Diversity in Approaches to Hydropower Flexibility in Water and Power System Adaptation Strategies Under Climate Change Conditions

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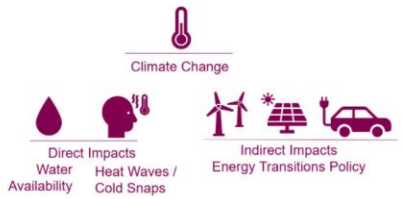
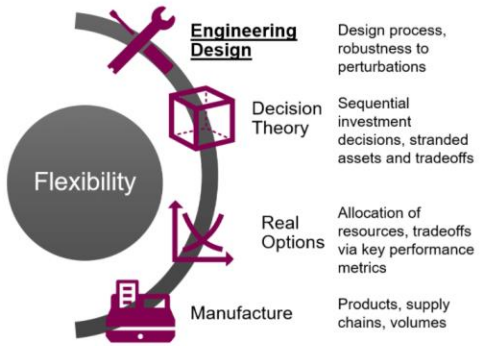
Climate Change Impacts and Policy Require Hydropower Adaptation

Hydropower flexibility will play an important role in decarbonization strategies while also being impacted by the direct impact of climate change on water resources.

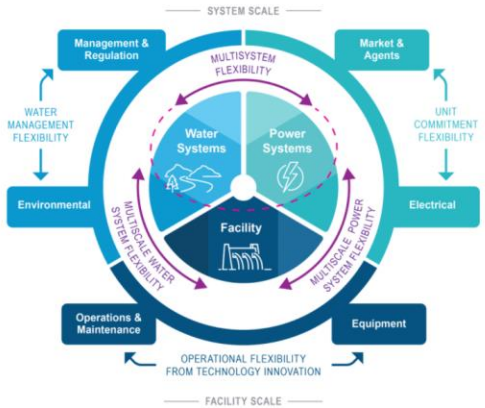


Flexibility Objectives Differ Across Adaptation Studies



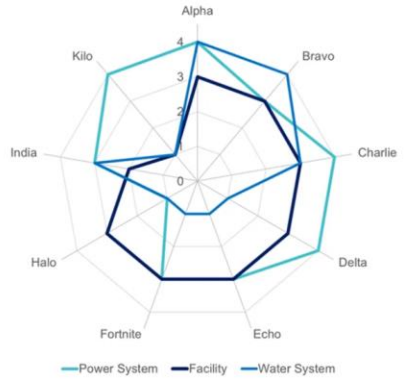
Flexibility As An Engineering Design takes Multiple Definitions Across Hydropower Systems and Scales.

Water and Power systems are connected through hydropower plants. Adaptation Studies need to specify which flexibility they advance, e.g. flexibility of what to what.



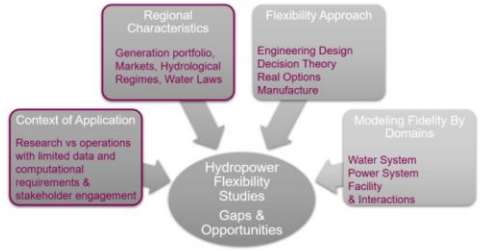
A Framework to Describe the Advances in Hydropower Modeling Across Water-Power Grid Studies

Hydropower representations in 9 anonymized flexibility studies with an engineering design perspective. Gaps represent challenges in immediate transferability across studies despite all advance flexibility of hydropower.



Extended Framework to Identify Gaps and Opportunities in Hydropower Adaptation Research

To integrate and transfer insight and methods across adaptation studies, application and regional characteristics also need to be specified



Moving forward

A systematic approach to categorizing and contextualizing Water-Power Grid Adaptation projects is needed to identify synergies and gaps across projects and inform collaborative opportunities and future research priorities.

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