

## **China's energy-water nexus: Spillover effect of energy and water policy**

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The nexus between water and energy is drawing more attention in China today. Large amount of water requirement for energy production drives us to consider the spillover effect of energy and water policies on both resources. Our study builds a multi-sectoral dynamic computable general equilibrium (CGE) model with an energy tax module, to study impacts on energy and water resource. Based on the proposed model, different policy designs with different ad valorem tax rates are simulated. The result shows that energy production and demand would be negatively affected by the reform in terms of output shrinkage in most sectors, and the effect will be larger with a higher tax rate. Energy structure would be improved, with a sharp decrease in fossil fuels production and demand, while the cleaner energy forms will increase. Water resource required for energy production would be significantly decreased based on energy saving effect of energy tax, which also greatly contributed for the achievement of "3 redlines" goal. Water saving policy can save water of thermal power plants but increase energy consumption. Hence, site-specific factors should be considered in the determination of cooling technologychoosing in different regions of china.