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Meta-analysis of human water behaviour underlying water use efficiency

Diana Carolina Callejas Moncaleano, Saket Pande, and Luuk Rietveld

Delft University of Technology, Department of Water Management, Netherlands (d.c.callejasmoncaleano-1@tudelft.nl)

Diana Carolina Callejas Moncaleano^a, Saket Pande^a and Luuk Rietveld^a

d.c.callejasmoncaleano-1@tudelft.nl; s.pande@tudelft.nl; l.c.rietveld@tudelft.nl

^aDelft University of Technology, Department of Water Management, the Netherlands

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Every day a large amount of water is extracted from inland surface (rivers, lakes, wetlands, reservoirs) and aquifers for agriculture, domestic, electricity, and industrial purposes. In semi-arid and arid regions, high water demand can lead water scarcity, and in other areas causes rapid depletion of water tables. One reason behind the over extractions and higher demand is the inefficient use of water

Water use efficiency has been a matter of concern to diverse scholars, water managers, and policymakers, as it affects the well-being of society and the economic growth of countries. In many countries, it becomes a priority policy; indeed, increasing water use efficiency is one of the pillars of sustainable development goals (SDG 6.4.1.). However, the slow progress of water efficiency remains, due to the water demand is likely to rise still higher, especially for many developing countries where the degradation of natural resources is critical, economic growth is slow, and there are not strong institutions for coordinate actions.

Across the spectrum of water users, there are a variety of contextual and psychological factors behind water use inefficiency. Researchers have identified the importance of associated these factors in influencing user's behaviour. The contextual factors investigated are social, economic, environmental, and institutional, and assessments focus on study causes of the water inefficiency, and what are the perceptions and attitudes of water users to adopt water-saving practices, and regulations. Yet, none of these studies consider a holistic view of these factors in shaping water use behaviour.

The understanding of water inefficiency requires, firstly exploration of connections between factors. Second, understanding how these influence the human behaviour of stakeholders and the decisions that they make as water users or water managers. A comprehensive assessment of these factors and their relationships is needed to provide insights on the causalities of over-extraction, the interdependence between stakeholders, and water use inefficiency. In this regard, a holistic view of a framework that incorporates the effects of know-how, linkages between stakeholders, such as water users, water managers, and institutions on water use efficiency, is absent.

This paper aims to study the gaps in our understanding of human water behaviour underlying water use efficiency from socio-cultural, economic, psychological, and institutional factors. This research proposes a conceptual model that connects contextual and behavioural factors and represents the prior causal- effect relationships between water users and institutions.