Supplementary Material

Surface water and groundwater quality in South Africa and Mozambique – Analysis of the most critical pollutants for drinking purposes and challenges in water treatment selection.

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Table S1. Average per capita water requirements for different categories of settlements [1,2]

Category of settlement	**L/(per capita day)**
Medium-sized towns	150-200
Small towns (included water needs for animals and small gardens)	200-250
Coastal towns (permanent visitors)	200-250
Coastal towns (seasonal visitors)	80-130
Rural village	60-100
Farm village (includes water needs for animals and small gardens)	100-150

References for Table S1

[1] DWA. Department of Water Affairs, South Africa 2009. Development of Reconciliation Strategies for all Towns in the Southern Planning Region: Inception Report. Prepared by Umvoto Africa (Pty) Ltd in association with Aurecon (Pty) Ltd on behalf of the Directorate: National Water Resource Planning. Department of Water Affairs, Pretoria, South Africa

[2] Hay, E.R.; Riemann, K.; van Zyl, G.; Thompson, I. Ensuring water supply for all towns and villages in the eastern cape and western cape provinces of South Africa. *Water SA* **2012**, *38(3),* 437-44, doi.org/10.4314/wsa.v38i3.9.

Table S2. Main characteristics of the sampling pounts in the peer reviewed papers included in this study.

Paper	Area Type: Rural (R), Peri-urban (PU)	Study site: details
Abia et al., 2015	PU	Water samples were taken in different points from the Apies River, in the Gauteng Province, South Africa and analyzed for *Escherichia coli*. Samples were taken in the area where the river is used for fishing, irrigation, as a water source for flocks, also for disposal of wastes of the surrounding villages
Abiye and Bhattacharya 2019	R	20 groundwater samples were taken in the area of Namaqualand in the Northern Cape Province and analyzed for 9 metals including As. This area is characterized by a lack of rainfall, climatic aridity and absence of surface water. Local communities rely on groundwater resources for their uses.
Abiye and Leshomo, 2013	R	The study site corresponds to Namaqualand in Northern Cape province. It's a rural area. 57 water samples were collected from boreholes currently used for human and animal consumption for the determination of physico-chemical parameters, inorganic constituents, stable isotopes and trace metals.
Abiye and Leshomo, 2014	R	The study site corresponds to Namaqualand in Northern Cape Province. It's a rural area. 30 water samples were collected from boreholes for major ion and metal determination
Abiye et al., 2018	R	Samples were collected from the Waterberg thermal fields (Limpopo) and the Namaqualand region (South Africa)for the determination of geochemical paramters as well as fluoride.
Agunbiade and Moodley, 2014	PU- R	Samples were taken from the Umgeni River (257 km from the source to the release in the Indian Ocean), KwaZulu-Natal province, South Africa. Sampling campaigns included 7 points in the dam region corresponding to a peri-urban -rural area for the determination of 17 pharmaceuticals.
Agunbiade and Moodley, 2016	PU-R	Samples included in the current review were taken from surface water (Msunduzi River in KwaZulu-Natal Province, South Africa) and were analyzed for a selection of pharmaceuticals.
Archer et al.,2017	PU	Sampling points in surface water are not reported in details
Barbieri et al., 2019	R	25 groundwater and surface water samples were taken in the area of Limpopo Natinal Park, Gaza province, Southern Mozambique and analyzed for main chemical and physical parameters, ions. The aim of the paper is to evakuate if these sampled resources could be adequate for human consumption and irrigation
Bezuidenhout et al., 2002	R	Water samples were taken from the Mhlathuze River in KwaZulu-Natal (RSA) and analyzed for microbiological and physical-chemical parameters. The sampled area is a typical rural area in this region.
Chilundo et al.,2008	R	Water samples were taken along the Limpopo River in Mozambique in order to collect data for establishing a water quality monitoring network.
Dzoma et al., 2010	R, PU	Samples were taken from stream water in a mining area near Orkney, in the North West Province of South Africa
Edokpayi et al., 2014	R, PU	Samples were taken from Dzindi River, in the Limpopo Province, South Africa and analyzed for chemical and physical parameters, heavy metals
Edokpayi et al., 2015	R	Samples were taken from Mvudi River, South Africa, and analyzed for chemical and physical properties, selected ions, microbiological parameters. The study area includes formal and informal settlements.

