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Climate Change and Water Infrastructure in Central Asia: adaptation capacities and institutional challenges

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The paper discusses vulnerability areas of water sector in arid Central Asia due to climate change projections with particular focus on adaptation to sustainable operation of physical infrastructure capacities (from legal, institutional and technical aspects). Two types of technical installations are the main focus of this paper, i.e. electrical lift irrigation systems and water reservoirs. The first set of electrical lift infrastructure is strategic for delivering water to water users via pumps, diversion structures, vertical drainage facilities and groundwater boreholes; on the other hand, the primarily task of second set of structures is to accumulate the water resources for sectors of economy. In Central Asia, approximately, 20-50% of irrigation water is lifted, yet major of lift structures are in very poor technical conditions coupled with ever increasing of electricity tariffs. Furthermore, useful volumes capacities of water reservoirs are being severely diminished due to bio-physical geomorphologic processes, improper operational regimes and chronic financing for special in-house sedimentation surveys. Most importantly, the key argument is that irrigation sector should internalize its adaptation efforts, i.e. integrate renewable energy technologies, energy audit programs and lastly design comprehensive investment prioritization processes and programs. Otherwise, water sector will be at great risk for continued provision of fundamental services to the public, food security and industry