Drinking Water and Sanitation in Rural Maharashtra: A Review of Policy Initiatives

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Introduction

That the sceptre of scarcity of water looms large over the population of India, as in most of the developing world, has been an ever-bourgeoning anxiety since at least the early 1990s. The emphasis has been the availability, quality and sustainability of freshwater, largely used for drinking/ domestic purposes. In India, decades of habitual complacency with the phenomenon of water being supplied or provided for by the state or accessed easily, by some certainly, through extracting the same from common property resources as open or sub-ground sources have been jolted. The palpable reasons for the crisis have been identified as the excessive demand for water coming up from a large, growing and often urban population; depleting groundwater levels due to mindless exploitation; causing contamination to or polluting water bodies; mismanaging waste water; neglect of protecting and/or promoting water harvesting systems; and poor policy and its implementation.

A Discussion of Issues: Towards a Framework

A recognition of causes of the crisis in the drinking water sector obliges one to think beyond the sub-sectoral constraints *per se* and to search for larger contexts within which the crisis subsists or grows. The pristine source of water remaining common for a variety of uses for human lives and livelihood pursuits, incorporates in its apportioning the elements of diversity that characterise most human actions in managing a resource in short supply for a teeming populace with varying rights and bargaining strength. The problematic of *managing* water is *not*, in fact, as it is made out to be by a section of the concerned practitioners, donor agencies and scholars, a choice *between* supply-led and demand-driven approaches, or, a foregone conclusion that the former has failed miserably and the latter is intrinsically efficient. Central to the issue of managing lies a clear distinction between water used for consumptive/ domestic purposes and for productive purposes. If one classifies these two types of uses as basic and economic, respectively, then in an otherwise socio-economically skewed/ fragmented society, the former entails *everyone* to have access to clean potable water as a right, to be ensured by the state. In that case, if a supply-led provisioning has been inadequate/ irregular/ biased (based on locality, caste or community) as much as a demand-driven strategy excludes a certain population on the criterion of affordability, both need correction.

Beyond the approaches to *provisioning*, arises a complex question regarding the right over the source, whether surface or groundwater. It is in here that much of local context and the macro legal/ institutional framework become significant. In most part of the Indian rural society where the water economy, particularly, that for the groundwater, functions in a highly informal, unorganised and discrete manner, conditions essential for the organised water industry to work *efficiently* are difficult to implement. The informality refers to a range of issues including denial of access based on caste/class identity to overexploitation of groundwater for solely private productive use. In fact, what seems to have worked, historically (and so far), is the highly individualised and localised strategies of accessing and managing the available water resources, occasionally mediated through local institutions. While much needs to be comprehended as to how

these ‘micro’ efforts function on ground, drawing upon the strength of the repertoire of experiences/ experiments a few useful common learnings are possible to engage serious attention.

Given that structural issues in addressing poverty and redistributing ownership of natural resources (particularly, land and water) are put into the backburner, much of the ‘solution’ have to be searched for without ruffling the skewed *status quo*. Under these circumstances, it is imperative that the most desirable intervention and outcome have to be while inclusive, would not compromise on ensuring sustainability of the resource. Quintessentially, this basic tenet of the IWRM goal, though most appealing as an egalitarian epitaph, would remain only a concept unless a few strategic mechanisms are not put in place. Attention is herewith drawn to four distinct, but related approaches to arrive at the goal of ensuring the *greater common good*, namely, technological, institutional and societal.

Approaches and Challenges

Technological Intervention:

Unbound possibilities in the technological sphere need be explored, especially with reference to reviving and modernizing a variety of traditional water harvesting systems in the country. Studies have shown that civil and hydro engineering interventions have not only restored existing systems, but also contributed to enhancing their capacity to collect, store and conserve water. Moving beyond ‘glorifying’ or mere documenting the anecdotal details regarding the ‘heritage’ value of these indigenous technology systems, concerted effort is required to economically and environmentally evaluate the potential of water harvesting structures and suggest scientific ways to improvise upon them. With an increase in the supply, in the long run, the cost of water would reduce and it will facilitate wider access. Achieving a broad based access to drinking water is essentially, a citizens’ rights issue and can largely be addressed by initiatives to augment the resource. In a wider sense, the water harvesting and conservation mechanisms eventually include all forms of watershed and groundwater recharge techniques.

As indicated earlier, the state promoted supply driven approach, despite its huge and widespread operation hardly ever focused its efforts towards harvesting and conservation of rainwater and surface run-off. With a formidable heritage of water harvesting systems across the country, the government neither invested in their revival nor even took stock of the diverse systems, their performance capacities, distinct technologies relevant for upscaling and so on. Even when the much-hyped SRP-Swajaldhara programme was launched, the glaring absence of any reference to water harvesting and conservation is a sad commentary on the government’s water supply strategies. Interestingly, the World Bank, which is obsessed with popularising the piped water schemes and the pricing of drinking water, is not discussing the values of reviving traditional water harvesting structures. A certain *monolithic* view on technology, mostly, an obsession with piped water supply and relentless groundwater extraction by digging deep tubewells, has been a vital factor adding to the water crisis in rural areas in India. In the absence of a policy

framework clearly demarcating property rights in groundwater the crisis would perpetuate. State must play a proactive role in this important legislation; the civil society groups could exert pressure towards realising this crucial end.

It needs to be emphasized that the key to addressing the rural drinking water crisis lies in an all-out effort in enhancing the availability or supply of the resource *per se*. So far as the state is investing in creating/ reviving water infrastructure or improving service delivery systems, even within an oft-maligned supply-led framework, that need not be dissuaded. In fact, any efforts, private or public, that help adding to the stock of water are to be considered positive. That would clearly favour a framework of promoting sub-river basin and/or watershed as the unit of intervention.

Strengthening Local Level Institutions:

The chief lesson emerging from the experiences of various drinking water supply approaches has been that, ultimately, the local level institutions matter for the community. Whether these are *gram sabha*s, *gram panchayats* or *pani samitis*, the appreciation of local needs and management of both water distribution and finance are best handles by the local community or its created responsible body. While existence/ formation of such bodies is essential for a democratic management of the scarce resource, there is a great need to build up certain key capabilities of these bodies. Particular mention many be made of too crucial skills, namely, financial accounts management and basic technical know-how to sort out common mechanical/ systemic snags in water supply and distribution. An additional requirement is that the locally responsible body must be able, on a periodic basis, to get the quality of water tested to detect and destroy bacteriological and chemical impurities in drinking water. For instance, at the village level, it is possible to monitor salinity and TDS using simple user-friendly instruments.

