Operation and maintenance of handpumps in Afghanistan

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MAXIMIZING THE BENEFITS FROM WATER AND ENVIRONMENTAL SANITATION

Leendert Vijselaar, Afghanistan

One problem in water programs is the operation and maintenance by communities. DACAAR has pioneered in Afghanistan a system where the community is responsible for their wells but pays a mechanic (selected by the communities and trained by DACAAR). A contract binds each community to the mechanics and he gets paid in kind by each community. The mechanic serves around 100 pump sites. The community pays for the spares and a spare parts shop is organised. HITeams (Handpump Inspection Team) have been created, each covers 2,000 wells, and they visit all wells twice a year. The HITeam solves problems but does not repair the pumps. The HITeam reports on the wells and the data are entered into a database and in this manner DACAAR know the percentage of wells functional and keep the down-time low, not more than 15%. The mechanic has proven to be self-sustaining. The HITeams will have to be taken over by the government.

Description of the organisation
The Danish Committee for Aid to Afghan Refugees (DACAAR functional only in Afghanistan) is an apolitical, humanitarian, non-governmental organisation. DACAAR was founded in 1984 with the purpose of providing support to Afghan refugees. The members of DACAAR are Danish Refugee Council, MS-Danish Association for International Co-operation and Danish People’s Aid, who together form a Steering Committee located in Denmark.

DACAAR began its work with Afghan Refugees in 1984 by assisting Afghan Refugees in Pakistan through a sewing project. In 1986 DACAAR took over implementation of water supply projects in Afghan Refugee camps from UNICEF. In 1988 DACAAR began working cross-border in Afghanistan. Over the years activities inside Afghanistan have expanded to include water supply, sanitation and health education and rural development. DACAAR is a leading agency in the WatSan sector and has installed more than 33,000 water points in rural Afghanistan.

Goal
DACAAR’s goal is sustainable economic and social recovery within selected project areas combined with the lasting return of refugees and internally displaced.

Purpose
The purpose for DACAAR’s Water and Sanitation Programme is improved hygiene practices as well as access to sanitation and safe drinking water facilities, contributing to improved health status and quality of life in communities, with a particular focus on women and children.

Sectors
The DACAAR Water and Sanitation Programme (WSP) has four programme sectors:

WatSan service provision, technology development & quality control, maintenance and data management.

WatSan service provision is done through improvement of dug wells (DW), drilling of new tube wells (TW), deepening of dried out dug wells (DE) and construction of rural gravity flow pipe schemes (PS).

Technology development and quality control are done through established committees in Afghanistan namely the Technology Development Working Group (TDWG) which is a sub-group of the Water and Sanitation Group (WSG). The development by DACAAR of various versions of the Afridev handpump, for example, has been carried out in conjunction with UNICEF and SKAT Consulting in Switzerland.

The rope and washer pump has been identified as the possible solution for a house-level, cheap and reliable pump to improve private water points all over the country.
Technical development unit
The DACAAR TDU and the WSG are also concerned in the development of various quality assurance processes for the WatSan sector in Afghanistan. The quality of the production process is also monitored at source, ensuring a minimum standard of production at factory level and the kind of lowering of standards which has happened in previous price wars. All these procedures are conducted according to SKAT guidelines for quality control of the Afridev handpump.

The DACAAR TDU is also engaged in capacity building for the sector as a whole including other agencies, the private sector and Government of Afghanistan.

Maintenance
To ensure that the maintenance system continues to function, DACAAR handpump inspection teams (HIT) regularly inspect all handpumps and meet with communities, shopkeepers and handpump mechanics to solve problems. The WSG/MRRD has agreed to this community-based maintenance system to becoming the standard for rural Afghanistan. As a result of this system, DACAAR wells have only fifteen per cent of handpumps non-operational at any one time.

One HITeams can serve 1,500 – 2,000 wells depending on the terrain and how dispersed the wells are. A water quality testing laboratory has been established in DACAAR Kabul Office in order to test the samples sent in by DACAAR teams and other agencies. The laboratory is able to test for 25 chemicals in water including arsenic, fluoride, boron and nitrates.

Handpump Inspection Team
Mobile Handpump Inspection Teams (HITeams) will monitor hand pump maintenance. They visit each Handpump Mechanic every three to six months to discuss and assist in resolving problems at individual waterpoints. They also inspect the waterpoints on a routine basis as per a schedule prepared by Programme Management.

Their role is to:
• Assess the functioning of the maintenance arrangements including the payment and performance of hand pump mechanics and the effectiveness of spare part distribution
• Rectify problems found (e.g. non-payment for repairs and maintenance by Usergroups, inadequate training of mechanics, unavailability of spare parts).
• Monitor the technical performance of the waterpoints and help the handpump mechanic to solve technical problems
• Collect data on repairs, maintenance, and spare part use
• Collect data on the functioning of spare parts shops
• Where required, collect water samples for testing of biological quality
• Monitor spare part prices in the bazaar
• Supply spare parts to the selected shopkeepers according to the price list until the shopkeepers have established links with the hand pump factories (only with Programme Management approval.)
• Identify new shopkeepers as required
• Select and train new hand pump mechanics if anyone leaves the job or is replaced.
• Chlorination of wells when needed.
• Assist Usergroup to move handpump from failed or contaminated wells to a new location

NOTE: HITeam has the authority to remove the handle from the pump on non-operating wells to pressurize communities into resolving conflicts.

