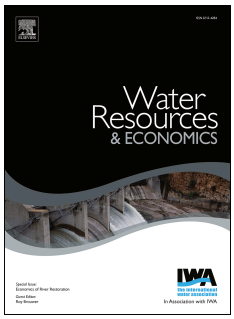
# Accepted Manuscript




Systemic risk in the global water input-output network

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# Systemic Risk in the Global Water Input-Output Network

**Abstract**

The issue of water access and security has been emphasized in the recent policy debate on sustainable development (Sustainable Development Goal No. 6) and adaptation to climate change (CoP21 in Paris, 2015). This study provides new evidence about the Blue Virtual Water Input-Output Network. The main novelty of our approach is the combination of Structural Decomposition Analysis (SDA) with Network Theory. SDA reveals that size-related, technological and structural components have contributed substantially to changes in virtual water use. Network analysis offers new insights about the vulnerability of the system to shocks through trade links across country-sector pairs. Our analysis highlights a possible trade-off in the increasing importance of virtual water trade: the efficiency improvement in granting access to virtual water might come at the cost of increasing systemic vulnerability.

Overall, the great unbalance between water availability and usage combined with rigidity of global consumption and production networks and the risk of cascade effects imply increasing vulnerability of the virtual water network to shocks propagation.

*Keywords:* Virtual water trade, Multi-regional input-output model, Network analysis

**JEL:** C67, Q25, F18