

MAXIMIZING THE BENEFITS FROM WATER AND ENVIRONMENTAL SANITATION

Operation and maintenance of handpumps in Afghanistan

Leendert Vajselaar, 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 pay 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 in to 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).

These services are provided by 19 specialised field teams, with a long experience in their field, and consisting of engineers, skilled labourers and hygiene educators (male and female).

Tube wells are drilled either by using DACAAR drilling teams or by a contractor. DACAAR directly operates 19 heavy percussion drilling rigs.

Where wells need to be deepened, the first option is always to hand dig the well deeper and install the appropriate model of Afridev handpump. Where this is not possible however, either because the well has already been hand deepened a number of times or the ground strata is too difficult, wells need to be bored. In this case, contractors are hired and monitored by DACAAR engineers.

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 (every six months) 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

Province	DW	TW	DE	SP	Total WP	Total WP with GPS	Total WP with Status	Working	Dry
Badghis	290	165	54	0	509	297	456	358	51
Farah	770	574	120	0	1464	1054	957	582	195
Ghazni	2150	698	692	33	3573	3180	3325	2496	572
Ghor	1052	41	6	0	1099	642	607	475	88
Hilmand	1418	603	426	11	2458	90	2227	1465	361
Hirat	3590	1367	1255	8	6220	5753	5504	3562	1228
Kabul	447	301	354	31	1133	1075	1073	814	147
Kandahar	1250	418	351	0	2019	829	1859	848	675
Kapisa	151	11	24	0	186	156	174	110	44
Khost	1148	55	396	24	1623	1525	1609	965	355
Kunar	566	0	159	397	1122	1022	1076	864	50
Laghman	631	161	88	70	950	945	941	736	69
Logar	782	53	435	590	1860	1793	1814	1209	276
Nangarhar	3225	474	1306	118	5123	4734	5000	3724	438
Nimroz	192	2	28	0	222	0	157	90	40
Nuristan	0	0	0	35	35	35	35	34	0
Paktika	349	59	25	0	433	315	334	268	60
Paktya	1010	164	174	58	1406	1157	1315	674	478
Parwan	77	23	0	61	161	133	161	144	4
Uruzgan	209	17	0	0	226	0	209	108	97
Wardak	1139	2	167	0	1308	926	1246	997	192
Zabul	426	99	132	0	657	271	539	339	130
Grand Total	20872	5287	6192	1436	33787	25932	30618	20862	5550

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

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Rural Water Supply in Africa, Peter Harvey and Bob Reed, Loughborough, ISBN: 1 84380 067 5.

Contact address

Leendert Vijselaar
Water and Sanitation Manager DACAAR
vijselaar@dacaar.org
