Benefits of Cooperation in Transnational Water-Energy Systems

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Cooperation in international river basins is often challenged by upstream–downstream conflicts over water allocation. In many cases, water allocation is linked to the energy sector through hydropower. In this study, the water value method was used to simulate reservoir operations in an international basin under different assumptions about national priorities and regional energy cooperation. Benefits in the water sector and the power sector were compared considering both cooperative and noncooperative behavior by national players. The approach is demonstrated for a semiarid international river basin characterized by conflict between upstream hydropower production and downstream irrigated agriculture. A scenario assuming regional cooperation in the power sector came closest to the multisectoral basin cooperation benchmark and produced fewer national costs than scenarios assuming noncooperative behavior. The results emphasize that power and water resource allocation should be viewed jointly in international river basins where upstream hydropower operations can impact downstream irrigation supplies. International cooperation in the power sector may ease upstream–downstream conflicts in these cases.

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