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Dear Co-Editors-in-Chief,

I am pleased to submit a research paper entitled *“Virtual water supply chains diversity buffers cities against climate change and drought episodes: A lesson from 181 cities*” by me, Hachaichi Mohamed, a Ph.D. researcher at EM Normandy France.

In this manuscript, I highlight that water had a great influence on the rise and collapse of ancient civilizations. Nowadays, mankind faces water-related problems exacerbated by intensive farming, rapid urbanization, and climate change strikes. However, most of the water humanity is currently consuming is invisible in nature. While there is in-depth knowledge regarding the virtual water of cities of the Global North, virtual water flows in cities of the Global South is still fuzzy and lack generalizability. To bridge this gap, we compute and decompose 181 Sothern’s cities’ virtual water (Blue and Grey) using Extended Environmental Input-Output Analysis (EE-IOA), we collected data from Multi-Regional Input-Output (MRIO) tables from Eora, and cities' final demand vectors from Office of Statistics of each host country. While the scientific literature asserts that the North African region is triggered as a climate change hotspot that is exposed to strong temperature increases and high drought risk, results showed that North African cities are importing goods and services with larger quantities of embedded freshwater to bend local climate impacts and achieve regional water security. Results showed that the average virtual water is estimated to be 253 liters per capita/yr and Greywater is estimated to be 285 liters per capita/yr which means that cities of the Global South are causing transboundary water pollution more than they import freshwater embedded in commodities. When decomposing the virtual water of the Global South we found that the major responsible sector is food accounting for 37% of the total footprint, followed by transport with 24% and energy with 22%. To place the climate-induced uncertainties in perspective, it is better to act in a pro-active approach to achieve regional water security.

To my knowledge, this is the first study that uses a large sample of cities from the Global South to draw general conclusions regarding geography (Latin America, Asia, and Africa) and income class (UMICs and LMICs). I anticipate large citations after publication.

I believe that this manuscript is appropriate for publication in the “*Science of the Total Environment”* journal, given the fact that the journal emphasizes on Environmental impacts of climate change, and agriculture.

This manuscript has not been published and is not under consideration for publication elsewhere. We have no conflicts of interest to disclose.

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