So far as the role of institutions is concerned, a specific question relates to raising adequate finance to sustain and wherever possible create systems of water supply. While the capital cost can be met through making a strong case for enhancing budgetary allocations, popular contribution, especially, towards operation and maintenance purposes may be raised. However, as much experience in sector reforms in India has demonstrated, both the pricing mechanism and fixing household contribution amount are to undergo sea change. It would imply a re-look at the property right regimes, the state of common property water and land resources and efforts at augmenting and conserving water resources. The myriad exercises in willingness to pay (WTP) have led one practically nowhere, especially, in case of drinking water pricing. In fact, one must recognise the growing emphasis on treating access to potable water as equivalent to having right to life. It has been realised that a purely neoliberal market-driven approach to drinking water, especially for the rural poor, has not worked. Local institutions be geared towards protecting, creating and improving water bodies. Both the state and private sector could play an important role in building capacity in local population and also in mobilising finance. Developing enforceable legal and regulatory instruments that halt vested private interests in controlling water and land sources is, in fact, the challenge before those concerned.

A major difficulty encountered in creating layers of institutional arrangement is that lack of coordination between them can potentially ruin the possibility of synergy. This is especially the case when most of these so-called *participative* fora end up as exclusive groups, almost invariably sidelining the socially disadvantaged population or their representatives. Numerous reports of poor or no participation by women also point to a similar malady. It is easy to sew a network between similarly placed homogeneous groups, but raises a significant challenge to bypass ingrained social segmentation, whether based on caste, class, gender or income, to ensure inclusion. The sporadic celebration of Putnam's *social capital* in crossing over this structural roadblock has been utterly misplaced.

Emphasizing Knowledge-sharing and Women-primacy in Water Governance:

Another key approach that highlights the societal ethos relates to two apparently unconnected issues in water governance at the local level. Despite technological and institutional interventions, unless the local society gears up to accept the challenge of being vigilant about water governance, issues such as sustainability of the sources, controlling wastage and monitoring demand for water assume significance. Broadbasing and sharing knowledge concerning various aspects of managing water, bureaucratic/ legal dimensions of water provisioning, technical knowledge regarding operation and maintenance and role of the local concerned institutions are key to developing societal empowerment in the matter of water management. These initiatives at promoting what some term as water literacy could lead to such important activities as community taking interest in, say, waste water management or alerting concerned functionaries in case of a mechanical breakdown of the system or even possibility of incidence of disease due to water stagnation.

The second societal issue relates to attaching primacy to women as the central stakeholders in community level water governance. Instances galore to suggest women understand and manage water with much care and competence. This is done best by the community formally assigning the responsibility to women rather than merely mentioning its worth. Their substantive participation in the knowledge-sharing process, in fact, holds the key to sensible water governance at the grassroot level.

Objectives and Methodology

With the above backdrop, the study has pursued the following key objectives:

1. To review different programmes and approaches for water supply in the country
2. To examine the status of rural drinking water supply in Madhya Pradesh
3. To identify the issues related to water availability, quality, sustainability and role of government functionaries at different levels
4. To examine the status of sanitation in the state and identify the gaps
5. To suggest policy measures for achieving sustainable water supply in the state

The document is based on secondary data collection, literature review and discussions with concerned officials and functionaries from both government and civil society organisations.

Governmental Initiatives in Drinking Water Supply in Rural India

Availability of and access to safe potable water have been an area of deep concern mainly due to the multifarious challenges these pose in managing and ensuring a sustainable supply for the fast growing population. In many parts of rural India, a crisis of drinking water has assumed such proportions that it has led to large scale out-migration, 'water riots', inter-state disputes over water sharing and conflict between rural and urban consumers. Given the critical nature of potable water, for both survival and health, ensuring its provision at the habitation/village level has been long practiced by the governments of various Indian states. Drinking water has been listed as a State subject, although it is one such few areas where the Centre has been most active through various centrally sponsored schemes (CSS), including the Accelerated Rural Water Supply Scheme (ARWSS) since the early 1970s. The CSS, as is known, are essentially funded by the Centre but routed through/ implemented by individual provincial states. Despite Central guidelines, in a way, such programmes at the state level carry the vestiges of the state administration. This *path dependence* largely determines the level of achievement in pursuing the CSS at the state level.

As the state (both the state and Central governments) continued to remain the single dominant supplier or provider, in popular perception, provision of drinking water has been construed as a responsibility 'binding' on the state. Moreover, a high sensitivity in the political sphere, at least in some states, to poor or no supply of water, willy-nilly, has promoted a situation in which for decades neither the minimal water tax/ charge has been revised with the rising cost of provision, nor majority of the consumers have ever paid the state. One could easily surmise that the rural drinking water sector enjoys the status of a fully subsidized sub sector with the least regulation in place.

Typically, the so-called supply-driven approach to providing drinking water is based upon group/ regional schemes and individual village level schemes. Eventually an effective functioning of these schemes - often too large and complex in terms of networks of pipelines and extraction and distribution points – requires prompt and pragmatic coordination between different sections/ departments (like mechanical, executive, hydrology and water quality testing) directly concerned with the schemes. As has been pointed out time and again, the nature and extent of inter-department coordination have strongly conditioned the process; nevertheless, these key sections/ departments have often functioned more as 'independent' divisions within the state government rather than in a mutually responsive manner.

Further, it needs to be emphasized that these drinking water supply schemes are all about the *distribution* part of the provisioning, and not concerned with the surface/ sub-ground level sources, which come under the administrative purview of the irrigation, watershed and ground water departments. Although drinking water essentially forms a small part of

these basic indivisible/ common water resources, there exists a pronounced hiatus between the department dealing with drinking water and the aforesaid three departments. This dysfunctionality has dented the effectiveness of state managed drinking water schemes.

Despite regular complaints regarding the irregular, inadequate and unreliable water supply, one thing that has clearly been noticed is a massively growing preference for *piped* water supply, preferably at the household level. More than the problem of the *manner* of supply, it is the source which is under stress. In fact, about 80 to 90 per cent of demand for drinking water is met through the ground water resource. The fast spread and almost singular emphasis on *piped* water supply, a direct and unfortunate fall-out of the supply driven approach, has *officially* encouraged large scale ground water exploitation. Moreover, a significant lapse of the supply-driven approach has been its near total neglect of promoting/ reviving surface and rainwater harvesting and conservation systems; more on this later.

An important, but grossly neglected issue concerning the supply-driven approach relates to the official classification of habitations into not covered (NC), partially covered (PC) and fully covered (FC) by a safe public source[1]. The data base of habitation status on drinking water availability has been built up in such a manner that as per the latest statistics given by the department of drinking water, Ministry of Rural Development, over 97 per cent of rural habitations have been covered either as FCs or PCs. If one believes this authoritative departmental statistics, then we hardly have a problem at hand. However, it is common knowledge and cited in numerous filed based studies/ reports that the severity of drinking water crisis in Indian villages is widespread. The most unfortunate part of the rural drinking water scenario in India is that the official statistics masquerades the facts on scarcity and spread of the problem.

Following the observation of the United Nations International Drinking Water Supply and Sanitation Decade (IDWSSD) during 1981-91 and the initiation of a new era of economic reforms and liberalization (since June 1991) drinking water has been discussed centre stage as a *commodity* to be priced or paid for by the user. That levying user charges ensures efficiency in water-use remains the underlying theme of the neo-liberal agenda; market could deliver where the state has 'failed'. A vigorous attempt to reform the drinking water sector was kept up, constantly keeping the issues of 'government failure' and 'market as solution' alive. Finally, by 1999 the nation-wide launching of the Sector Reform Programme (SRP) was hailed by the government as a *paradigm shift* in the approach to rural drinking water supply. Initiating in 67 pilot districts across Indian states, the SRP was ultimately broadbased as the currently-run Swajaldhara programme.

