

Appendix 2. Future research.

There are significant research gaps on how environmental flows interact with agriculture and with landowners/managers. It is important to differentiate among the different kinds and purposes of farming systems in the basin, and how they interact with river ecosystems, hydrology, climate change, and socio-political and economic dynamics. Farmers' and land managers' knowledge must be included to consider their needs, objectives, and constraints, and how environmental flows do or do not align with these, in both the short- and long-terms. Qualitative and quantitative research in collaboration with the agricultural sector can help identify benefits, risks, and impacts to agriculture, including identifying alternatives that minimize food-security risks (cf. Richter et al. 2020). Research must identify policy, technical, economic, socio-cultural, organizational, and other strategies that support benefits and mitigate negative impacts. This work must remain honest about where and when an increased investment in environmental flows might be costly to agriculture or other human consumptive uses of water in the RGB, in order to be proactive about possible solutions (e.g., government support measures to minimize these impacts). This is an important future research line that can bring the environmental and agricultural sectors together.