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#### **"COVID-19 pandemic lessons: recipe for uncertainty research on climate-sensitive diseases"**

The climate change – health nexus has received less attention within the biophysical disciplines although the Intergovernmental Panel on Climate Change, the World Health Organisation and the Lancet Commission on Global Health and Climate Change all confirm the threat posed to health. Whilst this less attention has been attributed to the low ambition of the health sector to promote climate change issues, biophysical disciplines have similarly failed to draw the attention of the health sector to the urgency especially using Earth system research. This situation, again is not different for COVID-19 with limited contributions from the Earth sciences, but has drawn urgent global response not ever witnessed before for climate change, and the renewed call for "One health" approach to health systems management in "The Lancet" (Jacobsen, 2020). Therefore, we use the global response to COVID-19 as surrogate for drawing attention to the role played by Earth science in disease origin, incidence and transmission. The analysis informs disease categorization and choice of health system management approaches looking into the future by answering the question **"what are the drivers of the drivers of diseases?"** using the case of diarrheal diseases in the context of the Earth system.

Subsequently, three questions are asked to enforce how the Earth system influences diseases towards managing the outcomes. We argue that the forcings and feedbacks within the Earth system are important to the functioning of Ecosystems and when drivers by climate change brings additional force that shift species – host – disease pathogens, which result in disease events. Thus, changes to biological/ecological processes which are an integral part of the functioning of the Earth System as a result of climate change would impact on the disease control services of ecosystems. Therefore, there is need for a holistic approach to health system management that reflect a more Pluralistic and combined "One health-Ecohealth-Planetary health" approach than the recommended One health approach based on the COVID-19 pandemic challenges.

The paper is an original work of the authors and neither been published nor the content considered for publishing in any form. We count on your support and looking forward to the Journal's feedback.

*Sincerely*

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