The SRP-Swajaldhara being essentially a demand-driven approach is distinct from the existing regional/ individual rural water supply schemes. Unlike in the latter, the new approach deemphasizes the role of the state and considers the local community to be the key stakeholder in the future management, financing and upkeep of the water supply

[1] For a detailed critique of the problematic classification and serious flaws in the official statistics on the status of water availability in habitations, see Das (2001).

systems. It has four key *mantras*, namely, (1) community participation; (2) people's contribution[2]; (3) demand-driven; and (4) accountability. However, the implementation of SRP and later, the Swajaldhara has been subject to criticism concerning their failure to adhere to basic guidelines, whether relating to IEC, popular contribution or even democratic participation in decision making.

While it would be too early to comment upon the efficacy of the Swajaldhara programme, despite claims of a paradigm shift, the entire approach to drinking water supply has hardly been innovative and continues to be another government programme, with physical and financial targets to be addressed. Its appealing catch-phrase of community participation has, quite naively, failed to appreciate the local level social and political dynamics which have been, historically, influenced the nature and extent of community involvement. Just as in the supply driven approach where the responsible functionaries tried to project figures of achievement of the targets somehow, the key requirements of participation and user contribution in the SRP-Swajaldhara programme are fulfilled more as a notional goal rather than through a change in the mindset of the community. In any case, the co-existence of both the supply and demand driven programmes has further confounded any meaningful paradigm shift in terms of the philosophy or logic of the approach.

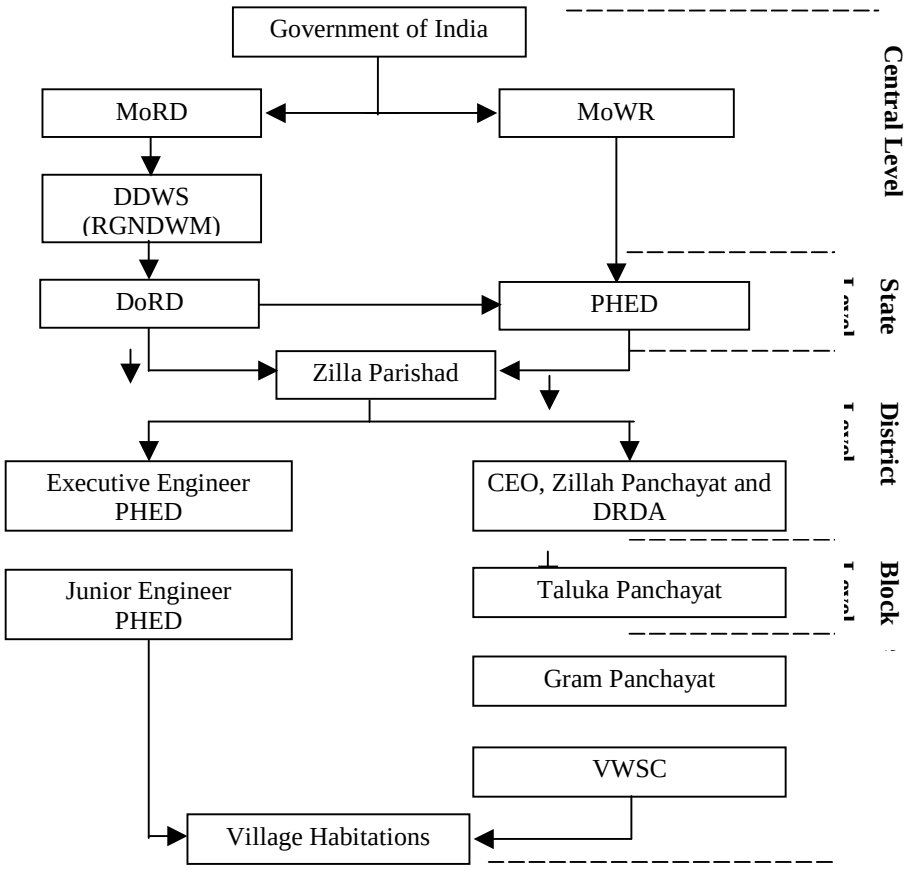
At this stage, reference must be made to the existence and operation of para-statal agencies in different rural areas of the country. Such efforts, though sporadic and often at a micro level, by NGOs/ CBOs or even philanthropic individuals, are important in their own right. In many cases, in fact, one observes a relatively better management of the system and finance, as compared to the administration by the government. Nevertheless, the very low scale of such operations and a general absence of coordination or sharing between para-statal agencies, do not always help one to develop a comprehensive and sustainable model of effective management of water supply in rural areas. Similarly, there have been instances of private corporate sector taking interest in and also making capital investment in rural drinking water provisioning; These come under what is termed 'corporate social responsibility'.

Institutional Framework

The constitutional rights and responsibilities related to water are blurred within the federal framework as, all the three tiers, namely, the central government, state governments local bodies at the village (panchayat) and city (nagarpalika) levels, deal with water. The 73rd and 74th amendments act (1992) specifies that inter alia, drinking water, water management, watershed development and sanitation are subjects to be devolved from the local bodies, i.e., panchayats and nagarpalikas. An idea about the various departments at central, state and village levels that deal with issues related to water supply can be had from Figure 1.

[2] For every village, 10 per cent of the total project cost (capital) has to be shared equally amongst all the households.

Figure 1: Institutional Hierarchy of Rural Drinking Water Supply System



Source: Joshi (2004).

Policies and Programmes

Throughout the Five Year Plans, the government introduced a variety of policies and programmes to address the issue of drinking water, a summary of which is presented in Table 1. The first national water supply and sanitation programme was introduced during 1951–56 as part of the government's health plan. The states gradually built up the Public Health Engineering Department (PHED) to tackle the problem of rural water supply and sanitation. In spite of this, it was found during the mid-1960s that majority of the schemes were being implemented in the easily accessible villages neglecting remote villages with severe water scarcity. The central government requested the states to identify these problem villages and make special plans for them.

The first major push to rural water supply came with the Accelerated Rural Water Supply Programme (ARWSP) in the 1970s, which gave full grant to the state governments for implementing water supply schemes in problem villages. By March 1981 the coverage of rural water supply was 30.8 per cent. Following the IDWSSD (1981-91) the second major push came by establishing the National Drinking Water Mission (NDWM), later renamed as the Rajiv Gandhi National Drinking Water Mission (RGNDWM). The Mission issued comprehensive guidelines for ARWSP (1986), helped formulate National Water Policies (1987 and 2002) and introduced the SRP in 1999.

