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ECONOMIC COSTS OF SUSTAINING WATER SUPPLIES: FINDINGS FROM THE RIO GRANDE BASIN

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ABSTRACT: Water stakeholders in the Rio Grande Basin face the challenge of improving the resilience and adaptability of its water policies in response to the basin's anticipated future climate change and variability. Existing conditions include (1) growing populations, (2) increased water demands for irrigation, urban, and environmental uses, (3) a changing regional climate that points to increased frequency and intensity of droughts and floods, and (4) weakly integrated analytical and planning capacities for implementing more resilient water policies. This research addresses those challenges by designing and applying an integrated basin-scale framework that accounts for the basin's most important hydrologic, economic, and institutional relationships. Its contribution is a quantitative analysis of three alternative policies for addressing long term goals for the basin's reservoirs and aquifers in the face of altered future streamflows brought on by varying climate. The three policies analyzed include (1) no sustainability planning at all, (2) sustaining aquifers, and (3) renewing aquifers. It identifies water use and allocation trajectories over time that result from each of these three policies. Findings show that it is hydrologically and institutionally feasible to manage the basin's water supplies sustainably. As of 2011, the economic cost of protecting the sustainability of the basin's water stocks is estimated at 6 - 10 percent of the basin's average annual total economic value of the basin's water use.

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