

Interactive comment on “Virtual industrial water usage and wastewater generation in the Middle East/North African region” by S. R. Sakhel et al.

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Referee number 1

“A lot of information is given randomly from page 1001 line 2 to page 1002 line 3. Random information like that could be presented in a figure or table based upon solid data from a trusted source (like the FAO, UN). In its current form it just confuses the reader and contributes to the paper not being concise and well structured. This section could be deleted“.

Authors We can condense the content to the major arguments: demand-supply-availability; sources, UFW, partly presented as suggested in a figure or table. We could not find better references (from the FAO or UN). Additionally, it was very hard to
C2325

find the references that were given.

Referee number 1 1.2 “Another example of irrelevant information is an almost 2 pages section on why these 8 industries are relevant for choosing: page 1003 line 8 to page 1004 line 28“

Authors: If we do not mention this information then the reason behind selecting these industries would not be justified. Anyway, we can condense some of the content.

Referee number 1

1.3 “There is a lack of information on the status of virtual water (and related water footprint) research. There is almost no consideration of related work, including appropriate references. There is no relation given to terms like blue, green or blue water. It appears that the authors missed the last decade on research on these topics. They refer to Chapagain and Hoekstra (2004) (page 1002, Lines 18-19) as a recent work. This work relates to the quantification of virtual water flows for the period 1997-2001. However, more recent work from the same authors quantifies the water footprint and virtual water flows off all nations for the period 1996-2005. The statement of the authors on page 1002 lines 26-27 is not correct.“

Authors: We will add information about the status of virtual water (and related water footprint). We could not find any work that is related to ours that talks about virtual water exports of specific industrial commodities (potash, refined petroleum products,...) but could find virtual water exports of total industrial products from the MENA countries. This is why we did not include related work. We have related the virtual water exports to the blue water term (renewable water resources) but we find that the green water term is not related to the industry in any kind. The referee is right about the statement on page 1002 line 26-27. This is because we expressed the sentence in bad English but we will correct it.

Referee number 1: 2. Probably the most important remark is that the methodology of

the paper is not clear. There is little information given on the used data sources and the exact methodologies used. A table with a detailed overview on data sources used, should be presented. The methodologies are presented in Table 2, but are not clear and almost fully based on grey literature. There are almost no journal publications referred to. Even Wikipedia is very often referred to, e.g. Table 1 although there are definitely more solid data sources for this table (e.g. UN). There are many examples where the methodology is exclusively based on grey dubious literature, e.g.:

Authors: Can the referee kindly tell us what is not clear about our methodology? We will include the references used in the methodology. We kindly ask the referee to understand that it is impossible to find better references. The references below Table 1 are from company websites or reports which were hard to find. Company websites and reports are reliable sources of information.

2.1 Table 2, Refineries: It is quoted that (Sandy, 2005) is used to quantify the water requirement for 1 crude oil barrel. If I click this link in the reference list, the pdf seems to have disappeared. Backer and Wurtz (2003) seems to have no digital link.

Authors: We can send the referee the document of Backer and Wurtz (2003). As for Sandy (2005), yes the link seems to have disappeared. But we have another reference which we can use instead.

Referee number 1: 2.2. Table 2: Olive oil - IPPC, 2005 should give the specific water requirement value per ton olive oil. If I click the link of this reference, I find no indication whatsoever about the water requirement for olive oil in this document.

Authors: The referee is wrong. He/she can find specific water requirement value per ton olive oil in Table 3.9.

Referee number 1: 2.3 Table 2: for Fertilizers a long list of specifications and different fertilizers is given. Where do the authors have all these data for MENA countries from. Did they use all these fertilizers in their analysis? This is extremely vague.

C2327

Authors: The specific water consumption and wastewater generation are from different references (e.g. IPPC, UNEP-UNIDO, ...). We have used all the fertilizers in our analysis. The European reference documents (IPPC) are formed based on meetings between EU member states and the industries concerned in which information was exchanged. Expert groups have contributed in making those reference documents. Therefore, they are not grey literature and are very reliable.

Referee number 1: 2.4. The reference list is an enormous list of grey literature, with e.g. the same reference of Egyptian Environmental Affairs Agency listed 4 times, Wikipedia listed 5 times etc.

Authors: It was hard to find these references and there exists no replacement for them. The reference list is not an enormous list of grey literature. I searched in several databases and I did not find Journal references which could be a substitute or replacement for all of our current references.

3. Due to the above listed flaws, the results presented in the paper are scientifically not justified. If the authors would rewrite their paper, presenting the methodology and used data in a structured and concise way and discarding all other useless information, then the results could be justifiable. They should use tables, figures with flow charts, reliable data sources and references. In its current form the paper is not acceptable.

Authors

We do not agree with the conclusion of the referee. Integrating the comments of the referee is not equal to rewriting the manuscript. It is sufficient when we adapt.

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C2328