49. Choosing an appropriate technology

[illegible]

This technical brief is intended as a guide to selecting the most appropriate options, taking as its example the selection of water-treatment facilities. It should *not* be seen as a guide for the design of individual treatment processes.

The process contained in this brief can be applied to the selection of single treatment facilities, or as a guide to the development of a *strategy* for a whole area. The process can be used both by people with direct responsibility for making the decisions, and also by other parties to ensure that the right issues are addressed by the decision-makers.

The method described below can be applied to any decision-making process — for example, to identify the technologies for a development project, such as a water supply, sanitation, or refuse-collection scheme.

[illegible]: [illegible] (see, for example, Schulz and Okun, 1984)

There are many different types of water-treatment process to choose from. Table 1 describes some of the more common. Many of the treatment processes used in the South, however, do not work properly.

Table 1. [illegible]

[illegible]	D[illegible]	C[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

The problem is that many of the treatment processes are *inappropriate* for their use and/or their location. For example, many were developed in the cooler climates of the North, making direct transfer to tropical climates unsuitable. The spare parts, maintenance, and power consumption required by many treatment processes makes them unrealistic options for many parts of the world.

All locations are unique; what is required is not a common *solution* to a problem, but a methodology for the *analysis* of problems.

Figure 1 shows three stages for the selection procedure.

1:

The *purpose* of the treatment process must be established. What are you trying to achieve, and why? Is it achievable, is it a realistic goal, is it the main problem? There may be a need to *prioritize* the problems. This stage is often underestimated or taken for granted. For example, in the case of water treatment, the priority in developing countries often should be a low-cost, low-maintenance system.

2:

The *constraints* on the proposed development have to be identified and this can only be done by looking at the particularities of the individual case. Often, physical paf.g coun0556 Tw ed.

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2:

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[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
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3:

Of the main treatment options listed in Table 1, the analysis has revealed that sedimentation and slow sand filtration are probably the most appropriate treatment options because of the operational and maintenance requirements. Chlorination could be considered if completely safe drinking-water were required, but the chemical requirement might mean that this option is not appropriate. Water from source 2 could be used for drinking-water supplies after treatment, leaving the water from source 1 for irrigation purposes. Otherwise, the very high turbidity in water source 1 would mean that a pre-treatment stage such as roughing filtration may have to be employed. Water-quality targets should be to remove turbidity and pathogens to acceptable levels, and to perform the routine operational tasks for the slow sand filter when required. (For further details about the operational requirements of slow sand filters, refer to *The Worth of Water.)*

So, when selecting any technology, consider the following:

: *What is required? Why? Is it realistic?*
: *Can it be achieved? What are the limitations?*
: *What technologies and controls are appropriate given the problem and the constraints?*

Pickford, J. (ed.), *The Worth of Water,* IT Publications, London, 1991.
Shulz, C.R. and Okun, D.A., *Surface Water Treatment for Communities in Developing Countries,* John Wiley & Sons/IT Publications, London, 1984.
WELL, *Guidance Manual on Water Supply and Sanitation Programmes,* WEDC for DFID, Loughborough, 1998.

Prepared by Jeremy Parr and Rod Shaw

WEDC Loughborough University Leicestershire LE11 3TU UK
www.lboro.ac.uk/departments/cv/wedc/ wedc@lboro.ac.uk