

Artificial Groundwater Recharge Techniques for Improving Groundwater Availability and Quality

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Abstract

North western states of India such as Punjab, Haryana, Western Uttar Pradesh, Western states such as Rajasthan, Gujarat and Maharashtra and Southern states such as Tamil Nadu, Karnataka and Andhra Pradesh have most of the over-exploited, critical and semi-critical blocks as groundwater development is concerned. The sustainability of agriculture in these states is linked with sustainable development of groundwater resources. Groundwater recharge is very much required to replenish depleting groundwater resources and improving their qualities. The recharge techniques are location specific and depend on local hydro-geological, topographical and rainfall conditions. Success of recharge programmes depends on identification of suitable areas and structures for recharge. Sometimes integration of surface and subsurface recharge techniques is required to achieve desired results. Indirect recharge techniques such as induced recharge, aquifer modifications, and subsurface dams can also contribute significantly at some locations. There is great possibility of using abandoned groundwater structures/ shallow tube wells and open wells for enhancing ground recharge with small investment on filtration chambers both in hard rock and alluvial areas. Besides, improving the availability of water in lean period, groundwater recharge reduces the damage due to floods and water logging. Groundwater recharge with multiple objectives can make investment on groundwater recharge economically viable. People participation is important for ensuring the success of recharge programmes.