

Collaboration to better address Climate Impacts on Water in the Canadian Columbia River Basin

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(a) Purpose of study or research hypothesis

Climate change is the most critical issue impacting water management in the Upper Canadian Columbia River Basin (UCB). The Columbia River Basin is an important transboundary freshwater resource for agriculture, fisheries, power-generation, First Nations and urban users.

(b) Key issue(s) or problem(s) addressed

A series of reports (Pacific Climate Impacts Consortium, 2006, 2013; Columbia Basin Trust, 2017) have highlighted the need to address documented climate impacts by monitoring the region's water resources to help communities prepare for these impacts. Addressing water data gaps and the need for streamlined archival and retrieval technologies for water data were identified as necessary as well.

(c) Methodology or approach used

In 2017, Living Lakes Canada (LLC), a Canadian water stewardship NGO, convened a conference of 120 North American water data experts to discuss the development of a water monitoring framework and open source water database for the UCB. Following the conference, LLC initiated and facilitated a collaborative approach to determine the best solution for water data collection, analysis, sharing and storage. This multi-year process culminated in the development of an open source, open access database as a repository for UCB water-related data sets, and a Priority Water Monitoring Matrix within a scientific framework.

To lay the groundwork for the framework, in 2020 LLC convened a meeting of senior hydrologists from government, consultants and academia who arrived at the consensus that a "water balance" approach was needed to fill data gaps. Also in 2020, the University of British Columbia published a 30-year study suggesting glacier-melt contributions to runoff have already passed peak water for summer stream flows in the UCB.

(d) Results or conclusions derived from the project

The Columbia Basin Water Hub database was formally launched in 2021 to house water-related data submitted by community-based monitoring groups; municipal, regional and First Nations governments; and industry. Steps to implement a Priority Monitoring Matrix for select monitoring sites within each of the 10 sub-hydrological regions within UCB were finalized with 2 test areas piloted in 2021.

(e) Implications of the project relevant to congress themes

This NGO-led, collaborative project developed a comprehensive, scaled and nested approach for water

monitoring to support efforts of decision makers to better address community and ecosystem climate adaptation options, an example of the type of paradigm shift necessary to collectively address climate crisis impacts on water.

Keywords : climate change, climate crisis, climate impacts, water, water stewardship, water monitoring, Columbia River Basin, Canadian Columbia Basin, water data, open source, Canada, Upper Columbia Basin