

## **Trends and sustainability of groundwater in highly stressed aquifers of Gujarat, India**

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**Abstract** Proliferation in groundwater withdrawal in Gujarat has led to development of water stress in the near surface shallow aquifer, which sustains major component of groundwater draft for irrigation and domestic requirements. This is clearly evident from the seven-fold increase in numbers of critical and over-exploited assessment units, which have increased from 6 during 1984 to 43 as of 2004, over a period of two centuries. These units show decline in water levels and in certain situations sharp deterioration in groundwater quality. The coastal aquifers are also under stress where excessive groundwater development has led to progressive deterioration in groundwater quality. The sustainability of the groundwater resources in the highly stressed aquifers in these areas has assumed criticality and its capability to meet the basic needs for economic development in its present status needs to be addressed through scientifically sound management interventions. This paper incorporates a river basin-wise review of groundwater levels, with special reference to the water stressed aquifers in Gujarat. Measures are spelt out for the sustainable management of such aquifers through various interventions like recharge with canal water, recharge with rainwater, incentivising communities for accelerated recharge, and groundwater demand management for augmentation of water stressed aquifers and regulation of groundwater development through people's participation.

**Key words** water stress; sustainability; overexploited; surplus; committed; managed aquifer recharge