With the introduction of the SRP, it became the world's largest, government sponsored demand based and participatory drinking water supply programme, which was first implemented in 67 districts of 26 states in India on a pilot basis. Community participation was sought through 10 per cent contribution to the total installation cost and full responsibility for operation and maintenance. The Central contribution to the programme (total cost Rs. 2060.45 crore) was to be Rs. 1922.85 crore. The remainder was to come from the beneficiaries.[3] Significant investments were also to be made in building community capacity, and in providing information, education and communication (IEC).

While there remained much to be learnt from the infirmities of the SRP, it was scaled up in the form of Swajaldhara in December 2002 with the objective of covering the entire country by the end of the Tenth Five Year Plan.

Table 1: Programmes and Policies Related to Drinking Water Supply

1950	Constitution of India pronounces water to be a State subject.
1954	First national water supply and sanitation programme started, during the first Five Year Plan (1951 – 1956), as part of the government's health plan.
1956-72	GOI allots resources to state government to develop and strengthen the state public health engineering department (PHED). Rural water supply schemes extended to include small urban towns and villages with water scarcity targeted on a priority basis.
1968	GOI gives states (some) financial authority to sanction rural water supply schemes.
1972	GOI introduces the Accelerated Rural Water Supply Programme (ARWSP) to assist States and Union Territories with 100per cent grants to accelerate the implementation of schemes in problem villages.
1974	ARWSP discontinued and the Minimum Needs Programme (MNP) introduced in states.
1977	ARWSP revived when the progress in regard to provision of safe drinking water to the identified problem villages under MNP was not found to be satisfactory, and aims to tackle unreached areas without access to safe drinking water, sustainability of the systems and sources and preservation of quality of water by institutionalising water quality monitoring and surveillance, through a catchment area approach.

[3] *The Hindu*, May 3, 2003; and Pravah (2005), 'Swajaldhara: A Study on the Principles and Process Towards Policy Advocacy, *Working Paper-1*, p. 2.

1986	National Drinking Water Mission (NDWM) set up to cover 137,155 residual problem villages (in April 1986) with safe drinking water, evolve an appropriate mix of technology, improve performance and cost effectiveness of on-going programmes, create awareness about the use of safe drinking water and take conservation measures to sustain the supply of water. Comprehensive guidelines issued (for the first time) to implement the ARWSP.
1987	National Water Policy that states that national, and not state or regional, perspectives will govern the water resources planning and development and that drinking water has first priority while planning multipurpose water supply schemes.
1991	NDWM of 1986 renamed the Rajiv Gandhi National Drinking Water Mission.
1996-99	Review of India's water resources, jointly with the World Bank and other donor agencies.
1999	Start of the Sector Reforms Pilot Projects, introducing community based management of rural water supply in the government sector.
2002	Swajaldhara programme announced, scaling up Sector Reform Pilot Projects to a countrywide programme of community-based management of rural water supply. Revised National Water Policy formally adopted by the National Development Council, comprising all heads of state governments and GOI.

Source: James (2004): p.16.

The RGNDWM has set standards for providing potable drinking water to rural population, which are used to assess the number of rural habitations covered under water supply. A habitation must fulfil the following parameters in order to categorise as a 'Fully Covered' (FC) habitation.

- Availability of minimum 40 lpcd water supply for human beings
- 30 lpcd of additional water for cattle for areas under DDP
- Availability of water source in the habitation or within a radius of 1.6 kms in plains and 100 m in hilly area
- There should be one handpump or standpost per 250 persons

The norms set by RGNDWM are uniform all over the country, irrespective of the regional variation in availability of water based on the climatic and geographical factors. Based on this, state PHED conducts a survey of villages every year, which partly reflects the impacts of government investments in this sector. Villages are categorised under three main headings:

- **Not covered habitation (NC):** A habitation with no private or public drinking water source that is safe (i.e., without quality problems such as excess salinity, iron, fluoride, arsenic or other toxic elements or biological contamination), adequate (i.e., 40

lpcd for 250 persons or less), accessible to all, and within 1.6 km of the habitation (or100 meter elevation in hilly areas).

- **Partially covered (PC):** Habitations with a private or public drinking water source that is safe, accessible to all and within 1.6 km in plains (and 100 meters in hilly areas) but with a capacity of only 10 to 40 lpcd.
- **Fully covered (FC):** Habitations with a private or public drinking water source that is safe, adequate and accessible to all, within 1.6 km of the habitation (or 100 meter elevation in hilly areas).

Status of Water Supply in India

The standard way of measuring the progress in water supply is the coverage data that reflects the physical progress (Table 2). However, it only gives the number and percentage of habitations covered under water supply and does not comment on water availability.

Table 2: Coverage Rural Households by Drinking Water (per cent)

Year	NC	PC	FC
2005	0.32	3.55	96.13
2004	0.42	5.02	94.56
2003	1.01	7.93	91.06
2001	1.31	11.15	87.54
1994	5.30	45.80	48.90

Source: Government of India, *Socio-Economic Survey*, New Delhi

A significant progress in terms of coverage can be seen but sustainability and water quality are two pressing issues that need attention. The joint assessment of India's water resources done by the World Bank, other donors and GOI in late 1990s notified that the per capita water availability in India was over 5,000 cubic meters per annum during 1950s. Now, it stands at about 2,000 cubic meters and it is estimated that by 2025, per capita availability would go down to around 1500 cubic meters. In addition, poor and variable rainfall, inequalities in endowments between different regions, difficulties in capturing run-off and water pollution would compound the problem of declining aggregate figures.

There is also a rapid change in the conventional past situation of water use, that is, plentiful water resources were being used primarily for irrigated agriculture and the demands in other sectors were relatively insignificant. Over time, other sectoral demands of water are growing rapidly in line with urbanisation, increase in population, rising incomes and industrial growth. The same is likely to continue in the future also. There is, furthermore, insufficient water available in most basins to address environmental and ecological considerations or ensure adequate supplies for other non-consumptive uses (such as navigation, religious observances and leisure needs).[4]

[4] World Bank (1999c), *Initiating and Sustaining Water Sector Reforms: A Synthesis*, Allied Publishers, New Delhi

Data suggests that the government has incurred expenditure worth Rs.32302 crore on Rural Water Supply Programmes during the First Five-Year Plan to 2002. But, in terms of physical progress the water supply status is far from satisfactory. A look in to the major findings from the CAG annual report (2002), as listed in the following, would be useful:

- Till April 2001, about 20,000 habitations did not have any source of water; while 155,000 habitations remained only partially covered and 73,197 problem habitations have re-emerged in seven states, which negate the impact of the programme. These figures would go up further if one takes into account the significant re-emergence of PC/NC habitations, despite their reported coverage in many states. In the present monitoring system of the ministry, this negative coverage was not being accounted for.
- Water treatment plants, installed at a cost of Rs.16.32 crore to control fluorosis, excess iron and salinity were non-functional.
- Poor performance of water quality testing laboratories defeated the objective of providing safe drinking water to the rural population in the affected areas.
- Even though there were habitations having no source of drinking water, Rs.283.90 crore were spent on coverage of partially covered habitations during 1997-2001, contrary to the priority norms of covering no source habitations first.
- Application of funds without adequate planning and scientific identification of water sources led to abandonment of 2,371 schemes midway in 19 states, costing Rs.197.52 crore. Scientific methods of source selection were not adopted in 10 States, causing failure of the schemes and rendering Rs.64.71 crore wasteful.
- Diversion of funds to activities not connected with the programme (Rs.86 crore), unauthorised retention of funds in Civil/Revenue/Public Works Deposits (of Rs.393.77 crore), inflated financial achievement (of Rs.307.69 crore), excess expenditure met from ARWSP funds instead of from State Plan funds (around Rs.190 crore), and materials purchased in excess of requirements (around Rs.70 crore).

