HydroQuebec's Experience in Adapting to Climate Change

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Abstract: Hydro-Quebec, a public utility responsible for supplying electricity to its domestic customers as well as neighboring Canadian provinces and American states, generates 97% of its energy from 59 hydroelectric power houses with a total installed capacity of 36,426 MW. The availability of this precious fuel being climate dependent, the utility is aware of the potential impacts of climate change on the resource and decided a decade ago, to undertake extensive research aimed at tackling this major issue.

It appears that the combination of warmer and consequently shorter winters and higher summer temperatures and the ensuing increases in evaporation, as well as the greater increased precipitation that will affect the region where the major portion of electricity is produced, are liable to considerably modify the quantities and the temporal distribution of water supplies to existing plants and to potential new hydroelectric developments. Thus, we investigated the impacts of climate change on the hydrological regimes of Québec's developed watersheds in order to elaborate adequate adaptation strategies over the upcoming decades. We found that the annual water availability may increase while the intra-annual inflow pattern could vary to an extent that operating rules would have to be reassessed in order to optimize electricity generation at existing and planned power houses.

Summary: Hydro-Quebec investigated the impacts of climate change on the hydrological regime of Québec's developed watersheds. It was found that the annual water availability may increase, while the intra-annual inflow pattern could vary, to the extent that operating rules would have to be reassessed to optimize the electricity generated from power houses.