

## ***Interactive comment on “T-shaped competency profile for water professionals of the future” by S. Uhlenbrook and E. de Jong***

**S. Uhlenbrook and E. de Jong**

s.uhlenbrook@unesco-ihe.org

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We thank the reviewer for all critical but overall quite positive and encouraging comments. In the following, we would like to respond to his/her four main points.

Generally, we would like to thank for the support for this publication and overall positive assessment.

**Comment 1:** The reviewer has the impression that the authors' view of the challenges posed by future water related problems can be more holistic (or wider). In addition, the write-up of the case of the water programs at UNESCO-IHE should be improved.

**Response:**

The authors acknowledge that from the HESS-D article it may appear that the T-shaped approach is somewhat 'hydro-hydraulic centric' with some references to other soft competencies. However, this is obviously not the idea behind the approach, which is that specialists in one specialisation should get acquainted with the basics of neighboring specialisms and develop a variety of soft skills and competencies. If going for a more holistic view, the chances are that graduates end as generalists; i.e. professionals who know a little bit of everything. However, the vertical leg in the competency profile is crucial.

Furthermore, we agree to improve the description of case one and include in further detail the offered education in social sciences including water history, water economics etc.

**Comment 2:** Do the reviewer think that as the context of the problem becomes multi-disciplinary (and no longer hydro-hydraulic centric), such as in the case of sustainable development of water resources, T-shaped competency profile is sufficient.

**Response:**

We would like to thank the review particularly for the illustrating the comment so lively (collapsing bridges etc.).

A T-shaped competency profile will never be sufficient to cover / solve all problems related to sustainable development, but a curriculum which offers the possibility for such a profile may help broaden the perspective of the graduates of a certain discipline. Becoming aware and understand that in-depth knowledge of only one discipline is never enough to solve all issues related to sustainable development of water resources is already major step forward. To create this awareness and enable education in neighboring disciplines, curricula should be designed in such a way that students have the possibility or will be obliged to follow selected topics outside their own discipline.

We will try to improve our argumentation respectively.

**Comment 3:** If the designers of a curricula (say based on T-shaped competency development) were themselves disciplinarily trained (I-shaped), how can it be ensured that the design that they come up is not biased towards being an I-shape and is robust and serves the context of the curricula development (say for example: sustainable development of water resources) in the best possible manner?

**Response:**

Valid point. For designing a curriculum which enhances T-shaped competencies, ideally stakeholders from various disciplines and even professionals from outside the university (alumni) should be involved. This comprises a team leader, programme chairs/coordinators of several programmes, educationalists, and support by the responsible persons at faculty or institutional level in addition to an outside professional. This exercise has to be part of the strategic policy at higher university level. The team leader responsible for the development of such a curriculum should not be a generalist, but instead specialist with well developed general skills, thus holding already a T-shape profile.

**Comment 4:** Even if a robust T-shaped competency development based curricula has been designed, why should the students participate or enroll? Would there be an incentive structure in place for the students so that they appreciate the reason behind such a design and make use of such curricula? Does the sector (both public and private) that hires graduates appreciate the complexity of future water problems and, thus, demands water professionals from the university with a T-shaped competency profile?

**Response:**

Student might appreciate the benefits of a T-shape competency profil only later, but we are convinced that they will as soon as they got the broader perspective and in particular after they have got some practical experiences (internship etc.).

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UNESCO-IHE is in a unique position that it offers only post-graduate water related programmes to students from developing countries with several years of relevant working experience (so-called mid career professionals). These students are generally highly motivated and want to study courses which are highly relevant for them and their employers. Education supporting the T-shape model at MSc and PhD level is part of the policy of UNESCO-IHE. In that regard, we are paying attention to transferrable skills and competences, and enhance the education of professionals with a broader view on sustainable development of water resources. We also receive positive feedback from the water sector world-wide (alumni survey etc.). Thus, we can reply positively to most of the questions raised by the reviewer.

*Stefan Uhlenbrook* (corresponding author) and *Erick de Jong*

UNESCO-IHE and Delft University of Technology, Delft, The Netherlands

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