Climate change is projected to alter the incidence and geographic range of climate-sensitive health outcomes, including diarrheal diseases, malnutrition, and some vectorborne diseases. These health outcomes are also associated with the quality and quantity of water, and are among the leading causes of worldwide childhood morbidity and mortality. Climate change is projected to alter precipitation patterns that will affect access to safe water, including through increases in the frequency and intensity of floods and droughts. The magnitude and extent of projected changes to safe water and health outcomes vary regionally, increasing inequities in regions with the highest burden of water-related health outcomes. However, the extent to which projected impacts actually occur depends on the ability of the public health, health care, water, and other sectors to proactively prepare for a changing climate. Achieving the Millennium Development Goals for water and health would improve the current situation and increase the resilience of communities and nations to climate change in the short-term. This is unlikely to be sufficient in the longer term as climate change brings new norms and challenges; transformations are needed in policies, technologies, and ways of thinking.