

Water services with independent providers in peri-urban Maputo: Challenges and opportunities for long-term development

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Abstract

Water service delivery to most residents of peri-urban areas of greater Maputo depends largely on alternative service providers, mostly in the form of small-scale independent providers (SSIPs). This paper discusses the present and long-term challenges facing SSIPs in supplying quality water of sufficient quantity in peri-urban Maputo and possible human health risks associated with the consumption of water provided by SSIPs. Extensive water sampling and analyses were conducted to evaluate the physicochemical and bacteriological quality of water provided by independent providers and the associated human health risks. Borehole pumping tests, the results of which were interpreted using the graphical method of Jacob, were used to evaluate the regional aquifer potential, the long-term impacts of its exploitation and the aquifer vulnerability to external contamination. From the results of borehole pumping tests it was concluded that the present yields are in average 33% lower than estimated safe yields and that larger than present yields therefore can be exploited. The aquifer vulnerability to external contamination (e.g. by *E. coli* and nitrates) is low, mainly because of low hydraulic loads and the existence of a rather thick (10 to 30 m) sandy unsaturated stratum where bacteria die-off and biological denitrification probably occurs. However, the aquifer vulnerability to sea water intrusion is high. Currently, the health risks posed to consumers relying on services provided by SSIPs are small; even so, 13 out of 35 controlled boreholes had either total coliform or faecal coliform levels higher than the WHO standard. In the long run SSIPs may face more serious water quality problems due either to over-exploitation of the aquifer system or increased hydraulic loads resulting from increased population density.

Keywords: water supply services, peri-urban areas, small-scale independent providers, water quality, public health