Issues in Rural Sanitation

As per *Census* 2001, only 36 per cent of households had access to some form of sanitation; worse, for rural India the figure is as low as 22 per cent. During the World Summit on Sustainable Development, a goal had been set up to reduce the uncovered population by 50 per cent by the year 2015. India declared to achieve the goal by 2007 and the government launched the Total Sanitation Campaign (TSC) in 1999. TSC as a part of reform principles was restructured from the earlier Central Rural Sanitation Programme (CRSP), which could not make much headway.

The TSC is designed as a comprehensive programme with an aim to improve sanitation facilities in rural areas and eradicate the practice of open defecation. The programme, aimed to encourage cost effective and appropriate technology in sanitation, requires a large-scale social mobilization in which the district is taken as a unit for implementation. Zilla Panchayat or alternatively the District Water and Sanitation Mission (DWSM) is the implementing agency for TSC.

The key intervention areas are Individual household latrines (IHHL), School Sanitation and Hygiene Education (SSHE), Community Sanitary Complex, Anganwadi toilets supported by Rural Sanitary Marts (RSMs) and Production Centres (PCs). However, the start-up activities and IEC are equally important components that provide the base for implementing the project.

Demographic and Administrative Profile of Maharashtra

Maharashtra is the third largest and the second most populous state in India. It has witnessed a significant increase in the level of urbanisation during last four decades (Table 1).

Table 1: Population of Maharashtra

Year	Population (million)			Decadal Growth Rate
	Rural	Urban	Total	
1971	34.7	15.7	50.4	27.45
1981	40.8	22.0	62.8	24.54
1991	48.4	30.5	78.9	25.73
2001	55.8	41.1	96.9	22.73

Source: GoI, Census of India, *Tables on Population*, Controller of Publications, New Delhi

The is classified into six revenue divisions, namely Konkan, Nashik, Pune, Aurangabad, Nagpur and Amravati (Figure 1). The Nashik and Pune divisions being contiguous form the popularly known Western Maharashtra; Aurangabad comes under Marathawada; and Nagpur and Amravati division together form the Vidarbha region.

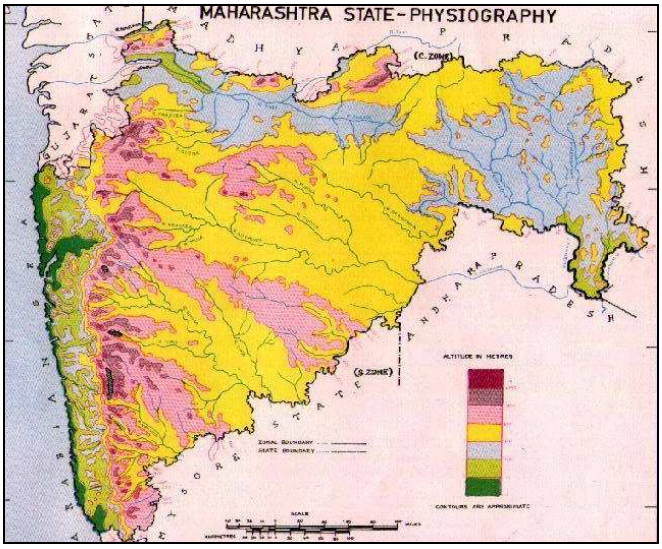
Figure 1: Maharashtra - Revenue Divisions

Source: Government of Maharashtra (2002), *Human Develop Report Maharashtra –2002*, GoM, Mumbai

Physiographical Profile

As shown in Figure 2 the state is divided into three physiographic zones: a) the Sahyadri Range (Western Ghats); b) the Western Coastal Tract (Konkan); and c) the Eastern Plateau (Deccan Plateau).

Figure 2: Maharashtra - Physiographic Divisions



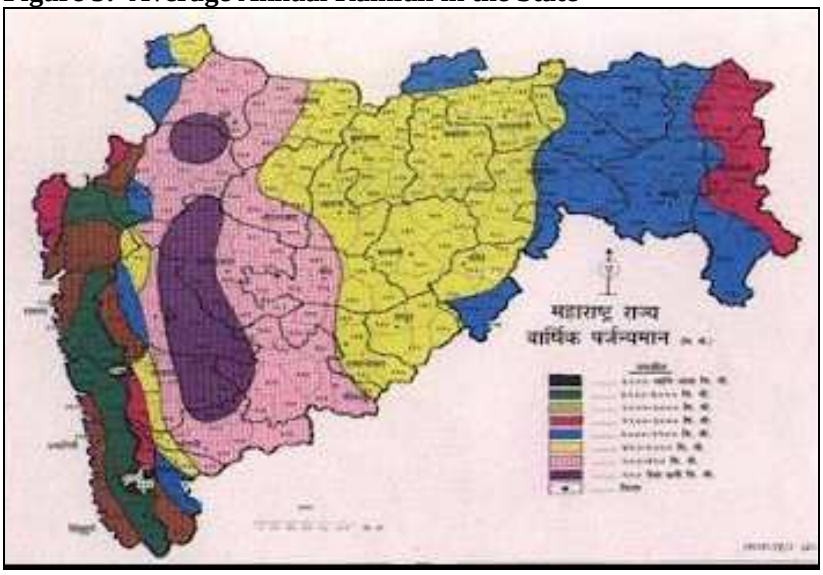
Source: http://agri.mah.nic.in/agri/stat/map/phymap.htm

The Deccan Plateau occupies 81.5 per cent of the total geographical area of the state. The main rock type in Deccan Plateau is of Basaltic formation. The Sahyadri Range runs in a north-south direction parallel to the western coast. The average height of the range is about 1000 mt above sea level and its main ridge runs at right angle to the southwest monsoon stream, which forms an important climatic divide. The Konkan, lying between the Arabian Sea and the Sahyadri Range is a narrow coastal lowland, barely 50 km. wide. Mostly below 200 m., it is highly dissected and broken, the Konkan alternates between narrow, steep-sided valleys and low laterite plateaux. The important rivers are Krishna, Bhima, Godavari, Tapi-Purna and Wardha-Wainganga, which are located near northern and western boundaries of the state.

