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Title: Trade-offs between water saving and external environmental risk via China's virtual water trade



Providing adequate food for the increasing population with higher incomes while ensuring the sustainability of agriculture had been a significant challenge for China. Due to heightened pressure on its domestic resources, China has started to import large quantities of food crops like soybean and maize in recent years. These imports might have negative repercussions in the environment and resources of the exporting countries. We use virtual water content and China's trade in six major food crops and three livestock sectors to get the VW trade for China over 2000-2015.

We find that China's net virtual water imports of blue and green water have increased considerably and consistently over the last 15 years. China's food trade has saved an increasing amount of blue (41 billion m³ in 2015) water over the years at the national level. China's food trade has also played a significant role in improving the shrinking supplies of freshwater resources at the global level (global savings of 37.2 billion m³ in 2015). In terms of green water, China's food trade has played a positive role in bringing the rainwater from the humid regions of the world to a relatively much drier country of China. For example, in 2015, China was able to save over 174.4 billion m³ of domestic green water through its food trade. At the global level, China's food trade contributed to saving over 58 billion m³ of green water in 2015 alone. We concluded that China's partial reliance on imported food did not add significant water pressure to foreign countries but saved global water. It is the combination of reliance on domestic and international markets which would result in low-cost solutions to resource deficiencies.