

Maintenance, the key to handpump survival

by Peter Morgan

The handpump has a vital role to play, but it is essential to continue to work towards finding truly sustainable systems of management.

THE CELEBRATIONS THAT follow the installation of a new handpump are well known. A new pump brings prestige to both governments and donors alike, as well as praise from user communities. Each pump brings high hopes of a safe and reliable water supply close at hand.

In the 1980s the handpump was thought to be the answer to most rural water supply problems in the developing world. It is adaptable to a wide variety of situations, and compared to piped or motorized schemes it is relatively cheap and easy to maintain. The handpump option is therefore strongly promoted by the United Nations and other international organizations as the most appropriate method

of bringing safe water to the millions who so desperately need it. Indeed, as the recent drought in Southern Africa has shown, there is no lack of international funding available to drill holes and fit new pumps.

But there is another side to the handpump story which must also be told, for tens of thousands of handpumps have fallen into disrepair for want of adequate maintenance. In some countries in Africa, the number of new pumps barely keeps up with the number that go out of service because of breakdown. This evidence is very disturbing, for it reveals that the handpump, for all its advantages, may not be the universal solution that it was once thought to be, especially in

Africa. What appears to be lacking in so many countries is the ability, both of the governments and of the local communities, to maintain the handpumps that are in use today.

There has been much speculation as to why this is the case. Certainly, many handpumps are designed in such a way that routine maintenance is far from easy, making any attempt at local management nearly impossible. Many handpumps are expensive to buy and equally expensive to maintain — a situation which inevitably puts a strain on local resources. In some cases, handpumps are simply not strong enough to do their job, while others use such a high proportion of imported parts that regular replacement poses a foreign currency problem to the country concerned. These questions have been discussed at great length, and continue to be discussed, with no simple solution in sight.

The VLOM concept

During the 1980s the concept of Village Level Operation and Maintenance (VLOM) was conceived. It was assumed that if the pumps were designed to be easier to maintain, and were also handed over to the communities, then the maintenance could and would be undertaken on the spot by the users, and much of the central government's responsibility might fall away.

As usual, however, the dream of easy maintenance has only been partly realized. Evidence from several countries in Africa shows that although much progress has been made, many problems associated with VLOM pumps still remain. Designers, manufacturers, and international agencies are obviously keen to sell their products, often before they are thoroughly tested under actual VLOM conditions. Laboratory tests on pumps provide guidelines, but do not replicate real-life conditions. Also, designers in a more technically developed world often have a limited understanding of what is technically achievable in the more remote parts of Africa, where many people have grown up in a world without western technology.

I remember one situation where a sales representative from Europe was asked to prove how easy his pump was to maintain. When put to the test, the representative was unable to mend the pump, or even to take it apart, for a lack of tools and technical know-how. Many such examples suggest that



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The installation of a new handpump brings prestige to donors and governments, and a crowd to the pump!



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pump maintenance is not as easy as it sounds, when put to a real-life test in the world in which most handpumps are placed. It is an unforgiving world, in which pumps are expected to perform day in and day out with a minimum of attention, tools, or back up services.

Who maintains?

There has also been much debate about who should be responsible for maintenance. In many African countries, the government itself accepts responsibility. Countries such as Zimbabwe have carried this out for over half a century, while others struggle to provide even a minimal service. As the number and variety of pumps increase, so do the cost and complexity of maintenance, and most governments in Africa cannot sustain an acceptable level of service. This is the case even with the so-called 'low-cost' handpump option.

The expectations of the users also vary considerably. In some countries, such as Zimbabwe, the users expect the government to provide the service free of charge, while in others, in Kenya for example, the users have become accustomed to paying for their water. In many projects donors indirectly help to fund maintenance, simply by replacing old but serviceable pumps with new ones.

A recent report by the World Bank/SKAT (1991) revealed that communities in Kenya and Malawi were willing to assume their share of responsibility, and to contribute towards reasonable operation and maintenance costs. The study also revealed that they were capable of performing simple repairs, like the replacement of seals, provided the spares were available. (These studies were undertaken in projects in which a fair amount of foreign intervention was still evident.)

Community participation

There appears to be a threshold, though, beyond which community participation cannot be expected. The studies show that if the operation and maintenance costs rise too high, the villagers refuse to participate. This occurred when the replacement of the rods and/or rising mains (and other technical parts of the pump) was necessary, a situation where the technical skills required and the costs incurred were well beyond the means of most rural communities.

When faced with a choice, most users prefer to return to their traditional, and usually unprotected, water sources, rather than provide money for anything other than the most basic handpump repairs. The exception, of course, is where the pump provides the only supply of

water for the community and is thus essential for life. When the pump acts as a lifeline to survival itself, then no effort is spared by the community in providing the necessary labour (and often the funding) to keep the pump working.