Climate and Rainfall

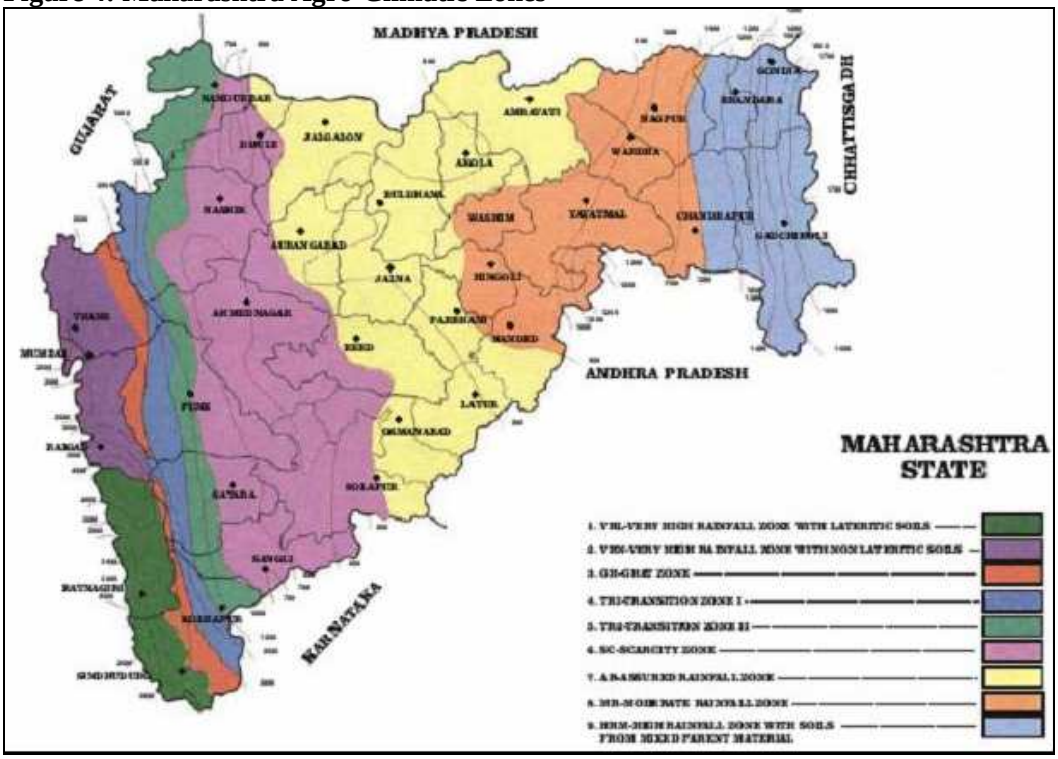
Maharashtra enjoys a tropical monsoon climate having four seasons during a year. With an average rainfall of 1000 mm, there is wide variation in the spatial distribution of rainfall across the state (Figure 3). The highest rainfall (6000 mm) occurs over the Western Ghats (Sahyadri) and it drops up to 500 mm within another 50 km eastwards (rain shadow areas), forming the drought prone area which accounts for almost a third of the state's geographical area. A major part of Madhya Maharashtra comes under the rain shadow area. A high to moderate rainfall is received along the coastal planes of Konkan (2000 mm to 3000 mm) and further eastwards in the Marathwada and Vidarbha regions (1000 mm to 1600 mm).

Figure 3: Average Annual Rainfall in the State



Source: http://agri.mah.nic.in/agri/stat/map/annualrain.htm

Figure 4: Maharashtra Agro-Climatic Zones



Source: Water Resources Department (2005), *Report on Water Audit of Irrigation Projects in Maharashtra 2003-04*, GoM.

The number of average annual rainy days is maximum 95 in Konkan, 55 in Vidarbha, 51 in Western Maharashtra and the minimum 46 in Marathwada. The occurrence of drought is common in the region as the rainfall is highly variable between years. The Agriculture Department has divided the state into nine different agro-climatic zones depending upon the climate, foliage, topography, soil and cropping pattern (Figure 4).

Sources of Water Supply in Maharashtra

Surface Water

There are around 400 rivers in Maharashtra with a total length of around 20000 km. The geographical area of the state is divided among five main river basins of Krishna, Godavari, Tapi, Narmada and narrow basins of West flowing rivers of Konkan. These are further segregated into 25 sub-basins. The basin-wise average annual water availability is given Table 2. The storage capacity and the benefited area are decided on 75 per cent dependability basis at present.

Table 2: Basin-wise Average Annual Availability of Water

Major Basins	Average annual availability Mm^3
Godavari	50,880
Tapi	9,118
Narmada	580
Krishna	34,032
West flowing basin (Konkan)	69,210
State (Total)	1,63,820

Source: http://irrigation.maharashtra.gov.in

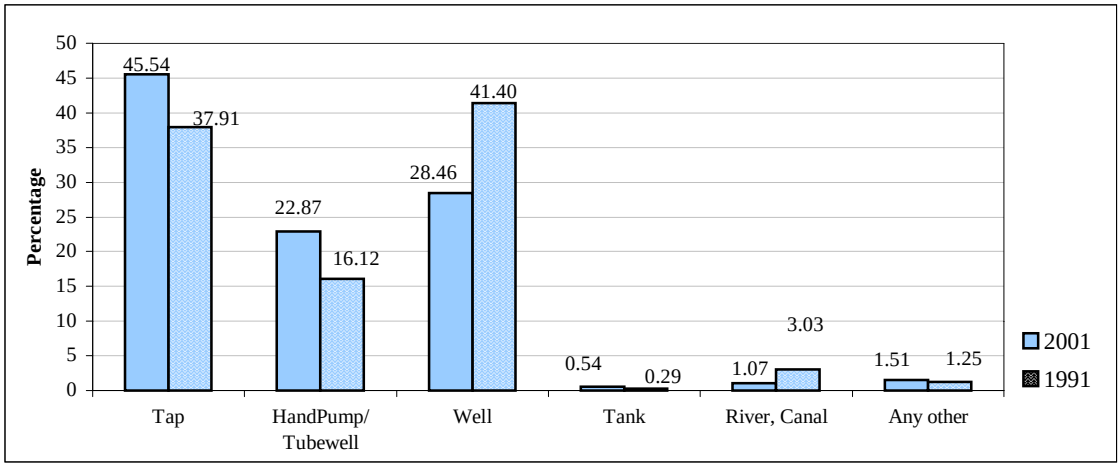
Although the annual average surface water availability is 1,63,820 $Mm^{3,}$ according to interstate river water implications, 1,26,387 Mm^3 of water should be allocated to the state. Thus, the total surface water available for utilisation should be more than the present expected requirement.

Groundwater

The overall stage of groundwater development in Maharashtra is above 30 per cent despite being a predominantly hard rock ground area with difficult hydro metereological condition. The inherent heterogeneity and low water yielding capabilities of hard rock compared to alluvial aquifers make the process of water conservation and recharge difficult. It is largely due to these hydrological and geographical features that the state is facing the problem of water supply. For instance, the Konkan region receives the maximum rainfall (40 per cent of state total), but the precipitation is quickly drained off to the Arabian Sea owing to the porous laterite soil formation and high gradient topography of the region. As indicated in James and Gopalan (2004) the areas having plentiful shallow groundwater aquifers suffer from chemical contamination such as salinity (Amravati, Akola and Buldhana), fluoride (Bhandara, Chandrapur, Yavatmal, Nanded and Satara) and nitrate (Nagpur, Satara and Sangli).

