



Levels of domestic water insecurity of rural dwellers in a municipal ward in Kwazulu-Natal, South Africa

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In rural South Africa, district municipal water services are largely based on abstraction of groundwater and provision through a network of publically accessible standpipes along the main roads. Some water users have illegally installed yard pipes that are connected to the main network. In our study area, a municipal ward in Kwazulu-Natal, there is ongoing development of water infrastructure. However, roughly 50% of water users still rely on informal water sources, such as springs, streams, rivers or rainwater. How do users of different primary water sources differ in terms of water insecurity? In which way does the development of municipal water infrastructure transform the water insecurity of rural dwellers?

Based on the widely used concept of water security, we defined indicators of water insecurity in this rural context. In January 2018 we conducted a survey of 67 households in our case study ward in Kwazulu-Natal, South Africa. It was complemented by semi-structured interviews and participatory observation. We grouped the households according to their primary water source: illegal yard connection, municipal water service and informal water source. In a mixed-methods approach, drawing from statistical as well as qualitative analysis, we compared the three groups of water users in terms of different aspects of their domestic water insecurity.

Our results demonstrate that water users can be water insecure in different ways and on different levels. Users of informal water sources are likely to be water insecure in terms of a comparably low water-related (agricultural) productivity, and comparably high water-related health problems and perceived water scarcity. Users of municipal water services are likely water insecure with regards to the comparably low reliability of water provision and low water-related productivity. Moreover, they are likely water insecure in terms of a comparably high risk of both water scarcity due to overuse and depletion of aquifers and a risk of conflicts over water, as the municipal water infrastructure undermines traditional water allocation regulations. Users of illegal yard connections exhibit a higher water-related productivity and lower risk of water-related health problems than the other two groups of water users. However, like legal users of municipal water services, they are likely to be water insecure in terms of reliability of water and a relatively high risk of water scarcity. Compared to the other two groups of water users, the risk of conflicts over water is highest for users of illegal yard connections. They are in constant fear of losing their main water source, whether it is through legal actions by the municipality, or through vandalism by neighbours.

In conclusion, these communities in rural Kwazulu-Natal find themselves in a multi-layered situation of water insecurity that cannot easily be resolved through municipal infrastructure development. Municipal water provision and development of new water infrastructure can likely reduce domestic water insecurity in terms of water-related health and productivity. However, it might raise water insecurity of rural dwellers at other levels, with regards to unreliability of water provision and increasing risk of both water scarcity and conflicts of water.