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# Agricultural water poverty: Using Q-methodology to understand stakeholders' perceptions

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*'To understand is hard. Once one understands, action is easy'* (Sun Yat Sen, 1866–1925).

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ABSTRACT

The aim of this Q methodology study was to identify perceptions of farmers and agricultural specialists toward agricultural water poverty concept and its causes in Marvdasht County, Iran. Seventy five participants completed the Q sort procedure. Data analysis identified seven types of perceptions toward agricultural water poverty: Management-adherents, Adaptive-adherents, Fatalists, Support-seekers, Farmer blamer Pessimists, Technocratic Realists and Optimists. The first four types of perceptions were dominated by farmers and the last three by agricultural specialists. These different perspectives indicated that various individuals think differently about the nature, causes, effects and permanency of agricultural water poverty. Understanding the multiple meaning systems of agricultural water poverty for decision and policy makers will be critical as they may provide the basis for the development of more appropriate strategies to mitigate water poverty in agricultural sector.



## 1. Introduction

There is a strong understanding that water scarcity due to climate change presents a fundamental challenge to the well-being of all countries, with potential of being the harshest in arid and semi-arid countries. Management of water scarcity increasingly calls for initiatives to understand perceptions of stakeholders regarding this phenomenon. Perceptions about water scarcity affect stakeholders' attitude and behavior regarding the urgency to address the issue as well as how to mitigate (Rijsberman, 2006). According to Mehta (2001, 2007), in most cases the perception of water scarcity may be mismatched with patterns which exist in analyzing prolonged rainfall data. She suggested that the problem of water scarcity has a manufactured nature rather than natural, consequently water scarcity should be analyzed as an anthropogenic as well as a biophysical problem. Water scarcity as a biophysical phenomenon means that there is real water scarcity (shortage) as a result of little or very little precipitation. In contrast, water scarcity as an anthropogenic phenomenon means that there is sufficient precipitation but people do not have access to water because of human action, hence scarcity is a manufactured concept which is constructed socially (Noemdoe et al., 2006).

There are different definitions of water scarcity as well as various perceptions regarding its concept. Physical or quantity-related water scarcity, caused by natural or human induced causes, is a widespread term which is attributed to the temporary shortfall in water resource volume to meet water needs (Pereira et al., 2002; Rijsberman, 2006). Water scarcity is also considered as the intensified scarcity of good quality resources that does not support any economic use of water rather than insufficient quantity (Bithas, 2008; Jiang, 2009; Mariolakos, 2007; Pereira et al., 2002). But these clear-cut definitions are not useful for all situations. What is addressed by the term "water scarcity" can no longer cover all the factors and dimensions pertinent to the real meaning of this phenomenon, i.e. social, infrastructural and economical dimensions. Therefore, "water poverty" as a new term and concept was introduced to encompass all facets of water scarcity and to link the poverty of communities to the availability of water resources in those communities (Sullivan et al., 2003). From its originators' view, it indicates a naturally different concept apart from those introduced for water scarcity. In most cases, water poverty appears in societies without adequate and sufficient water supplies

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