Edokpayi et al., 2016a	R	36 samples were taken from the Mvudi River, South Africa, and analyzed for trace metal concentrations over the year.
Edokpayi et al., 2016b	R and PU	Water samples were taken from Mvudi River and Nzhelele River n Vhembe District, South Africa and analyzed for Polycyclic Aromatic Hydrocarbons (PAHs) (
Edokpayi et al., 2017	R	36 water samples were taken from Nzhelele River and analyzed for trace metals.
Edokpayi et al., 2018	R and PU	24 groundwater samples were taken from 8 boreholes in Muledane area in the Limpopo Province in South Africa and analyzed for heavy metals
Fatoki et al., 2001	PU	Samples were taken from Umtata River, Eastern Cape in a peri-urban catchment area and analyzed for turbidity, microbiological and cadmium pollution.
Fatoki et al., 2002	PU	Samples were taken from Umtata River, Eastern Cape in a peri-urban catchment area and analyzed for dissolved trace metals.
Fatoki et al., 2003	PU	Samples were taken from Umtata, Buffalo, Keiskamma and Tyume Rivers and in the Sandile and Umtata Dams in the eastern Cape province, South Africa. They were analyzed for Cd, Hg and Zn.
Fatoki et al., 2004	PU and R	Samples were taken from the Umtata River in a periurban and rural area and were analyzed for cadmium in order to evaluate the level of health risk to communities along the river banks who rely on it as their primary domestic source.
Gumbi et al., 2017	PU	Water samples were taken from Umgeni river, Kwa-Zulu Natal Province, in different sampling points in periurban areas and analyzed for pharmaceuticals.
Jackson et al., 2007	PU and R	Samples were taken from the catchment area of Berg River: in an agricultural farming area and in the informal settlement of Mbekweni (Western Cape, South Africa). They were analyzed for trace metals.
Jackson et al., 2009	PU	Samples were taken from two rivers in the Western Cape south Africa and analyzed for trace metals
Leusch et al., 2018	PU	Water samples were taken from a dam/lake in a nature reserve in Gauteng <province, South Africa and analyzed for some pharmaceuticals
Lin et al., 2004	R	Samples were taken from Mhlathuze River, Kwa-Zulu Natal, RSA) and analyzed for chemical, physical and microbiological parameters.
Madikizela and Chimika, 2017	PU and R	Water samples were taken from Mbokodweni river, South Africa and analized for naproxen, diclofenac and ibuprofen.
Madikizela et al., 2014	PU and R	Water samples were taken from Mbokodweni river, South Africa and analized for triclosan and ketoprofen
Manickum and John 2014	PU	Water samples were taken from Umsunduzi River and aanalized for endocrine disrupting compounds.
Matongo et al., 2015a	PU	Samples were taken in different sampling point along Umgeni River, KwaZulu-Natal, RSA in order to evaluate the occurrence of a selection of pharmaceuticals
Matongo et al., 2015b	PU and R	Water smples were taken in different sampling point along Msunduzi River, KwaZulu-Natal, RSA and analyzed for a selection of phramceuticals
Nekhavhambe et al. 2014	R and PU	Water samples were taken from different rivers around Thohoyandou, Limpopo Province, RSA and analyzed for PAHs
Obi et al., 2002	R	Samples were taken from the river water sources in the rural Venda communities, Northern Province, South Africa, and analyzed for microbial indicators.
Odiyo and Makungo, 2012	R	Water samples were taken from groundwater in Siloam Village, Limpopo Province, South Africa and analyzed for fluoride concentrations. This village is a typical rural village in South Africa with high fluoride concentrations, the likely sources of fluoride, the factors afecting concentrations and the impact on human health

Odiyo and Makungo, 2018	R	Water sample were taken from 11 boreholes in Siloam Village, Limpopo Province and analyzed for chemical and physical parameters as well as microbial indicators in order to evaluate the contamination level of boreholes used for domestic use in the rural village.
Olatunji et al., 2017	PU	Water samples were taken from surface water in a river receiving untreated farm wastewater and analyzed for steroid hormones
Rimayi et al., 2018	PU	Samples were taken from the Hartbeespoort Dam, Gauteng Province, Soth Africa and analized for pharmaceuticals and antivirals.
Segura et al., 2015	PU and R	Water samples were taken from surface water in RSA and Mozambique and analyzed for antinfectives.
Sibanda et al., 2013	R	Samples were taken from the Tyume River in the Eastern Cape Province of South Africa and analyzed for microbiological parameters
Van Wyk and Coetzee, 2008	R	Groundwater samples were taken from boreholes in the Bushmanland and Namaqualand areas, Northern Cape Province, South Africa and analyzed for uranium
Wanda et al., 2017	PU	Samples were taken from groundwater and surface water in Gauteng, Mpumalanga and North West and analyzed for emerging micropollutants.
Wood et al., 2015	PU	Samples were taken from different surface water points in Western cape, KwaZulu- Natal, Freee, Limpopo, Northern Cape provinces, South Africa and analized for anti-virals
Wooding et al., 2017	PU	Samples were taken from surface water in Rietvelei Nature Reserve (Pretoria) and Albasini Dam (Limpopo Province), South Africa and analyzed for anti-virals.

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