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Potential Adaptation Measures to Tackle Climate Change Impacts on the Water Sector in Arid Climate: Perspectives from Oman

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The water problems have always remained an issue of concern to the governments in arid countries especially in the GCC (Gulf Cooperation Council) countries. The reasons for water problems are mainly population growth and an increasing demand for water. The climate change will make the current situation even worse. The key predictions for the region are the high incidence of reduced flows, declines in rainfall and higher temperatures. These changes will make water management even more difficult than what it is today. When renewable surface and groundwater resources are not sufficient to meet the ever-increasing demands from agricultural, industrial and domestic sectors, finding alternative water resources becomes a priority. To overcome these challenges and adapt to new climate realities, besides conservation, use of unconventional supplies should be seriously looked into. In 2025, the estimated water demand in Oman will be nearly 2,500 MCM from current demand of 1,700 MCM. Oman is marked with extremely high summer temperatures, low intensity of rainfall, and declining groundwater table levels due to over pumping and obviously high evapotranspiration rates. Groundwater in Oman is over-used and, therefore, continuous abstraction is lowering water table depth and in some cases deteriorates water quality due to seawater intrusion. There are encouraging examples from the GCC countries especially in Oman that if implemented widely will make the water sector more environmentally sustainable and the region more water secure. Use of renewable energy in the desalination industry, wide use of treated wastewater and greywater, adoption of low cost wastewater technologies, managed aquifer recharge with treated wastewater, biosaline agriculture, water conservation at domestic level will lead to significantly better management of water sector. Lessons learnt in Oman have the potential to be applied in similar environment in other parts of the world.