

GROUNDWATER DEVELOPMENT, USE AND MANAGEMENT IN ARABIAN PENINSULA

ABDERRAHMAN, W.A.

The Arabian Peninsula includes Saudi Arabia, Kuwait, United Arab Emirates (UAE), Bahrain, Qatar, Oman and Yemen. Most of the Peninsula is extended in arid region. It consists of igneous and metamorphic basement rocks known as the Arabian Shield, and the sequence of sedimentary layers known as the Arabian Shelf. The Shield extends along the western part of the Peninsula and contains limited renewable groundwater resources. The Arabian Shelf contains more than 20 layered principal and secondary aquifers, formed mostly of limestone and sandstone. They overlay the basement rock formation, and covers about two third of the Peninsula. These aquifers crop out in the western parts of the Shelf and extend towards the eastern parts. The renewable and nonrenewable groundwater resources represent dependable sources for different purposes including irrigation. The Peninsula has experienced comprehensive developments coupled with great population growth. Specialized water agencies, and regulations were introduced to produce and regulate water demands. To meet the irrigation needs, thousands of shallow and deep wells were drilled especially during the last two decades with permission of local water agencies. Seawater and brackish groundwater desalination plants have been constructed on the coasts of the Gulf and Red Sea to produce suitable drinking water. To avoid negative impacts on groundwater such as declines in water levels and quality, the agricultural policies and water pumping on farm level were modified. But, there is still more attention should be given to new technologies in water demand management to protect the sustainability of groundwater resources.