

Interactive comment on “Analysis of virtual water flows associated with the trade of maize in the SADC region: importance of scale” by J. M. Dabrowski et al.

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The reviewer makes an interesting observation regarding the virtual water content values derived for maize in this study and in others. The national approach used in this study used important maize growing areas to derive climatic data for input into the CROPWAT model for the SADC comparison. This resulted in a value of 986 m³/tonne, which is significantly lower than the value of 1609 m³/tonne reported in Chapagain and Hoekstra (2004). The more detailed WMA analysis (using SAPWAT and WMA specific crop production statistics) resulted in a value of approximately 750 m³/tonne which is less than half of the value derived in Chapagain and Hoekstra (2004). Values derived in Chapagain and Hoekstra (2004) were made based on climatic conditions derived

from capital cities of the countries included in the analysis. The values derived in that particular study are very comprehensive, cover many crops grown throughout all countries in the world and are very valuable in terms of the objective of that particular study and in highlighting the virtual water concept and its application. The study presented here shows that in reality, values can differ significantly and care should be taken when drawing conclusions using virtual water content figures that have not been derived at a fine level of detail.

The two concluding points made by this reviewer are addressed below:

1. The reviewer makes a valid point. The potential impact on groundwater and stream-flow recharge was not taken into account and is difficult to determine. The statement to which the reviewer refers will be revised so as to address the reviewers concern in a revised version of the manuscript.

2. By calculating the virtual water content attributable to green water the paper has addressed this point to an extent. Additional information such as soil conditions and other aspects that influence crop production would further enhance the value of this information.

References

Chapagain, AK and Hoekstra, AY (2004) Water footprints of nations. Volume 2: Appendices. UNESCO-IHE: Institute for Water Education. Delft, The Netherlands.

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