

## ***Interactive comment on “Towards systematic planning of small-scale hydrological intervention-based research” by K. E. R. Pramana and M. W. Ertsen***

**Anonymous Referee #2**

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Dear authors,

Thank you for your laudable attempt to present learnings from field research relating to small-scale water interventions in diverse settings to a broad audience. I am supportive of two things that this paper attempts to do: (i) Provide insights into how managing or failing to manage relationships and participation of local stakeholders can disrupt or improve the success of research projects, (ii) Provide information about the performance of specific small-scale water interventions.

That said, the paper itself is, to be blunt, a mess.

It also raised some significant concerns for me (in particular, the major discussions of

C1

human agency in the paper focus on the potential for people to disrupt installations of instruments/sensors, which is a highly negative, narrow and frankly inappropriate way to discuss the nuanced issue of how researchers should engage with communities). I could not support publication of a document that portrays such a narrow view on this important topic. I would like to refer the authors to Srinivasan et al 2015 (HESS) and Thompson et al 2013 (HESS) - in the first case for an illustration of how research can be designed in response to the concerns and perceptions of a wide range of human stakeholders and agents; and in the second case to review the notion of "use-inspired science" - which again highlights the importance of working with stakeholders when conceiving research. The notion that as researchers we \*always\* have a degree of choice about where to invest our energies and even how to frame our questions, and that this choice can and should be informed by the needs of local communities seems highly pertinent to the premise of this paper (namely that research should be designed with stakeholders and local human agents in mind) - but the motivations for the research questions being asked is not broached at all.

Leaving aside these concerns about ethics, tone and appropriateness; the paper attempts to do too much - to review the ideas of human agency, to present hydrological results from three case studies, to present a set of frameworks for evaluating social perceptions / willingness to participate in research - apparently setting up a de novo participation scale (?), interviewing experts and generating hypothetical research budgets for alternative conceptions of the completed projects, also with reference to ideas from the RAND corporation. This morass of stuff renders the larger picture of the paper incoherent.

There are ideas here that are worth more exploration. Drawing from experiences documented by social scientists and by groups like RAND Corp may be very useful for researchers. Cautionary tales of how research can be badly derailed if the social context of the research is not managed well are useful. And given the dearth of published research about the effectiveness of many small scale water interventions, the findings

C2

of the research projects should certainly be published (if they have not been already)? But I think it would be valuable to separate studies about hydrology from studies about doing hydrology, so that the paper could really focus on either physical processes or on the intersection of teams of scientists and local communities in a research context.

If the authors are really committed to the importance of presenting their experiences through the lens of community participation / participatory research / studies of science – then there needs to be much more effort put into reading the pertinent literature (the issue of community willingness to support scientific studies is very broad, and extends well beyond the focus of water interventions - yet the issues raised in very different contexts are still pertinent to hydrologic research. Scientists have often messed up community engagement, in ways that will probably look familiar to the authors, and with consequences that will probably seem equally familiar. The authors need to read this literature and take its lessons on board, and incorporate them into their suggested planning frameworks). A paper that focuses on this aspects of their work need not attempt to present the hydrological results of their work which are a distraction. I would suggest that the authors attempt to find well established frameworks through which to classify the kinds of human intervention that occurred, rather than generating their own, and that these frameworks be introduced early and used consistently through the paper.

I'm unclear on the value of the expert surveys and budgeting. If one's only concern in conducting research on small-scale interventions is unit of knowledge / dollar spent, then some of this information could be useful. But bringing everything back of a dollar bottom line seems to potentially repeat some of the mistakes that might have been problematic in the research to begin with. How to put value on the relationships and willingness of communities to e.g. sustain their infrastructure, or work with the NGO again, or to say nice things about the NGO or the intervention to neighboring villages? Should scientists be thinking about these things to? Is there benefit to having boots on the ground rather than relying on satellite observations? How is a scientist a part of and

C3

an important part of a development team? I am worried, that despite the attempts of these authors to take off the blinkers of a technical research team who focus primarily on getting and analyzing data, that some of these ways of thinking still permeate this paper.

I have attached a PDF with many editorial comments. A final note is that the language used is frequently ambiguous or very hard to interpret, and that the paper is often rather poorly organized. The suggestions on the attached may be helpful, but I think that a bigger picture evaluation of the manuscript's aims, presentation of the state of knowledge, and overall message is needed before publication could be entertained.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-151/hess-2016-151-RC2-supplement.pdf>

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C4