Editorial

THIS EDITION OF *Waterlines* focuses on a number of water supply technologies and their role in long-term development and emergencies. Some would argue that such a focus is inappropriate. They would argue either that sufficient technology research and development has been done in the past, or that management and financial issues are far more pertinent than any remaining technical challenges. Our 'Crossfire' debate in this issue sets these two extreme views head-to-head.

Water supply technology has been neglected in the recent past. Part of the reason for this has been the obvious mismatch, experienced by many practitioners, between technology and the capacities of users and support institutions to manage it. Technology development and promotion has often proceeded with insufficient regard for context and management capacity: it has been inappropriate, or not fit-for-purpose. This is not a good reason, however, to neglect attention to technology. On the contrary, it is an argument for getting our technology focus right.

I would like to put forward seven assertions about the importance and necessary attributes of water supply technology in the context of development and emergency relief.

1. *Technology is foundational*. Without technology, there is no benefit to be gained, and nothing to manage. This does not mean that technology is enough – the foundations of a building must provide a firm base for its walls and roof, but it would be a poor building that stopped at ground level.

2. *Poor technology choice can cause failure*. There are numerous examples of technologies around the world which have proved impossible to manage, or too expensive to run. I believe we have to be particularly cautious of the claims made by some purveyors of 'maintenance-free' technologies (which simply do not exist), or which utilize 'free' (renewable) energy, but which still incur significant recurrent costs.

3. *Appropriate technology can contribute to success*. Equally, there are many examples of technologies which are sufficiently robust, easy to repair, or powered by gravity (for example) to permit long-term functioning and service to the users. Sound technology design or selection is a necessary, but not sufficient, condition for sustainable service.

4. *Technology needs to be relevant*. Much of the technology R&D going on at present is producing packaged water treatment systems which can turn contaminated or saline water into potable water. While relevant to certain situations, this form of technology development fails to address the much more fundamental issues of access, convenience, reliability, manageability and cost, which directly affect many of the unserved or poorly served.

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5. *Technology needs to be of high quality*. The technologies used in low-income countries should be fit-for-purpose, and of a quality commensurate with the purpose of providing long-term service. There is no room for cheap and shoddy technology. The emphasis should be on cost-effective solutions, which find the right balance of capital and recurrent costs, service and longevity.

6. *Technology needs to be home-grown*. Far too little R&D takes place in the countries where the technology is needed. Consequently the science and technology base of low-income countries never develops, and 'imported' technologies are not owned and adapted well to local circumstances. No field of endeavour progresses without a strong research basis. This is no less true of the water and sanitation sector in a low-income country than any other sector in any other place.

7. *Technology needs to be integrated with management*. Unless technology design and development, management capacities and financial issues are considered together in an integrated manner, technologies which are not fit-for-purpose will continue to be promoted, and long-term management will fail. This is the reason why indigenous science and technology capacity needs to be developed, and why foreign technologists need to take the trouble to understand the context, culture and needs of the countries to which they target their products.

The papers in this edition of *Waterlines* address these issues in a variety of ways. The papers on SODIS, by Prem Gurung and colleagues, and on the rope pump, by Sally Sutton and Joe Gomme, focus on technologies developed outside of the countries where they are now being promoted. They explore important issues of technology dissemination and adoption, highlighting the complexity, challenge and context-specific nature of such technology transfers. In writing about manual well drilling, Kerstin Danert draws attention to technologies which are evolving in low-income countries, but through collaboration with external organizations. She highlights the sometimes fragmented nature of developments in this area, and the role of networking organizations in spreading the word about successes and failures. Caetano Dorea addresses the matter of the perceived or feared health risks associated with the use of aluminium sulphate in emergency water treatment. He concludes that water treatment carried out using alum does indeed fall into the fit-for-purpose criterion mentioned more than once above.

Getting technology right is challenging enough. Achieving a good 'fit' between technology and those who use it and manage it is even harder. We hope that the articles in this issue of Waterlines provide some food for thought in relation to these important matters.

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