CHAPTER - I

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1.0 BACKGROUND

The population of the country has already crossed the 1 billion mark and is expected to reach 1.64 billion by the year 2050. Towns and villages are expanding rapidly, new hamlets are coming up and existing ones are turning into villages – all requiring and demanding drinking water for sustenance of life. In terms of sheer volumes, the rural drinking water requirement in 2050 would be 29 billion cubic metres (BCM) against the present requirement of about 10 BCM. With lakhs of villages and hamlets spread over high hills and mountain slopes, deep forested valleys, barren deserts, degraded lands and ravines, along saline coastal belts, denuded rocky plateau and other inaccessible remote areas, providing safe drinking water for all is a challenging task.

Ground water, the major source of rural water supply is depleting fast in many areas due to large-scale exploitation for expanding irrigated agriculture. Out of a total of 5,156 blocks in the states of Andhra Pradesh, Gujarat, Haryana, Punjab, Rajasthan, Karnataka, Tamil Nadu, and Uttar Pradesh, 247 blocks are already over-exploited with ground water extractions being in excess of the net annual recharge. Besides, a much larger number of blocks, presently categorised as “dark” are likely to become “over-exploited”.

The fast deteriorating situation of water availability is gradually acquiring an even more dangerous and frightening dimension of worsening water quality. Rapid lowering of ground water table in many areas has given rise to ingress of sea water into aquifers which has rendered the water from wells, hand pumps etc. unfit for human consumption. According to a recent (1997) finding arsenic contamination in ground water is high in about 1,000 habitations in West Bengal, Fluoride levels are above permissible limits in Andhra Pradesh, Tamil Nadu and Madhya Pradesh affecting 14 million people in 28,000 habitations. High level of iron contamination is affecting 29 million people in 50,000 habitations in northeastern and eastern states. Salinity is high in Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Tamil Nadu.

Besides various natural factors, rapid urbanisation, industrialisation and increased use of fertilizers and pesticides in agriculture have also adversely affected ground water quality. With more and more untreated or partially treated effluents being discharged by the industry and municipalities into the water bodies the ground water quality is deteriorating alarmingly.

This being the situation of rural water supply today, the prospects of augmenting it almost three fold by 2050 and improving its quality to desired levels appear bleak unless radical changes are brought about in our water management strategy.

1.1 WATER HARVESTING – THE WAY AHEAD

The usual approach of augmenting water availability through major, medium and minor schemes has its own techno-economic limitations. The main problem is not only that of collecting and storing water in huge quantities but also that of providing it within easy reach

of the large rural population spread over lakhs of villages and hamlets especially in remote areas.

Our experience of thousands of years since the dawn of civilisation, has shown that minimum water requirements of every household anywhere can be easily met by the traditional methods of collecting rain water locally in village/ community ponds and large manmade containers, diverting and storing water from local streams/ springs and tapping sub-surface water below river/ stream beds. These basic techniques have been successfully applied in many different ways by the people in different parts of the country depending upon the local climate, type of soils and rocks both above and below the land surface and the nature of land forms viz. plains, hill slopes, hill tops, valleys, plateau etc. These traditional methods, called "Water Harvesting" in modern times, are environment-friendly and can be easily adopted by the villagers themselves at affordable costs.

1.2 ADVANTAGES OF WATER HARVESTING

- A water harvesting system collects and stores water within accessible distance from place of use.
- Assures a more continuous and reliable access to water.
- Surface water storage structures like ponds/ tanks augment ground water recharge, which improves the yield of hand pumps and wells.
- Provides an alternative source of good quality water where ground water or surface water is contaminated with harmful chemicals, salts or bacteria.
- Easy to construct with locally available material and labour.
- Investment requirements are low and, therefore, structures can be built by the village communities themselves.
- Environment friendly.