Data management
For DACAAR the database is a vital management tool used in planning, monitoring and analysing (see Table 1 at the end of the document) the impact of various strategies such as the maintenance strategy. Data on all wells are regularly collected by the DACAAR handpump inspection teams and verified by WSP monitoring teams. Also data from external agencies are starting to flow into the national water supply database, and constant effort is put on ensuring a continuous flow of information.

Understanding of the requirement of services
The output in terms of WatSan services is that communities will have sustained access to improved water and sanitation and have improved their hygiene practices. As explained in detail in the following section, DACAAR’s operational strategy is totally compatible with the RuWatSan Policy Framework Principles endorsed by MRRD (Ministry of Rural Rehabilitation and Development) in Afghanistan, and specifically:
• Basic service is a human right
• Some for all, not all for some
• Equitable allocation
• Integrated approach for development of water, sanitation, hygiene education through community mobilisation
• Development based on user demand
• Community empowered to plan, construct, operate, maintain and own community facilities
• Base development on what works
• Technology: low cost, affordable and maintainable by the communities (dug wells and tube wells with handpumps, protected springs, and gravity piped schemes, latrines)
• All pumps must be of proven quality and with spare parts available locally
• Agreed cost-sharing basis with communities
• Community will be the owner of water supplies and fully responsible for all operation and maintenance
• Water development should always be linked to sanitation and hygiene for improved health
• Service sustainability has highest priority
• Sector development based on consensus
Proposed approach, methodology, timing, and outputs

Approach and methodology
DACAAR has three principle concerns when providing WatSan services. The first concern is water facilities remain public. The second concern is water points are accessible to women. The third concern is a sense of community ownership of water points.

The first step towards selecting a project area is to complete a survey of water and sanitation using one of the DACAAR survey teams who visit the local authorities and then collect data from most villages in each district to be considered. In the first instance the site engineer explains the principles of the project to the elders of each community which has been selected for WatSan services. The principles include:

- community ownership of improved water facilities
- water points must be accessible primarily to women
- no sources of contamination should be located close to water points

In order to ensure that women are able to access water points and are satisfied with the sites selected, female staff will also visit each village and discuss site selection with the women. The site engineer must give priority to the women’s suggestions which are relayed to him by the female staff. The community is informed from the first discussion that they will be responsible for maintenance of the facility.

In order to generate a sense of ownership of the facility, the community is required to contribute up to 30 per cent of the cost of materials and labour for installation. The community also selects a caretaker and signs an agreement with a DACAAR trained handpump mechanic (one mechanic per 50 to 100 handpumps).

The site engineer also ensures that the necessary spare parts will be available for the handpump mechanic by motivating at least one local shopkeeper to stock spare parts by giving him a starter kit and linking him to relevant retail outlets or manufacturers.

The sanitation part of the DACAAR WatSan implementation strategy includes the installation of subsidised latrines.

Table 1: WSG Database Monthly Report kept for Water and Sanitation Group in Afghanistan DACAAR wells

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<th>Province</th>
<th>DW</th>
<th>TW</th>
<th>DE</th>
<th>SP</th>
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<th>Total WP with GPS</th>
<th>Total WP with Status</th>
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Misc = wells could be privatised, collapsed, disappeared
UW = Problem and delivering water
DW = Dug Well    TW = Tube Well    DE = Deepened well    SP = Stand Post    WP = Water points
NW = Problem and not delivering water

The actual data output is more than above. The actual amount not working is 15% after the dry wells are deducted of the total WP.
for interested individual families in the same communities which are being provided with improved water facilities.

Each site team includes male and female hygiene educators. Hygiene promotion is an integral part of DACAAR’s water supply activities. DACAAR has many years’ experience working in hygiene promotion and has been instrumental in writing a variety of documents used by the government and NGOs throughout Afghanistan.

**Conclusion**

From the DACAAR experience it is clear that dealing with 33,000 water points over about 20 years to ensure lasting use of handpump and water points in general it requires follow-up. DACAAR developed the Hand Pump Inspection teams that effectively monitor the condition of waterpoints and make it possible to support the communities in their operation and maintenance. These provide moral support as well as helping with rural problems and giving practical support. The major problems with an operation and maintenance system is the funding as donors do not provide funds for such specific activities as HITeams even if proven to be of great benefit.

Most NGO’s water programs are too small to be self sustained and therefore the government should have dedicated staff to support operation and maintenance but leave the actual work of connecting with the communities to NGO’s or small contractors trained in community approaches.

**References**

Access (An e-newsletter for the Water and Sanitation Program Community) – WSP – New Thinking on Rural Water Management Models by Richard Pollard, WSP-EAP Regional Team Leader – April 29, 2005


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