In addition, the practice of growing cash crops like sugarcane, turmeric and fruit crops requiring a higher consumption of water has further aggravated the situation. Over 50 per cent of the total area under irrigation in Maharashtra depends on groundwater sources and nearly 80 per cent of rural water supplies are based on groundwater.

Figure 5: Distribution of Rural Households by Source of Drinking Water, Maharashtra



Source: Government of India (1997), *Census of India 1991, Availability of Infrastructure Facilities in Rural Areas of India: An Analysis of Village Directory Data*, Office of the Registrar General of India, New Delhi;
Government of India (2003), *Census of India 2001, Tables on Houses, Household Amenities and Assets*, Controller of Publications, New Delhi.

A comparison of 1991 and 2001 census data suggests that there is an increase in the use of tap, handpump and tubewell as source of drinking water whereas use of surface water and well has decreased (Figure 5). This clearly points to the fact that within last one decade (1991-2001) the rate of groundwater extraction has gone up.

Water Supply Schemes in Rural Maharashtra

The state government has implemented various schemes for improving the water supply coverage over a period of time. Apart from government agencies, World Bank, German Development Bank (KfW) and other NGOs are actively involved in implementing water supply schemes in rural Maharashtra. Table 3 provides an idea about these various interventions.

Table 3: Efforts in Rural Water Supply in Maharashtra: A Summary

Description	Period	Highlights
Dug Well Era	1960-1970	Providing dug wells Mainly manual drawing, sparingly with power pumps
Bore Well Era	1971-1985	Bore well digging technology introduced Providing hand pumps and power pumps on bore wells As on March, 2002 around 2.2 Lakh hand pumps, 14,000 power pumps and about 90,000 community dug wells were functioning in the state Large scale digging of bore wells for irrigation purposes (around 20 lakhs bore wells dug) causes drying up of bore wells for drinking water supply
Rural Piped Water Supply Era	1985-1997	Increase in the number of piped water supply schemes in rural areas based on surface water sources First World Bank project with a cost of Rs. 504.25 crores implemented during the period 1991 to 1998 consisting of 17 single village schemes and 47 multi-village schemes in 560

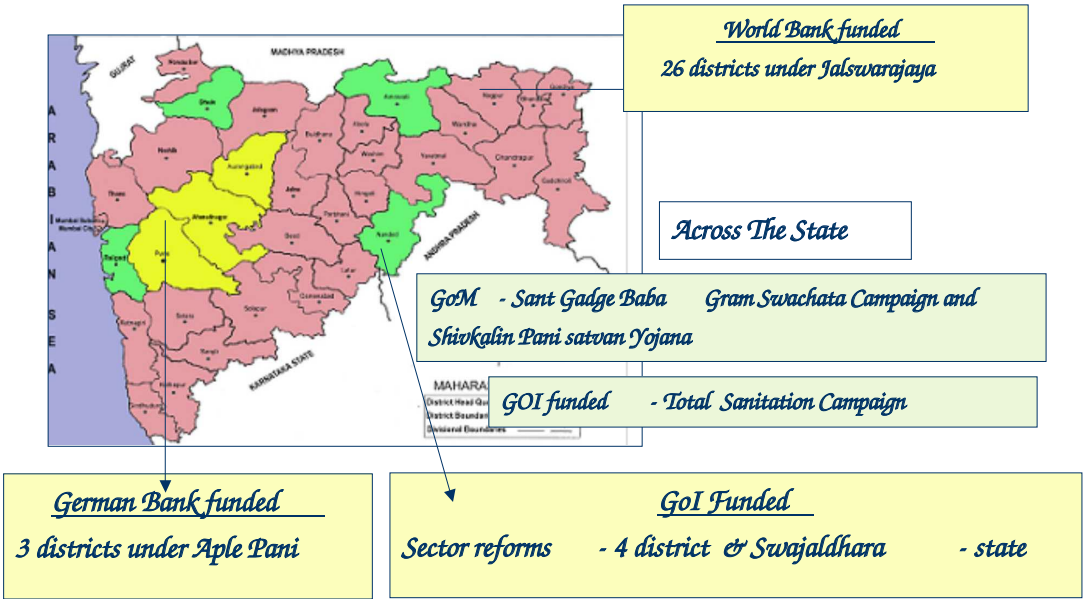
		villages of 10 districts DFID project (1990-2000) building 3 regional schemes in 3 districts costing Rs. 74.3 crores A White Paper on drinking water supply was published in 1995 to set a direction to the plans and programmes to solve drinking water problems[5].
Master Plan Era	1997-2000	Highest expenditure for regional and single village piped water supply schemes Estimated cost of Rs. 7,300 crores Till December 2002 expenditure Rs. 4,500 crores As on date 1,907 on going schemes which require Rs. 1,750 crores for completion
The Policy Reform Era	Since 2000	Demand-driven approach to delivery of rural water supply and sanitation services First state in India to adopt a state wide new reform policy in water supply and sanitation sector Shifting the role of government from direct provider of service to that of policy formulation and capacity support Beneficiaries to participate in planning, implementation and O&M of facilities A three pronged strategy was adopted for water conservation, preservation and utilisation through increasing water supply, managing demand and regulating over abstraction of groundwater

Source: *mrwss-pip_jalswarajya-sep- 2003.zip*

Though the government made large capital investments in the water supply sector, complete and sustainable coverage seemed a distant goal. In July 2000, the state government took a major policy decision to adopt the demand driven approach towards the drinking water and sanitation sector in the state. During the same time (April 2000), GoI's Sector Reform Project (SRP) was implemented in four districts namely Raigarh, Dhule, Amravati and Nanded. By now, the Reform Programme (Jalswarajaya) has been extended to cover all 33 rural districts across the state (Figure 6).

[5] Maharashtra was the first state in India to come out with a White Paper on drinking water supply.

Figure 6: Projects under Sector Reforms in Maharashtra



Source: Maharashtra Water Supply and Sanitation Department (2005), Mumbai

Maharashtra is the first state in the country to launch a state-wide programme for reforming the water supply and sanitation sector. The implementation of the following reforms is an integral part of the Jalswarajya project being implemented with assistance from the World Bank in 26 districts of the state since 2002.

A project assisted by KfW, the German Development Bank, was launched in three districts (Pune, Ahmednagar and Aurangabad) in the state, following the reforms. Adtionally in 2001, the GoM has initiated the scheme Shivkalin Pani Sathawan Yojana (SPSY) to educate the community and mobilize their action to plan and implement measures to conserve groundwater. This scheme encourages communities to take up conventional and non-conventional water conservation measures for drinking water source strengthening, roof top rainwater harvesting, construction of tanks in hilly areas for storage of rainwater and similar other measures for sustained availability of drinking water. This is an environmentally friendly scheme and is gaining popularity in the state.

