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From risk assessment to adaptation pathways: improvement of Climate Risk Informed Decision Analysis for the Limari basin in Chile

Christianne Luger^{1,3}, Ad Jeuken¹, Koen Verbist², Saket Pande³, Andrew Warren¹, Christopher Vivanco⁴, Hector Maureira⁴, and Pablo Alvarez⁵

¹Deltares, Netherlands

²UNESCO-IHP, Zimbabwe

³TU Delft, Netherlands

⁴CAZALAC, Chile

⁵PROMMRA, Chile

The Climate Risk Informed Decision Analysis (CRIDA) framework incorporates the uncertainties of climate change that impact project planning, socioeconomic justification, and engineering design into a step-wise and collaborative planning process to guide a technical analyst to low-regret risk- and cost-effective solutions;

Research has been carried out to demonstrate and improve, through additional guidelines, the usability of CRIDA, in a pilot for the Limari basin in Chile. The added guidelines (1) offer the analyst numerically based justifications for analytical decisions to ensure a more structured application of CRIDA and (2) improves on co-design aspects by incorporating stakeholder risk perceptions and opinions explicitly in the process.

The Limari Basin has experienced an increase in drought frequency and severity over the last decades. A strategic approach for adaptation is recommended through CRIDA based on an evaluation of the future risk to climate change and the confidence in this analysis and a subsequent systematic assessments of adaptation options. The resulting strategy requires the increase of water supply robustness by adding new water sources that can be implemented in combination with flexible measures for managing demand (i.e. implementing agricultural meshes and improving irrigation efficiency) in parallel or in series to create adaptation pathways.

The study demonstrated the functionality of CRIDA. While the added guidelines required more processing time, subjectivity in the method is reduced thus also reducing possible bias introduced by the analyst. In addition, overall acceptability of the proposed strategies is improved by incorporating stakeholder risk perceptions and opinions explicitly in the process.