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## The impacts and challenges of water use of electric power production in China

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## **Proposition**

Accompanying the thesis

*“Impacts and challenges of water use of electric power production in China”*

By Yi Jin

1. Clarity on the water use type (consumption vs. withdrawal) and water sources (e.g. seawater vs. freshwater) of power production is essential to improving energy-water nexus modelling. (Chapter 2)
2. Water is used for power production and then transmitted, virtually, across the power transmission network, and thus changes regional water stress. (Chapter 3)
3. Electricity generation has major impacts on freshwater biodiversity due to its water use. (Chapter 4)
4. Incorporating water scarcity into power production planning is an important step towards sustainable energy development. (Chapter 5)
5. Many global challenges, though interconnected, have been addressed individually, at times reducing one problem while exacerbating others. Nexus approaches simultaneously examine interactions among multiple sectors. (Liu et al., 2018)
6. As energy and water are fundamentally intertwined, understanding the spatial and temporal evolution of thermoelectric water use and water stress is important for both sustainable energy development and water resource management. (Zhang et al., 2018)
7. Globalization has led to an increasing geospatial separation of production and consumption, and, as a consequence, to an unprecedented displacement of environmental and social impacts through international trade. (Wiedmann and Lenzen, 2018)
8. Water can be redistributed in physical terms, through water transfer projects, and virtually, through embodied water for the production of traded products. (Zhao et al., 2015)
9. Some novel low-carbon electricity technologies require more water use and may aggravate water stress where they are deployed. For example, the water intensity of coal-fired electric generating units with a wet cooling tower doubles when equipped with carbon capture and storage system. (Zhang et al., 2018)
10. Interest in the direct interactions between human and nature has grown rapidly. This attention encompasses multiple academic disciplines and practical perspectives. (Soga and Gaston, 2021)