The WaterCompass

Results of the WaterCompass Tool. The tool was created by Practica Foundation (www.practica.org) and the Akvo Foundation (www.akvo.org), in order to assist people in choosing water technologies. We hope this tool proves useful, any comments can be send to watercompass@practica.org.

Session information
Date: Thu Jan 30, 2014
Time: 14:15:39

Options chosen

Water source
- Rainwater
- Surface water
- Groundwater

Location
- Densely populated urban
- Densely populated low-income urban
- Moderately populated urban
- Peri-urban, rural
- Remote rural

Preferred level of delivery
- Household
- Shared
- Small community
- School or institution
- Large user group

Preferred management level
- Household
- Shared
- Small community
- Municipal

Affordability
- User-financed
- Donor-financed

Intended system sophistication
- Labor-intensive
- Intermediate
- Technology-intensive

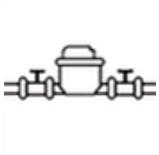
Intended use
- Drinking only
- Domestic use
- Domestic small-scale productive use

Contamination
- Pathogenic (micro)
- Pathogenic (macro)
- Arsenic
- Fluoride
- Iron
- Manganese
- Heavy metals
- Sulphate
- Chlorine
- Salts
- Pesticides
- Nitrate
- Phosphate
- Odor and taste
- Turbidity suspended solids
- Hardness
- Acidity
- Lack of oxygen

Ground formation
- Sand gravel
- Clay formations
- Compacted formations
- Soft weathered rock
- Bedrock

Water lifting
- Not required
- 0-8 m
- 8-15 m
- 15-40 m
- >40 m

Annual precipitation
- less then 200 mm
- more then 200 mm; seasonal
- more then 200 mm; year-round



Pressurized distribution

Rooftop rainwater harvesting

Screening and straining

Settling

Short descriptions

Pressurized distribution

A centralized transport method where water is transported through pipes from a source or treatment facility to a public standpipe, house, yard or group connection. Pumps are required to get pressure on water flowing through pipes. Pipes are typically made from metal, cement or plastic.

Financial - Both construction costs and O are high. Construction costs include design, material and labor. Energy requirement produces the highest running costs. Other O costs include repairs, pump control, leakage control and preventing recontamination. Specific costs..?

Institutional - Can supply water to community or larger user group. Implementation requires experts for system design and construction. For O activities skilled people required. Needs government regulation. Management responsibility might be at local authority, company or community committee, depending on system.

Environmental - Pipes need to be dug in soil, has impact on local environment. In case of leaking pipes, contamination from soil might enter pipes. Leakage control and residual chlorine required. Compared to other distribution methods, this method has largest ecological footprint.

Technical - High-tech method. Construction requires experts. Intermittent storage or pumping required to deal with variable demand. Water meters and house connections required. Maintenance includes leakage control, pipe cleaning, pump control (dealing with variable demand) and lubrication of pumps.

Social - Expected to be highly appreciated by users since there is no manual pumping required and water gets closer to them. Only problem for users might be costs. If system not properly maintained, additional water treatment is required at household level.

Relevant remarks

Rooftop rainwater harvesting

Rainwater can be collected from the rooftops of houses, schools or other buildings. Roofs with galvanized iron sheets work best for collection, but tiles and sheets are also acceptable. Applicable above 200 mm precipitation per annum, but long dry periods will necessitate an alternative water source. Risk of contamination with suspended solids.

Financial - Usually, roofs are already in place. If not, investment is needed for adequate roofing. If yes, these costs (RAIN? 6-12 USD/m2) might be prohibitive for household(s). Additional costs may occur in the form of household treatment or storage/conveyance facility construction.

Institutional - Optimal decentralized method; can be managed at (shared) household-level. More facilities may prompt establishment of local water committee to optimize managing. Resilience can be improved by organized - professionalized, regional-level - monitoring. Proper (micro-)credit scheme is essential for local dissemination.

Environmental - Good solution if sufficient rainfall and no other good quality water sources. Often insufficient for year-round consumption. This may require alternative water source development.

Water quality might be problematic: roof corroded or contaminated with dust, leaves, insects, bird droppings, etc.

Technical - Maintenance is simple but requires regular and careful attention. Roof should be frequently cleaned, ideally after every dry period exceeding one month. The initial precipitation is not for storage, but for flush-cleaning system. Large-scale roof repairs can be executed by local craftsmen.

Social - Requires an awareness-raising campaign to acquaint potential users with this solution. Periodically, people might use unimproved sources if water yield is insufficient. Yields close to 1L per mm rainfall. Mostly used for drinking water only, because of low yield.

Relevant remarks

Screening and straining

Water filtration method using screens or sieves made of steel with a mesh-size of 2-8cm. Often placed at surface water inlets to prevent debris or coarse material from reaching subsequent treatment processes. Microstrainers with openings of 10-60µm can be applied after screens for the removal of algae.

Financial - Costs depend on the design and the cleaning mechanism applied. Expenses can be kept low by using manual labor for cleaning and maintenance. Typically an affordable solution, but specific costs are difficult to offer as they strongly depend on region.

Institutional - Applied at (inlet of) central treatment facilities, but simple use makes it suitable for decentralized applications. Management requirements depend on cleaning mechanism. Maintenance is low, can be combined with cleaning of other facilities. Training on debris management might be required.

Environmental - Applied for surface water containing coarse particles. Debris mostly includes organic material like leaves, duckweed and algae. In vicinity of urban settlements, plastic wastes are typical. Debris needs to be properly disposed and managed according to its characteristics and volume.

Technical - A simple, but flexible technology for diverse configurations. Straight screens can be manufactured locally and cleaned manually. Cylindrical or drum strainers require mechanical cleaning (backwashing). Requires regular debris removal. Lower debris load reduces cleaning frequency.

Social - Requires no specific social campaign as the method is widespread and is not applied directly at household level. Screening only removes larger particles, therefore it cannot guarantee safe water quality. To be applied in combination with other treatment processes.

Relevant remarks

Settling

Settling of solid particles in a container filled with water and left undisturbed for at least 24 hours. After the particles settle, the clean water can be carefully poured into a clean container. Particle removal may result in the removal of a fraction of the pathogens present, but an additional disinfecting step is advisable.

Financial - Any container can be used for the settling, no special purchase required. In case of using three-pot treatment, some extra pots or containers might be required. There are no further operating costs.

Institutional - This method is applicable for use at household level. Organized from a central level, households might get training and recommendations for using settling. The settling process itself can be managed by the households themselves. Not feasible to control the use.

Environmental - Mainly used for surface water. If containers are open, contaminations might blow into water.

Technical - Can be applied with two pots, but three-pot system is advised. Every 24 hours water is poured into new pot, only water from third pot is used. Siphon helps reducing turbulence during pouring. Pots need cleaning before pouring new water.

Social - Requires careful attention of users. They need to leave the water long enough in the pot, to pour water to the following pot and to clean the pots. Activities might be easily neglected, resulting in increased health risks for users.

Relevant remarks
