

# **Identification of suitable sites for rainwater harvesting structures in arid and semi-arid regions: A review**

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## **Abstract**

Harvested rainwater is an alternative source of water in arid and semi-arid regions (ASARs) around the world. Many researchers have developed and applied various methodologies and criteria to identify suitable sites and techniques for rainwater harvesting (RWH). Determining the best method or guidelines for site selection, however, is difficult. The main objective of this study was to define a general method for selecting suitable RWH sites in ASARs by assembling an inventory of the main methods and criteria developed during the last three decades. We categorised and compared four main methodologies of site selection from 48 studies published in scientific journals, reports of international organisations, or sources of information obtained from practitioners. We then identified three main sets of criteria for selecting RWH locations and the main characteristics of the most common RWH techniques used in ASARs. The methods were diverse, ranging from those based only on biophysical criteria to more integrated approaches including socio-economic criteria, especially after 2000. The most important criteria for the selection of suitable sites for RWH were slope, land use/cover, soil type, rainfall, distance to settlements/streams, and cost. The success rate of RWH projects tended to increase when these criteria were considered, but an objective evaluation of these selection methods is still lacking. Most studies now select RWH sites using geographic information systems in combination with hydrological models and multi-criteria analysis.