Pump 'ownership'

Handpumps are often 'handed over' to communities in the belief that the true 'ownership' is transferred with it. This is a complete misconception. Communities rarely accept the actual ownership of communal facilities, and the handpump is a case in point. The test of this arrangement comes when costs are incurred and the 'owners' are asked to make anything more than a small payment. They rarely do make such payments because they continue to feel the pump belongs not to them, but to the government or to the donor organizations that installed them. Perhaps the question that should be asked is 'what is a community?' Should it really be this 'top-down' concept of a group of people who happen to live in the same area, but may not necessarily have much else in common?

The willingness to invest money is a good test of real ownership, and several mechanisms which involve local communities are being experimented with. In Tanzania, SIDA has introduced the concept of a 'Village

Account' in one large project: villagers together contribute a sum equivalent to 15 per cent of the cost of the pump installation, and this is deposited in a local bank account and used to fund maintenance. In Kenya a variety of self-financing schemes are operating. In some cases a pump levy is imposed or water is paid for by the bucketful to offset the high overall costs of maintenance. In others, the users are expected not only to maintain but also to pay for the spare parts for their handpumps, a concept which is easier for some communities to accept and put into practice than others. (A description of how the Nira 85 and the India Mark III handpumps are maintained by the community in western Kenya was described in the October 1992 issue of *Waterlines*.) In most African countries, however, the villagers are simply too poor to contribute very significantly to the upkeep of their handpumps, and they prefer to turn back to their traditional sources.

It is now becoming increasingly obvious from these studies that the handpump and the social aspects of its use have not been sufficiently researched to establish that VLOM in its true sense is possible. While there will always be exceptional cases, there is scant evidence that communities in general are prepared or even able, by themselves, to support long-term handpump programmes in Africa. Under such circumstances, handpump programmes, if they are to survive and provide a vital service, will depend on considerable support from central government and the donor agencies for many years to come.

Pressure from the IMF/World Bank

has recently forced African governments into structural adjustment programmes, and a considerable reduction in government spending is one result. This process has a significant negative effect on the ability of governments to contribute to the sustainability of their own national rural water supply programmes. Monies available for rural water supply maintenance have often been cut to the point where maintenance becomes impossible.

Shared responsibility?

Perhaps the future answer lies in expanding the concept of shared responsibility for maintenance, under a two- or three-tier system, with local *fundis* performing simple tasks like bolt tightening and seal replacement, and more skilled district-based teams, supported by government institutions, dealing with the more complex problems related to rod, pipe, and cylinder and valve servicing and replacement.

For handpumps to be suitable for such a system they must be designed in such a way that certain aspects of pump maintenance fall well within the capabilities of practical village operations. The pumps must also be durable, so that breakdowns are infrequent, and the costs of replacements are kept to a minimum. Users do not appreciate laying out money frequently on poorly designed parts. The same principles have applied for many years to the motor car: the user expects to get a reasonable life from a new part and is able to service some parts of the car himself, leaving more complex maintenance or repairs to skilled mechanics.

Such a system would only work if

a strict policy was enforced limiting the number of handpump types to just one or two per country, and even limiting the number of pumps in the national programme to a level which the country and the user population can afford to maintain.

Is the handpump necessarily the most appropriate solution? Perhaps the use of handpumps should be limited, in the first instance, to institutions and to drier areas where the water tables are deep. Should not other options be offered to communities in areas where water is closer to the surface? By choosing a more modest approach, there is a greater chance of providing improved water to more people.

Conclusions

The message is quite simple: no pump should be installed unless a proven handpump maintenance system is also established to support it. That means the maintenance system should be established as a priority and not as an appendage to an installation programme. Where no such maintenance system is established, a new pump will provide a few years' service, but ultimately it will join the ever-growing graveyard of abandoned pumps. This is not a good basis on which to build a water-supply system in the developing world. Unfortunately, the short-term rewards of fitting a new pump are simply too attractive compared to the effort required to establish a long-term maintenance system.

The handpump has a vital role to play in Africa, just as it played such a major role in Europe during the transition from an unprotected to a fully protected piped water supply earlier this century. Taking the last ten years as a guide, it seems likely that handpump programmes in Africa will need propping up by governments and donor agencies for some time to come, if the user communities are to benefit from protected water. There will be a need to define parameters for the cost-sharing arrangements, clearly indicating the roles of the user communities, the government, the donor, and any private sector organization that may also be involved. It remains essential to continue to work towards finding truly sustainable systems of management in Africa which can work in practice. To attain this goal is perhaps the most challenging aspect of the current international water supply programme. ●

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Perhaps the use of handpumps should be limited, in the first instance, to institutions like this one, and to drier areas where the water tables are deep.