

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1  
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## **Comment on nhess-2021-394**

Alexander Fekete (Referee)

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Referee comment on "Brief communication: Critical infrastructure impacts of the 2021 mid-July western European flood event" by Elco E. Koks et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-394-RC1>, 2022

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Overall, the paper addressed an important aspect of these flood events; critical infrastructure failures. It is helpful for research to have such an account of CI interruption and recovery times in a paper. The paper presents findings based on a mix of research and newspaper sources, and own field observations. Three countries are covered, but the reports and findings are mostly on Germany. The overall structure could be improved a bit, but the overall documentation of damages is helpful for other researchers.

### Content comments:

Page 4, line 85. Gas supply is almost fully restored. Yes, from the perspective of the utility providers. But many homes are still disconnected. There is a shortage of heating installations for the houses. But I guess, if this is what you mean by "almost", it is ok as it is.

2.3 Lines 99-104: it is correct, but maybe you need to add that in most laces, emergency sewage tanks have been installed, by THW and others.  
Line 106: add a source, if you have

2.4 This section is quite short, by comparison. Since there is no conceptual order of critical infrastructure, and you also do not cover many more CI sectors/ branches; you may consider shifting this information in 2.4 to another section that summarises 'other impacts'.

Section 2 in general: I would suggest either having at least a sentence on each of the three countries in each sub-section (2.1 etc). Or, omitting short sentences such as "In The Netherlands, little to no problems have been recorded with regards to water supply." However, especially Belgium is not mentioned in every sub-section yet.

2.6. For Germany, more hospitals heavily affected are missing (Erftstadt, Leverkusen). The paper is mixing overview information such as 105 general practitioner practices with one more elaborate example of one hospital; maybe you could add more overview information (x numbers of hospitals) as well.

### Section 3

Section 3 has the same heading as section 2. And also the content appears to be the same.

So maybe it is better to merge both sections. Section 3 appears very much like miscellaneous observations, the 2.7 'other'

However, the style is even more narrative and overall, it is not so clear, which fields the authors wish to cover and which not. And again, mainly Germany is covered.

Maybe this section could be divided into

2.7 Roads (first para)

2.8 Bridges (third para)

And the middle para on shortages in flood zonation mapping be shifted to section 4?

Or, a new 2.9 on retention basins as infrastructure overlooked so far?

The information is fine and it is also fine that the authors cite themselves, it seems.

However, maybe reduce mentioning the name of one author a bit; make it more elegant by replacing it by "the same study" or similar.

You could add similar studies on road and rail interruption studies such as by Atzl/Keller.

But the paragraph itself is very important and very laudable that the authors observe further needs of assessment in (their) previous studies as well. And indeed, flood assessments now need many updates including bridges collapsing, sediment transport, tree transport and many more.

Lines 151-154 Interesting argumentation of the "counterfactual", but I agree that the static maps of riverine flood zonation do not match to (every) real event. Since they are based on scenarios that see all potentially flooded areas, irrespective of the flood waves (and duration of discharge). So if the message here is, that the study was counterfactual because the mining pit 'saved' other areas from being flooded, which was not captured by the study in 2020, or by the flood maps, it is correct and fine.

### Section 4.

The three findings are not surprising and sound a bit generic, given the existing literature in science about this. But maybe it is still very important to stress these points once more after this important event, so as to hope to improve the risk management practices in Germany, at least.