

## ***Interactive comment on “Unravelling intractable water conflicts: the entanglement of science and politics in decision-making on a large hydraulic infrastructure project” by Jonatan Godinez-Madrigo et al.***

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Received and published: 29 March 2020

Dear Editor,

The paper on the El Zapotillo dam project in Mexico is a relevant and well-explained example of the political use of a hydrological model.

The article shows how the hydrological model, elaborated by UNOPS and commissioned by the government of Jalisco (recipient basin) did not take into account: (a) important negative effects for the to-be-displaced communities, ecosystems and donor-

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basin farmers; (b) important factors like climate change, increased demand in the cities, water quality, aquifer depletion and land subsidence; and (c) important potential alternative solutions like demand management in the cities (including reduction of distribution losses) and local water supply options.

**Conceptual framework** The conceptual framework does draw on relevant literature and specifies the different relevant problems related to the construction and use of hydrological models. However, regarding the political nature of models the main concepts introduced are the “epistemic uncertainty and ambiguity” (lines 71-77). I think it is much clearer to see the “epistemic uncertainties and ambiguities” as political choices of the modellers. The variables in the model reflect the value the factors have for the modellers. Not taking into account the ecological status of the downstream river, or the historic, religious and cultural value of the church in Temacapulín are political choices. This does not become clear by calling that choice an “epistemic uncertainty, understood as the ignorance of the functioning of a given system”, or an “ambiguity, understood as multiple knowledge frames” (line 73). Those choices are not so much an issue of understanding the functioning or having the right knowledge: it is instead about political choices (based on interests, valuing and worldviews).

**Method** It would be good to include better scrutiny of the position and work procedures of UNOPS. As part of the methodology it would have been interesting to collect data on, and do interviews with, the involved experts from UNOPS. Why did they make the model? Why did they not take into account the actors, factors and alternative solutions? Were they aware of their political role (or did they believe themselves in their political neutrality)? Furthermore, it does not become clear what role the UNOPS model outcomes have played in the development of the controversies over the El Zapotillo project. It would have been interesting to research more on how the different stakeholders have used, and reacted to the report of the model outcomes (as set out in lines 216-217). This could give a much more detail description than the general “many actors were negatively surprised” in line 227-8 and the brief description of responses

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of Temacapulin's representatives and academics in lines 388-393.

Argumentation In general, the argumentation is fair. The Figures 3 and 5 need more explanation. In Fig 3 the allocated flows do not coincide with the allocated flows mentioned in lines 222-223.

The Conclusions assert that co-production of more transparent and trusted knowledge will help to resolve conflicts. This might be true to some extent, but interests of stakeholders depend on (geographical, socio-economic and institutional) positions and valuing of certain costs and benefits more than others. More and better trusted knowledge will not overcome these differences.

Several typos, missing words and awkward wordings could be corrected in a thorough proof-read.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-86>, 2020.