

A PUMP FOR ALL PEOPLE

RELIABILITY OF SIMPLE,
PLASTIC HANDPUMP IMPRESSES
MALAYSIAN VILLAGERS

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Handpumps made from polyvinylchloride (PVC) may provide one of the simplest and most practical ways of supplying safe, clean water to rural developing countries. But much of the pumps' potential benefits depends on the willingness of people to accept and use them.

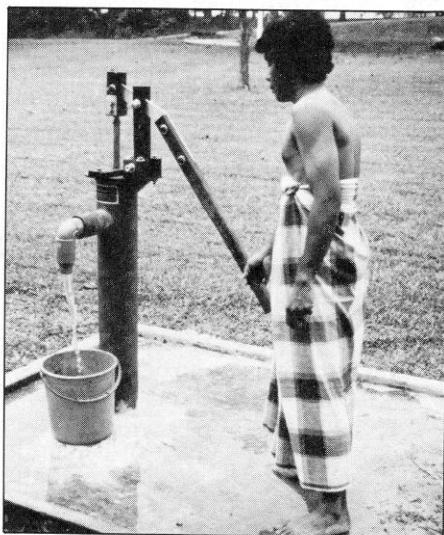
In Malaysia, field tests of PVC pumps proved that they were technically feasible. To determine whether they were humanly feasible, researchers from the University of Malaya went to the Kuala Pilah district of Malaysia to determine the attitudes toward and the acceptability of the handpumps, as part of a 3-year IDRC-supported project to introduce and test the pumps.

More than 800 000 households in Malaysia still rely on traditional sources of water — sources that are often highly polluted and unsuitable for drinking. The government of Malaysia hopes to eventually supply piped water to the country's 13 million people — a task that may take a couple of decades to achieve. Currently, less than half the rural households have piped water. Handpumps can be an intermediate step, making safe water more accessible.

Kuala Pilah district is typical of much of Malaysia: 237 households scattered through traditional agricultural villages populated mainly by paddy farmers. About one-third of those households receive potable water through a pipe system, a slightly larger portion (approximately 40 percent) use some form of handpump. Of the remaining households (24 percent), half share wells, and the other half rely on open ponds or rivers as sources of water.

Researchers interviewed a cross-section of families. Some had used the University of Malaya PVC pump, some had used other types of pumps, some had used both PVC and metal pumps, and finally others had no pumps at all. The families were questioned about their experiences with pumps and water supplies.

Overall, the users were pleased with the handpumps. With the exception of



PVC village pump: the benefits depend upon the people

a single prolonged dry spell, they felt the water supply was consistent. This reliability was particularly pleasing to some villagers, because in areas serviced by pipes the water supply had been cut off during the rainy season.

The PVC handpumps also proved to be more convenient. Because the pumps were installed close to their homes, the villagers saved a great deal of time and effort in not having to fetch water from the river — a fair distance away. The plastic pumps were also lighter and easier to operate than were the metal pumps — a boon for women and children especially.

The better quality water from the PVC pumps also increased the acceptability and satisfaction. Water from PVC pumps was preferred over that from metal handpumps because it was free of rust. The colour was often described as "pure" instead of "yellow." It was also preferred to piped water because piped water contained levels of chlorine the families found hard to tolerate. Piped water was also said to be turbid and foul-smelling. Traditional sources of water, such as rivers and streams, were often reported as highly polluted and suitable only for washing and bathing.

The only complaints came in regards to the low volume of water from the tubewells. Although the hand-pumps supplied three or four houses daily with adequate water for drinking and cooking, there was often insufficient water for festive occasions and for repetitive functions such as bathing, laundering, and cleaning. Many users believed this may have been because the tubewells were just not deep enough to tap the groundwater, and they suggested alternative well locations. Other users blamed the shortage on the large number of households sharing each pump, and they asked that more pumps be installed.

Although the test pumps were installed free of charge, the villagers generally agreed that even if they had to pay for a PVC pump themselves, in the long- and short-term, it would still cost less than piped water supplied by the government. (For piped water, the installation price alone would be about double the price of a PVC pump.)

All the villagers agreed they were willing to work out a maintenance schedule both at the community and household levels so they would not have to rely on the Ministry of Health or university personnel to carry out repairs. Moreover, many of the male users showed a keen interest in learning more about the installation and maintenance of the pumps.

Despite the obvious satisfaction and acceptance of the PVC pumps, the villagers seemed reluctant to purchase the handpumps. Many claimed they were just too expensive. In many cases the financial barrier may be a real one, but for others, the unwillingness to pay may have been based on a misconception during the pilot testing. The free installation of pumps may have given some villagers the impression that the pumps are a deserved social benefit, requiring nothing in return.

Local mass-production may be able to make the handpumps more affordable. Research is currently underway to find a way to mass produce them by injection moulding of plastics. The Malaysian government will support the manufacture of 550 mass-produced models by a local plastic manufacturer. The pumps will be installed by the Ministry of Health and experiments will also be done on their performance in medium and deep wells. And once again, studies on social, cultural and economic acceptance will be launched to establish the proper way of passing the technological responsibility on to the Malaysian villagers. □

Both authors are faculty members of the University of Malaya. Dr Goh is professor of Mechanical Engineering and Dr Low is Associate Professor of Hydrology in the Department of Geography. They recently conducted a preliminary study to determine the acceptability among villagers of a PVC handpump developed by Dr Goh and his colleagues.