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## The Combination of Indigenous Knowledge and Geo-Informatics for Water Harvesting Siting in the Jordanian Badia

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### ABSTRACT

Jordan is located in an arid to semi arid region where around 90% of its land receives an average annual precipitation of less than 100 mm while only 3% of the land receives an average annual precipitation of 300 mm or more. Jordan is characterised as a "water scarce" country because the current *per capita* share of water is estimated to be of the order of 140 m<sup>3</sup> per year which is well below the 1000 m<sup>3</sup> threshold. Rainwater harvesting is the accumulating and storing, of rainwater. It has been used to provide drinking water, water for livestock, water for irrigation or to refill aquifers as a groundwater recharge. GIS has been widely used in selecting the best sites for water harvesting schemes. This research aims at selecting optimum sites for water harvesting schemes in the Jordan arid lands (Badia) using indigenous knowledge and geo-informatics. To achieve this aim, a community-based research and desktop investigating is applied. The community-based research focused on consulting with 200 stakeholders from local communities where they provided knowledge on opportunities and constrains from their experience on water management in the arid lands where they live and interact. Also they provided information on potential location for water collecting sites that has been used for ages to provide water to humans and livestock. On the other hand, desktop research is conducted on sitting criteria for water harvesting based on physical and socio-economic characteristics. The physical criteria include rainfall volumes, slope, distance to water courses (wadis), distance from geologic faults and soil texture, where socio-economic criteria include distance to groundwater wells, distance to urban area, distance to agriculture activities and distance to international brooders. This selecting criterion in combination with indigenous knowledge is used within GIS environment to identify optimum sites for water harvesting. GIS analysis resulted in identifying 118 potential sites. Of those, 30 sites had already recommended by the community consultations.

### KEYWORDS

GIS; Indigenous Knowledge; Water Harvesting; Arid Lands, Jordan

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