

Interactive comment on “HESS Opinions: The Myth of Groundwater Sustainability in Asia” by Franklin W. Schwartz et al.

Anonymous Referee #2

Received and published: 3 September 2019

This is an interesting opinion paper on a well-known and significant topic. I enjoyed reading it, especially the review on the case studies and the main problems hampering the effective and sustainable management of groundwater resources. To my best knowledge, the “myth” of groundwater sustainability, and groundwater management in general, belong to many countries, even “advanced” ones, not only Asian.

The paper is made of two parts: illustration of selected examples and some proposals for a “pragmatic research agenda”. The first part is quite good and convincing, although the main conclusions are unfortunately rather obvious and well known nowadays. The collection of cases is not a comprehensive review of groundwater management case in Asia, and it is not meant to be that, but it delivers the message; still, the socio-political conditions are much different among sites such that a comparison is not possible.

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Perhaps the main focus of the hurdles is on the technical issues, less on the socio-political constraints that in many cases lead the process. My main reservation is that the exposition looks confusing at times. For instance, the examples continue in Section 3 (by the way, the case of Yemen seems to me quite divorced from the rest standing the particular situation of the area) and one cannot truly see a discontinuity between sections 2 and 3. The lengthy text on the OCWD seems quite out of place and not in line with the rest, which focuses on Asian countries (and do we need Eq.1?). A few sentences would have delivered the same concept. Similar for the Singapore case.

The second part, i.e. the delineation of the proposed ideas based on the current management practice in Asia, is much shorter than the first one and not much clear in my view. It definitely needs more elaboration. The Section promises “Groundwater Research Directions” but I can’t really find clear and sufficiently elaborated indications.

The first item deals with water quality; adding water quality to the management practices seems rather obvious, and it is implicitly done in several cases, but perhaps I have misunderstood the point (and the short text does not help).

I agree in principle with the approach of considering the sustainable groundwater management as something that will never materialize, and the derived idea of the worst-case scenario. This is something interesting and useful, and sometimes I have seen a similar approach adopted in practical management schemes. However, I see two problems with this approach. First, the analysis of the worst case scenario may anyway need significant resources for data acquisition and the understanding of the groundwater-surface water interactions, and then the several technical problems illustrated in the paper come back again. Second, the message that may easily come out from this suggestion is the following: forget about management, too difficult and expensive, just let things go and prepare for the worst. That would mean the death of the concept of sustainable management and the triumph of Business As Usual, with likely disastrous consequences on areas characterized by poor or absent management.

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Instead, I think that a less pessimistic alternative would be to provide a management procedure made by subsequent steps of increasing complexity, starting from basic and simple analyses that may guide the management and political decision; in other words, not give up the concept of management. In this perspective, one would rather speak of “feasible management”, i.e. based on analyses that can be realistically carried out under the several constraints, starting from the simple concept of safe yield that is relatively easy to estimate in most cases. The governments and stakeholders may start making decision (import food? Invest more on different sources of water? etc.) from those basic and anyway fundamental pieces of information. Role of the scientists and engineers is to try to provide simple rules to stakeholders and managers, while complex management techniques may be affordable only by California or a few other developed regions. To this matter, the list of technical requirements brought by the paper is certainly discouraging. Thus, while the worst case scenario is something worth performing (but how about its uncertainty? Are the future stressors certain?), giving up completely the idea of management might not be so good. Again, I might have misunderstood the concept, and this part of the paper (Section 4) needs further clarification and elaboration.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-399>, 2019.

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