



Science-society collaboration for robust adaptation planning in water management – The Maipo River Basin in Chile

Anahí Ocampo Melgar (1,2), Sebastián Vicuña (1), Jorge Gironás (1,2,3)

(1) Centro de Cambio Global (CCG), Pontificia Universidad Católica de Chile, Santiago, Chile, (2) Departamento de Ingeniería Hidráulica y Ambiental, Pontificia Universidad Católica de Chile, Santiago, Chile, (3) Centro de Desarrollo Urbano Sustentable, CONICYT/FONDAP, Santiago, Chile

The Metropolitan Region (M.R.) in Chile is populated by over 6 million people and supplied by the Maipo River and its large number of irrigation channels. Potential environmental alterations caused by global change will extremely affect managers and users of water resources in this semi-arid basin. These hydro-climatological impacts combined with demographic and economic changes will be particularly complex in the city of Santiago, due to the diverse, counterpoised and equally important existing activities and demands. These challenges and complexities request the implementation of flexible plans and actions to adapt policies, institutions, infrastructure and behaviors to a new future with climate change. Due to the inherent uncertainties in the future, a recent research project entitled MAPA (Maipo Adaptation Plan for its initials in Spanish) has formed a collaborative science-society platform to generate insights into the vulnerabilities, challenges and possible mitigation measures that would be necessary to deal with the potential changes in the M.R. This large stakeholder platform conformed by around 30 public, private and civil society organizations, both at the local and regional level and guided by a Robust Decision Making Framework (RDMF) has identified vulnerabilities, future scenarios, performance indicators and mitigation measures for the Maipo River basin. The RDMF used in this project is the XLRM framework (Lempert et al. 2006) that incorporates policy levers (L), exogenous uncertainties (X), measures of performance standards (M) and relationships (R) in an interlinked process. Both stakeholders' expertise and computational capabilities have been used to create hydrological models for the urban, rural and highland sectors supported also by the Water Evaluation and Planning system software (WEAP). The identification of uncertainties and land use transition trends was used to develop future development scenarios to explore possible water management challenges. Finally a collaborative process guided by the Water Security concept resulted in the identification of local-based performance indicators that will be used to evaluate scenarios and the need for adaptation measures. This collaborative approach has allowed capturing the general aspirations of different water users in this basin and identifying the main challenges and possible adaptation measures that will be necessary to explore if some of these scenarios become real. Furthermore, this science-society effort has formed the basis for a more extended and long-term collaboration for the implementation of adaptation measures to other unavoidable land-based changes in the Maipo river basin.