

Groundwater-Level Monitoring and Sustainability in the Kabul Basin, Afghanistan, 2004 to 2013

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The Kabul Basin, including the city of Kabul, Afghanistan has a population of approximately 4 million and depends primarily on groundwater resources for a potable water supply. The Afghanistan Geological Survey (AGS) has monitored groundwater levels at more than 70 wells in the Kabul Basin since 2004 and the Danish Committee for Aid to Afghan Refugees (DACAAR) has monitored 10 wells during the same period. In the Kabul Basin, similar to other populated areas of Afghanistan, there have been many reports of wells going dry from the drought of 1998 to the early 2000s. Statistical analysis of monthly groundwater levels in the Kabul Basin indicates that water levels have increased slightly in rural areas, since about 2005, as a result of normal precipitation and stable groundwater withdrawals. However, groundwater levels have decreased in the city of Kabul (the Central Kabul subbasin) due to increased water use by the city's increasing population. The rate of groundwater-level decline in the city is greater from 2008 to 2012 (1.5 m/y on average) than from 2004 to 2008 (0 to 0.7 m/y on average). Many community supply wells were installed only a few meters below the water table and are vulnerable to seasonal drying. Groundwater resources in the city of Kabul face long-term sustainability concerns, such as increasing numbers of shallow water-supply wells going dry, whereas those in the northern Kabul Basin may have fewer issues with long-term water sustainability. Groundwater monitoring, in addition to surface water and climate monitoring, is necessary for assessing water resource management options to improve the sustainability of water resources in the Kabul Basin.

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