

## The Water Efficiency Paradox, a study of Central Asia

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Water scarcity is a rapidly growing concern in the semi-arid areas of Central Asia. Water savings and efficiency improvement programs are promoted as a possibility to save the Aral Sea. The Aral Seas lost 92% of its volume between 1960 and 2009. Projects on rehabilitating the Aral Sea and increasing the efficiency of water use in the irrigation sector are, however, not making progress. In Central Asia, 90% of the water withdrawal is allocated to agriculture. Irrigation efficiency programs often disregard the downstream connectivity of the water flow path. Not all water being applied is consumed by crop evapotranspiration and in fact an equally great portion of water returns back into the river basin system and is reused downstream. This cascade effect implies that results in one location can induce a scarcity of water in another location. The cascade effect in the Syr Darya has been studied by means of the Aral Sea Basin Management Model (ASBMM) designed by SIC-ICWC and remote sensing data produced by UNESCO-IHE. We will demonstrate the impact of increasing irrigation efficiency locally on the overall water consumption in the basin. We will show that efficiency increases with larger areas, and that there are caps to the maximum efficiency at basin scale. Increasing efficiency is thus not self-evident. Classical solutions on promoting increase of efficiency and water savings are therefore outdated and misleads stakeholders. We will look into the misconceptions and challenges in the communication between researchers and policy makers regarding increasing efficiency.