

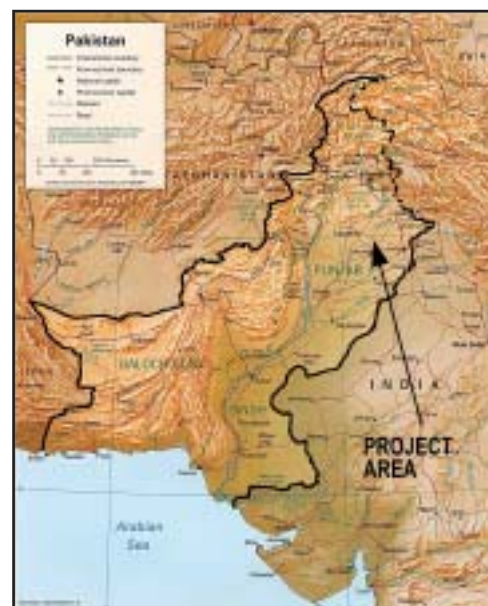
# SODIS - WATER QUALITY IMPROVEMENT AT HOUSEHOLD LEVEL

## A CASE EXAMPLE FROM PAKISTAN

### SUMMARY

The drinking water situation in Pakistan is in an alarming condition and rapidly deteriorating. According to the Pakistan Council on Research in Water Resources most of the drinking water samples taken during a national water monitoring project were unfit for human consumption.

Therefore the Community Action Program (CAP), an NGO based at Faisalabad, together with partner institutions in the fields of education, health, religion and politics, are promoting SODIS (Solar Water Disinfection), a simple and low-input water treatment method for use at household level since the year 2002. Currently, CAP is running Phase III of the project and has so far directly introduced SODIS to more than 50'000 households. A significant health impact through using SODIS was achieved in the project areas, where the diarrhoea rate in children below the age of five has nearly decreased by half.



### THE CONTEXT

The SODIS project in Pakistan is implemented in the areas of Faisalabad, Gojra, Jhang, Rajoa, Chiniot and Lahore. In these areas people depend on groundwater, accessed through private hand and electric pumps. In urban areas centralised government water supply networks deliver drinking water to the households. The water supplied through these networks generally is microbiologically contaminated. Pakistan spends less than 0.25% of its GDP on water and sanitation. Most of this money goes into the provision of hardware products, such as public water supply networks. In many places these installations remain inoperative, since they are not properly handled and often do not meet the actual needs of the users.

Groundwater was safe in many cases. But the contamination often occurred during handling practices, This is an indication for the need of a project focusing on the improvement of water quality at household level.

A case study on environmental sanitation in Punjab carried out by UNICEF in 2002 mentions that 250'000 children below five die every year due to diarrheal diseases in Pakistan. According to information from doctors and health practitioners water-related diseases, such as diarrhoea, typhoid, gastritis, hepatitis A and E, are very common throughout the project areas and affect the overall well-being of the people.

A recently carried out study in two SODIS project villages shows the lack of awareness concerning the importance of safe drinking water for human health

Women and children are the most affected groups in terms of inadequate water supply. Women traditionally are responsible for water and health issues and in many places have to walk long distances to meet the daily needs of their families. Children on the other hand are most vulnerable to water-related health problems. Improvements in the water supply situation therefore will have a positive impact especially on the livelihood of these groups.



Fig. 1: SODIS has a great potential to improve the health of children in the project area

## THE PROJECT

### Objectives

The objective of the project in Pakistan was to provide access to safe drinking water to the people of Pakistan through creating awareness on the importance of clean drinking water for human health and introducing SODIS as an alternative low-input water treatment.

### Strategy

The strategy applied for the implementation of SODIS in Pakistan was strongly people-focused. The people are the ones to bring about change and were thus involved during the whole project process. As people generally are not aware of the importance of clean drinking water, a close and steady interaction with the people, providing training on improved hygiene practices and the importance of treating their drinking water is necessary.

The promotion and dissemination of SODIS is channelled through the established structures of health, education, religion and politics. CAP assumes the role of a resource centre for planning, coordinating, training and monitoring.

### Actors

The Ministry of Health is an important partner for implementing the SODIS project activities through its National Programme on Family Planning and Primary Health Care (NPF&PHC), where Lady Health Workers (LHWs) visit user households monthly to address issues related to health and hygiene. Within this structure these Lady Health Workers were used as SODIS promoters. LHWs, discuss issues related to health and hygiene on their monthly household visits and offered a perfect platform for the dissemination and training of SODIS. The female household heads received explanations, practical demonstrations and could address difficulties during the



Fig. 2: Training on hygiene and SODIS during a community meeting



Fig. 3: Local Women Health Workers exchange their experiences with disseminating SODIS

regular follow-ups. In female community meetings the women could exchange their experiences and serve as promoters themselves, both within the community and their families. This led to a certain degree of auto-diffusion of SODIS, which indicates people's motivation. Many have realised that SODIS provides them an easy tool for self-help.

