

Dear authors,

Thank you for submitting a revised version, and for clearly indicating how the reviewers and editor comments were addressed and which changes made.

I note this is my third comment to you the authors.

I am of the opinion that the ms has been significantly improved, mainly by (1) toning down the claims, (2) including water use in the Bangladesh part of the basin, and (3) making some spatially explicit nuances as to where the unmet demand might possibly be met and where not.

There are still some weaknesses that need to be addressed, but these are, I think, feasible.

1. The first comment I made in my initial comment, namely the need for a precise definition of the “Ganges water Machine”, has not been addressed (at least I couldn't see it). Can you please somewhere clearly mark the definition used.

Authors response (AR):

The definition of GWM is included in page 5 line 26-30: The GWM entails A) increasing infiltration by spreading flood water over the land area by constructing bunds, and increasing seepage from irrigation canals by spreading the canal network, and B) pumping and depleting groundwater from the aquifers during the pre-monsoon period to create sufficient sub-surface storage (SSS), and subsequently recharging the SSS by natural or artificial means during the monsoon period.

2. Another comment in that initial comment, namely about the sloppy use of units, is still an issue. I have indicated some instances where this must be improved in the attached marked up pdf.

AR: Sorry for this oversight. Correct units are included wherever applicable in the text.

3. The spatially nuancing of where the unmet water demand could be met should have consequences for the total amounts mentioned in the abstract and the conclusions (59 and 124 Bm³). Perhaps Table 4 should be amended to indicate more clearly where to what extent the potential increase in groundwater CWU can be met or not. This is indicated in the text, but not in the table. It would be good that a total feasible value could appear, both in the table and in the text.

AR: Thanks for this useful suggestion. Table 4 was amended and the potential SSS figure was revised in both the table and in the text (see below for details)

4. The new figures 8a and b are not clear (have a bad resolution in my copy)

AR: We have inserted figures with improved resolution.

5. There are still several minor editorial issues, as indicated in the marked up pdf (attached)

AR: These are addressed. See below

Success!

Pieter van der Zaag

Page 2 line 17. This may need to be adjusted. See my later comments. Also check the units. This is not a stock value but a flux.

AR: Units changed. Inserted the following sentence at the end to indicate the potential that can be realized ("Overall, a revived GWM plan has the potential to meet 45-84 Bm³/year of unmet water demand")

Page 2 line 28: I am not sure we need this. If we do, then "PDRP" is missing.

AR: ESS deleted and expanded it in the manuscript and PDRP is included. We have kept the Acronyms as they are, in case if they are required later by the editorial staff.

Page 4 Line 6: odd order; what is the logic to present these countries in this order>

Order in terms of % area. See changes

Page 4 Line 16. sounds odd to me

AR: see changes.

Page 5 line 3: please be consistent and correct with these minute details; at six instances the period is missing in the manuscript

AR: sorry for the oversight. All corrected in the text.

Page 5 Line 29: This causality has not been established and in my view may not be used here. What you might suggest is that with the GWM groundwater tables might have fallen less than they actually did.

AR: agree. Made changes to the text (now in line 4 page 6) ("...of which at least a part could have been avoided with the GWM")

Page 6 Line 2: Very odd and problematic formulation. Do you mean: "...original GWM proposition could.."
?

AR: Yes. Made changes to the text.

Page 8 line 4: Please use the correct units; distinguish fluxes (Bm³/yr) from stocks (Bm³). This is in particular important in Table 1, since the last column are stock values whereas the others are fluxes. Conflating these is a scientific sin!

AR; Sorry for the oversight. All corrected.

Page 14 Lines 5-6: Sentence not clear to me

See changes

Page 18. Line 11. Check sentence.

AR: Sentence is corrected (see lines 11-12).

Page 18. Lin 19. Figures should be understandable on their own; so here use the full "environmental management class"

Made changes.

Page 19 Line 6: Check sentence.

Revised the sentence (lines 7-8)

Page 20 Line 14: This is NOT a clear formulation; do you mean the gap between actual irrigated area and gross irrigated command area, or what?

AR: the sentence now read as "Here, groundwater pumping will be increased only to bridge the gap between actual irrigated area and the irrigable area, i.e., the net irrigated area."

Page 20 Line 16: Again, not clear nor precise. What do you mean? Do you mean the gap between actual irrigated area and all cultivated crop land, including rainfed agriculture? Or what?

AR: Here, groundwater pumping will be increased to bridge the gap between actual irrigated area and the actual cropped area.

Page 24 Table 4: Perhaps add information as indicated in the text as to where the potential increase is feasible and where not, and sum the feasible potential.

AR: Added two columns to show the potentially realizable unmet demand under the two scenarios. Revised the column title of C1 and C2.

Page 25 Line 7: Figures are unreadable. Improve the resolution.

AR: Increased the resolution

Page 25 Line 18: Ambiguous; does this include or exclude Ghagara sub-basin (#8)?

AR: Ghagara is in moderate potential group

Page 26 line 13: So, if you add and subtract all of the above, what is the total likely increase in groundwater CWU for both scenarios?

AR: The revised figure is indicated in the table as well in the text. See line 1 page 27: "Given the constraints of water surface and groundwater availability and high water use at present in the four groups, only 45-84 Bm³/year can be potentially realizable as SSS for meeting the un-met demand under the two scenarios"

Page 26 Line 27: For m quite an odd term. Do you simply mean "fallow"?

AR: Yes. See changes.

Page 27 Line 23: The above implies that the feasible unmet demand that can be met is much less than the potential, as given in the second sentence of the conclusions (i.e. 59 and 124 Bm³/yr). So what is feasible?

AR: Overall, it is feasible to realize between 45 and 84 Bm³/year of SSS to meet the potential unmet demand (see lines 9-10 page 28).