

Embedding farmers' groundwater use in the context of their livelihoods: farmers' perspectives on social-ecological stressors, causes, and solutions

Seyyed Mahmoud Hashemi, Ann Kinzig, Hallie Eakin, Reza Sedaghat & Joshua K.Abbott

Pages 387-401 | Received 08 May 2020, Accepted 22 Jun 2020, Published online: 20 Jul 2020

ABSTRACT

Achieving the Sustainable Development Goals in the agriculture and water sectors requires actors (e.g. farmers, water authorities, scientists) to consider the sustainability of both human and water elements. With a focus on farmers, using a behavioral approach, we explore how the groundwater system, which consists of human and water elements, is seen by pistachio growers in Rafsanjan, Iran (a major pistachio-production region in the world). We advocate that farmers' rationales behind their decisions about their groundwater use – including their reactions to policies implemented to conserve groundwater– often can be understood in terms of their understanding and knowledge of the groundwater system in which they are embedded. To this end, we explore how pistachio growers see (1) their groundwater-dependent livelihoods (Livelihood); (2) the stressors that threaten their livelihoods (Stressor); and (3) their responses to those stressors (Response). In addition, we document some differences between pistachio growers' knowledge of the groundwater system and those of scientists. We find that, while showing heterogenous views, the majority of pistachio growers' perceptions and subjective norms on the Livelihood, Stressor, and Response components strongly favor the human element (short-term pistachio production) over the water element (groundwater conservation for future use). Furthermore, we find that pistachio growers' knowledge of the groundwater system is an additional factor that influences their decisions to increase groundwater use. We discuss the implications of the results for conserving groundwater resources and maintaining pistachio growers' livelihoods.

KEYWORDS: Groundwater scarcity, effectiveness of farmers' responses, human system, poverty, stressors, sustainable communities, sustainable development, water system