### Financing

The project was launched in May 2002 with Phase I, introducing SODIS to urban and peri-urban communities of Faisalabad. Financial assistance was provided by the SOLAQUA Foundation. Phase II started in June 2003 to scale up promotion and dissemination of SODIS to other cities and rural areas, such as Gojra, Rajoa, Chiniot and Jhang. In addition to the SOLAQUA Foundation, financial contributions from private local donors were received for this phase. Currently, Habib Bank Zurich AG is financing Phase III, which targets new project areas in Lahore.



Fig. 4: The roof is the favorite location for solar exposure of the bottles.

## ACHIEVEMENTS AND FACTORS OF SUCCESS

### Institutional Cooperation

Institutional networking and cooperation was declared to be one of the central aspects of CAP's SODIS project strategy. The partnership with the Ministry of Health is certainly one of the major achievements in terms of institutional cooperation. CAP is about to sign a contractual agreement with the Ministry of Health, thereby providing a great potential for scaling up nationwide through the involvement of 70'000 LHWs.

In order to further support the involvement of government institutions CAP has organized a national workshop in April 2004, bringing together officials, practitioners and researchers of all administrative levels. The declarations made during this event are now translated into actions and first results could already be achieved.

The Tehsil Municipal Administration (TMA) in Chiniot, provider of drinking water services, signed a Joint Venture with CAP in order to collaborate for the provision and promotion of safe drinking water at city level. TMA Chiniot is about to design intervention guidelines for the improvement of the water supply situation on city level, where SODIS will play a prominent role.

### Water Quality and Health Improvements

The efficiency of SODIS at field level could be proved through several water tests, which were carried out with a DELAGUA field testing kit. Although not all the SODIS treated water samples were completely free of contamination, an enormous improvement of the bacteriological water quality could be achieved. Before the treatment with SODIS more than 20% of the samples revealed a contamination of more than 100 FCU (Faecal Coliform Units) per 100ml. After SODIS treatment, 53% of the samples contained 0 FCU per 100ml, 35% of the samples had less than 20 FCU per 100ml and 12% of the samples had 20-100 FCU per 100ml.



Fig. 5: Public walks with school children are used to create awareness in the community.



Fig. 6: The consumption of SODIS treated water reduced diarrhoea incidence among children by half.

A recent health impact study carried out by CAP in Rajoa and Chiniot aimed at measuring the diarrhoea incidence among children younger than five years. The occurrence of diarrhoea was studied using a case-control method with regular SODIS users being compared to SODIS non-users of the same area.

In Rajoa, 13% of the children under the age of five living in regular SODIS user households suffered from diarrhoea during the inspection period, and 19% in Chiniot. Children living in SODIS non-user households had a significantly higher diarrhoea incidence of 26% and 39% respectively. Thus, diarrhoea incidence significantly was reduced by drinking SODIS treated water. Other factors contributing to the improved health situation were appropriate sanitation and enhanced hygiene practices.

### Awareness Building

Awareness was raised at the actual user level and on the level of the service providers and government institutions. Methods used were house to house visits, community meetings, school trainings, walks with school children to spread the message in the community.

To raise awareness at institutional level, CAP regularly publishes a SODIS newsletter.

## THE CHALLENGES

### Constraints

- Water and sanitation issues still receive rather low government priority
- Goals and objectives for a national water and sanitation strategy are not yet defined
- Awareness of health and hygiene still is lacking among the people
- The strong focus on hardware delivery by service providers often does not meet the actual needs of the users.

### Potential for Scaling Up

Based on a strategy with locally established coalition partners the potential for scaling-up of SODIS is nearly unlimited. CAP is about to sign a contractual agreement with the Ministry of Health. This will raise the potential of up scaling through the nationwide involvement of 70'000 LHWs. In Chiniot, an agreement was signed with the Tehsil Municipal Administration (TMA), a local government institution and provider of services, to collaborate for the provision and promotion of safe drinking water at city level.

With the extended government support at national level also a better media coverage can be achieved to deliver the message about safe drinking water and SODIS to increase the number of people addressed and enhance their trust in the method.

Water and health should receive far more attention at educational level, as awareness of the importance of these issues is widely lacking among the people. Water issues should become a priority issue on Pakistan's agenda and the declarations passed put into action.

### Lessons Learned

- Since Pakistani people strongly believe in government recommendations, official support in the dissemination and promotion will have a positive impact on the SODIS acceptance.
- The involvement of local political and religious leaders, health practitioners are also important for dissemination purposes, as people rely on their advice. A negative attitude towards SODIS by these persons/ institutions can prevent a successful introduction of SODIS in the project areas.
- Close collaboration with local water supply service providers will assist them in meeting their responsibility and improving the quality of their services
- Strong focus should be given to linking SODIS with general hygiene education. This will raise awareness



Fig. 7: Women Volunteers conduct house to house visits to train people on hygiene and SODIS

of the importance of treating the drinking water and enhance the sustainability of SODIS.

- To integrate SODIS in daily routine, continuous follow-ups are crucial. This can best be done by locally established institutions and area resource persons.
- People judge the quality of water in terms of aesthetic aspects. Field test kits to demonstrate the degree of bacteriological contamination to the community increase their trust and motivation in using a water treatment method.

## REFERENCES & PARTNERS

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