

# Quality problems in rural water supply in India — A multi-dimensional management issue

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## 1. Introduction :

The Indian economy is still characterised by the predominance of the rural sector. This predominantly rural character is reflected in the very high proportion of population living in rural areas. It was as high as 85% in 1951, which declined to only 70% during last 50 years. Therefore, Indian planners very rightly accorded top priority for the development of rural India and in particular agriculture and basic infrastructure facilities *viz.* rural water supply, rural connectivity, etc. According to the government of India report<sup>1</sup>, access to public water supply by the year 2000 had been provided to more than 83% (about 1.18 million) habitations as per norms and 15% (about 21 thousand) had some form of water supply and only less than 2% do not have access to water supply and are dependent on traditional sources. In India, rural drinking water supply systems are predominantly dependent on ground water. Since ages it has been using sub-surface water and shallow aquifers for domestic uses. With the break-through of India Mark II hand pump in late 1970s, the programme of provision of safe drinking water to its rural population was predominantly implemented through installation of hand pumps all over the country. At present about 3.4 million hand pumps are installed in India tapping the aquifers more than 100 metres below ground level. However review carried by the Programme Evaluation Division of The Planning Commission (Planning Commission, GOI 1996)<sup>2</sup> and Rajiv Gandhi National Drinking Water Mission from time to time reveals that at any point of time, 25 to 30% of the system remains either underutilised or in need of major repair. As per latest report, only about 15% of the total rural habitations of the country are facing water quality problems, mainly due to fluoride, arsenic, iron, nitrate contamination and salinity. Despite such a good

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stride, it is felt that the service level of drinking water supply in rural areas needs further improvement. Large number of water treatment plants *viz.* Defluoridation plants, Iron Removal Plants, Desalination plants, etc. installed in various States to tackle specific chemical toxicity in drinking water sources through the centralised 'Sub-Mission' programme under the Rajiv Gandhi National Drinking Water Mission have not met with much success.

## 2. Ground water development and its Implication on Quality :

Technology development in drilling and pumping methods has resulted in massive exploitation of ground water mainly for irrigation which is about 85% of the total withdrawal and for industry and domestic purposes, it is approximately 15%. The area under ground water irrigation has increased from 6.5 million hectares in 1950-51 to about 40 million hectares at present. Over the years, considerable advancement in agricultural and industrial development has been made resulting in ever-increasing water demand. Exploration of ground water to meet the increasing demand of exploding population is causing imbalance between over-withdrawal of ground water and the deficient recharge, which has resulted in rapid lowering of water table. In selected pockets in the country, there is abnormal fall in water table to the tune of 2 to 3 metres every year. In Banaskantha and Mehsana in Gujarat, the ground water level has gone beyond 350 metres from 80 metres within a span of 3 decades<sup>3</sup>. The situation is grave in 7% of the total area of the country where the stage of ground water development is more than 85%. It has reached critical stage in 11% of the area where the stage of ground water development is 65%-85%. Over-withdrawal along the coastal areas has resulted in saline water intrusion and contamination of the potable ground water aquifers. It is reported that 627 villages of Saurashtra and Kutch region are highly affected by salinity ingress. Rajiv Gandhi National Drinking Water Mission carried out a National