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The community consultation process leading to the compilation of the 23 Unsolved Problems in Hydrology (UPH)

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This contribution summarizes the steps of, and experiences with, a wide consultation process, led by the International Association of Hydrological Sciences (IAHS) that resulted in a list of 23 major unsolved scientific problems (UPH) in hydrology.

Step 1) Launch of a YouTube video, outlining the purpose of the initiative and its vision.

Step 2) Discussion via a LinkedIn group leading to a total of about 200 contributions and responses.

Steps 3-4) Two 'in-person' meetings organised in April 2019 in Vienna: one (Step 3) at the EGU General Assembly (attended by about 60 scientists), in order to solicit additional questions, at the end of which about 260 candidate problems had been compiled; the second one (Step 4) at the Vienna Catchment Science Symposium (VCSS) at the Vienna University of Technology (attended by about 110 scientists), to sort, merge, split, reword and prioritise the proposed questions. Through an iteration of parallel sessions (repeated twice, mixing the participants) and a final plenary voting session, a list of 16 'gold' and 29 'silver' questions was identified.

Step 5) Synthesis carried out by a small working group, involving representatives and members of IAHS, IAH, EGU and AGU, to consolidate, interpret and synthesise the questions, as well as to address potential biases in their selection that might have arisen from the composition of the participants at the meetings. The working group also pooled the questions into seven themes for clarity and communication. As a result of the synthesis process, the working group finally listed a set of 23 questions, presented in a community paper with over 200 authors (Blöschl et al., 2019, <https://doi.org/10.1080/02626667.2019.1620507>).

The UPH initiative is a proof of concept that this kind of broad consultation process is actually feasible, and is well received by the hydrological scientific community. Thus, equally important as the final list, is the community-level learning process of such a consultation, involving a large number of hydrologists and the four main learned societies in the field.

Consultations such as this could and should be repeated in the future for the benefit of our discipline, since providing common research subjects will increase the coherence of the scientific process in hydrology and promote the co-building of scientific strategies and synergy towards accelerated progress in hydrological sciences and applications.

This PICO presentation gives a short overview of the consultation process and of each of the 23 questions, shares the experiences from the process and proposes some possible future steps.