the first year, training and educational processes were carried out. During the second year, emphasis is placed on follow-up activities in order to make sure the newly acquired behaviours become routine.

Financing
The project is incorporated into ongoing activities of PCI. The cost of 22'500 USD for activities, intrastructure, educational/promotional material and training activities are financed by PCI, Avina Foundation, Lichtensteinischer Entwicklungsdienst and Michel Comte Foundation. This amounts to about 11 USD per capita of the beneficiary population. The specific costs are relatively high as the villages are very remote and the houses scattered.

Fig. 2: The information on SODIS spread from the schools to the Water Committee and the community

Fig. 4: Students of the local school perform a play on SODIS.

Achievements and Factors of Success

Achievements

- Currently, more than 85% of the families in the communities involved use SODIS on a daily basis.
- The method was especially well received in schools.
- The local health posts, the Committees for Water and Sanitation and the local authorities actively participated in the project, assuming increased responsibility.
- Since SODIS is a zero-cost method, the families could both drink safe water and save fuels or fire wood.
- The families started to construct special bottle supports with locally available material, so that the bottles could be exposed to sunlight in a safe place where children also can reach them.
- Some women produced their own bottle bag with local material (wool). This enabled them to take the treated water to the fields and drink safe water during the day.
- The families started to collect their own bottles and bring them home after consuming soft drinks at the market (bottles are generally not available in the zone of the project).
- Educational materials were develped at the schools, and SODIS also supported creativity at school fairs, plays and other special events.
- Innovative methodologies like 'Integral Child Development" and "Learning by Doing" were applied at schools.
- The project has enhanced people's awareness of the water quality. This in turn has motivated them to take better care of their water supply systems and dug wells. They are now more willing and able to improve water quality before consumption.
- A test sampling at household level showed that all the families using SODIS have safe drinking water available, according to WHO standards.
- As a special activity, PCI organised an inter-communal exchange of experience. Members of one community, including children, visited another community to see how the project was implemented there. This activity was well received by the participants.

Factors facilitating these achievements

- The involvement and cooperation of important local actors: the health posts, the local administration, the parents club, and the schools.
- The acceptance of SODIS by the above mentioned actors was an important factor that helped developing the project in a dynamic way.
- The schools were able to act as focal points, not only by including SODIS in their curricula, but also by actively practising the method and other healthy habits at classroom level
- Thanks to its large-scale program of educational support, PCI has considerable experience with working in schools. The experience and good relations with the staff ensured smooth and effective project implementation.
- The teachers involved in the project were highly motivated.
- The application of a participatory approach has greatly helped the people to get involved in the activities and take on responsibilities.
- The continuous input of the SODIS Foundation helped to resolve technical doubts quickly and tackle difficulties jointly.
- The exchange of experience between PCI and other organisations implementing SODIS in Bolivia has helped them to enrich their experience and improve implementation strategies.

Fig. 5: Women have started to produce their own bottle bag with local wool

The Challenges

Constraints

Initially, the sanitation authorities did not give top priority to the activities of treating water at the household level. Only slowly they became more active, after they had seen the impact of SODIS at the schools and in some households.

Another difficulty encountered in one community was the high percentage of migratory population. This made it difficult to organise meetings with the whole community; in this community SODIS had to be spread mostly by household visits.

Similarly, the availability of bottles initially was a limiting factor as these are not generally available in the communities. However, people learned to keep bottles of soft drinks they occasionally bought in the city, and PCI also organised collection campaigns to enable people start practising SODIS in their homes.

Potential for scaling up

The fact that changing habits takes a long time, and that repeated visits at the household level are needed, implies fairly high project costs although the technology of SODIS in itself is a zero-cost method. This currently is making it difficult to work with the same intensity at a larger scale.

However, PCI is considering SODIS as an institutional standard, which in the future is going to be an integral part of all water and sanitation projects.

This may allow the institution to drastically lower per capita costs for implementation of SODIS, and to reach a large number of people every year.

Considering the simplicity of the SODIS method, and based on the positive experience gained by this project, a large potential for expansion was detected in neighbouring communities involved in this project. The acceptability of SODIS in this zone is very high, a factor which will contribute to the further dissemination of this method within the region.

Lessons learnt

The project revealed that a major strength of SODIS is its simplicity in application. Even children and illiterate people can easily learn how to obtain safe water, and the results can be observed within a short time at the household level.

- The coordination and involvement of key local actors (local authorities, health posts, schools and teachers, local leaders) enabled the project to have a significant impact within the communities.
- The application of innovative methodologies such as “Integral Child Development” and “Learning by Doing” helped to develop creativity, initiative, leadership, and self-esteem of the children.
- The strategy of involving the schools, the health posts, the local authorities, the local leaders, and the parents clubs, had a large impact on the community and yielded good results within less than one year of project implementation.
- Incorporation of SODIS into internal community organizations, such as the schools and the local committees, enhanced the sustainability of the intervention.
- The ability and motivation of the staff of PCI to gain the confidence of people were very important and contributed to meeting the objectives.
- At the family level, the idea of constructing special bottle support platforms facilitated the regular practise of SODIS, also by children.
- Integration of SODIS into the daily routine is a creative process. In this project, the families at some point decided that they need water when they are at work in the fields; therefore they made their own bottle bag. This is a strong indication for their interest in SODIS.
- The project revealed that it is necessary to visit the homes of the families. During the first year, each family was visited at least once a month by a local promoter to create confidence and to resolve technical and practical questions and doubts.

Fig. 6: Application of SODIS by the local health posts.

References & Partners

PCI is a non-profit organization working in Bolivia since 1980. Its main activities are in the areas of health, education, nutritional security, environment, and income generation.
http://www.pci-bolivia.org

The SODIS Foundation is a non-profit organization working in Latin America with the objective to improve living conditions of people who do not have access to safe water.
http://www.fundacionsodis.org