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Water transfer projects and "Water-Energy-Food Nexus" governance from the perspective of game theory

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ABSTRACT

The "water-energy-food nexus" governance depends on the strategic interaction of multiple stakeholders. However, existing research on this particular aspect is very limited. Water is needed in industry and agriculture, and in all aspects of life, and the availability of water resources is the top priority for water, energy, and food security. However, water shortages and uneven spatial and temporal distribution require water transfer projects to adjust the distribution of water resources and to consider "water-energy-food nexus" governance. This paper investigates water transfer projects and "water-energy-food nexus" governance by using the game theory, building game models and analyzing the strategic interaction of multiple stakeholders. The solution of the Nash equilibrium supports the formulation of policy recommendations and implementation paths for the sustainable development of water transfer projects governance. The results indicate that water transfer projects can be used as a solution for the "water-energy-food nexus" governance.

Keywords: Game theory; Nash equilibrium; Water transfer projects; Water, energy and food nexus; Sustainable development

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