As of now, the GoM is in the process of completing a large number of water supply schemes, commissioned under the earlier 'Master Plan'. There are about 1907 on-going schemes under the MJP that require about Rs.1750 crores and the same is expected to be completed by 2006. Most of these projects are being executed by the MJP under the supply driven mode. The GoM plans to utilize the current grants/ budget available under the Minimum Needs Programme (MNP) and Accelerated Rural Water Supply Programme (ARWSP) for completing the above schemes.

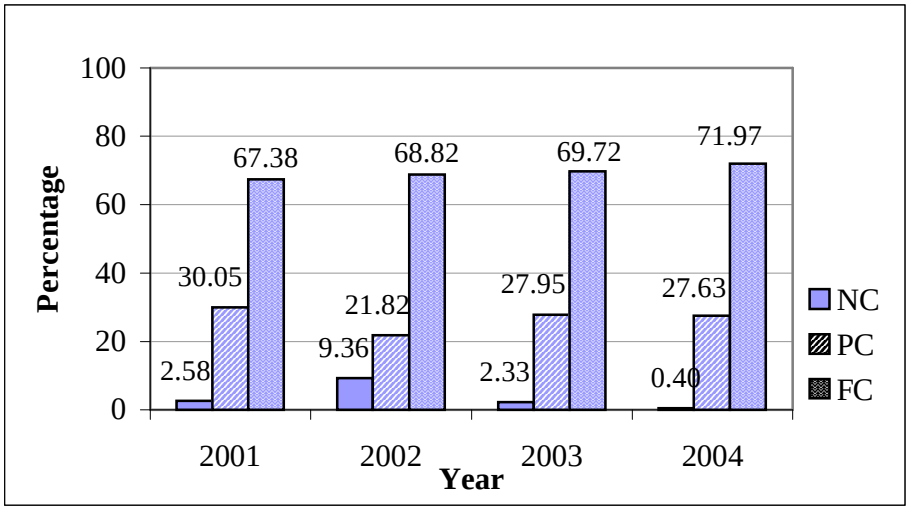
Further, for SRP-Swajaldhara the GoI funds will be routed through the state government and an identified District Implementation Agency (DIA). In Maharashtra the Zilla Parishads have been identified as the DIAs. There is no pre-determined outlay for the state and the funds would flow based on the proposals approved and sanctioned.

The Prime Minister's Gramodaya Yojana funds water supply schemes, besides many other rural interventions such as roads, as a minimum needs intervention. The water supply component of this scheme is mainly focused on the PC and NC habitations. This programme also emphasizes on the integration of water conservation works along with water supply works. The guidelines prescribe that a minimum of 25 per cent of the budget of the water supply schemes should be used for water conservation/ harvesting works.

Coverage of Habitations

The water supply coverage data of last four years show a slow but steady progress at the state level (Figure 7). In 2004, 23743 habitations were partially covered with less than 40 lpcd of water supply and 346 habitations were not covered at all.

Figure 7: Water Supply Coverage in Rural Maharashtra: 2001 - 04



Source: Ministry of Finance, GoI, *India Economic Survey*, New Delhi and Scott and JPS (2005), p.33.

As shown in Table 4, one notices a sudden rise in the problematic villages after the VIII Five Year Plan suggesting the bounce back from "Tanker Free" villages:[6]

[6] "Freedom from Tankers" programme was undertaken between 1996 and 2000. Twelve out of 32 districts were declared tanker free by 1999. During 2000, nine more districts were declared tanker free as shown in table here:

Year	Districts
1996-97	Dhule, Nandurbar, Bhandara, Gondia, Wardha and Gadchiroli
1997-98	Chandrapur, Kolhapur and Yawatmal
1998-99	Sindhudurg, Nagpur and Sangli
2000	Aurangabad, Beed, Nanded, Ratnagiri, Pune, Solapur, Thane, Nashik and Satara

However, the WSSD data show that, thereafter, the situation worsened in some villages and it was again necessary to make arrangements to supply water through tankers.

Table 4: Problem Villages, By Plan

Plan period	Problematic villages	Villages covered	Remaining villages	Expenditure (Rs. in crore)
VI	17112	15883	1229	373
VII	23306	21717	1589	980
VIII	16790	7951	8839	496
IX	27553	13351	14202	2069.75 (Provision)

Source: Sukthankar Committee Report updated 2002, as cited in Scott and JPS (2005), p.33.

Water Quality

In 2002, the state government had undertaken an exercise to monitor the water quality in the rural areas through a 10 per cent random sample. Since then, it also started the process of testing all the public water supply sources in all the 33 districts in a phased manner. The districts that have shown chemical contamination in water will be taken on priority. Testing has already been completed in the districts of Yavatmal, Nagpur, Chandrapur and Bhandara.

Out of the 26 districts under the SRP, 18 are facing problems related to groundwater quantity and quality. These are Jalgaon, Buldana, Akola, Washim, Wardha, Nagpur, Bhandara, Chandrapur,Yavatmal, Parbhani, Jalna, Nashik, Bid, Latur, Solapur, Ratnagiri, Sindhudurg and Sangli. The analysis of the samples collected for quality check shows number of talukas affected and the type of chemical contamination found in the sources (Table 5)

Table 5: Number of Talukas affected by Poor Water Quality

	District	Total Talukas	Declining Water Table	Fluoride	TDS	Nitrate	Total Problem Talukas
1	Akola	7	4	0	4	2	7
2	Beed	11	5	4	3	4	7
3	Bhandara	7	1	2	0	2	4
4	Buldhana	13	4	0	4	0	8
5	Chandrapur	14	0	6	2	4	9
6	Gadchiroli	12	0	2	0	2	4
7	Gondia	8	0	2	0	0	2
8	Hingoli	5	0	0	2	0	2
9	Jalgoan	15	5	1	3	3	8
10	Jalna	8	5	0	0	2	6
11	Kolhapur	12	0	2	2	0	4
12	Latur	10	0	1	3	3	6
13	Nagpur	14	2	10	4	12	14
14	Nashik	15	5	0	5	2	9
15	Nandurbar	6	1	0	0	0	1
16	Osmanabad	8	2	2	1	2	3
17	Parbhani	9	0	4	1	4	5
18	Ratnagiri	9	0	1	3	3	5
19	Sangli	9	5	1	4	2	6
20	Satara	11	3	4	1	3	5
21	Sindhudurg	8	0	5	2	0	5
22	Solapur	11	4	4	5	6	11
23	Thane	14	0	1	3	4	5

24	Washim	6	1	0	2	0	3
25	Wardha	8	3	0	0	2	4
26	Yavatmal	16	5	4	4	0	9

Source: Scott and JPS (2005), Table-5.8, Chapter-5.

It may be noted that fluoride contamination above the acceptable level occurs most frequently in Chandrapur, Satara, Solapur, Yavatmal and Nagpur and to a lesser extent in most districts. Nitrate contamination is prominent in Yavatmal, Nagpur and Chandrapur and is only of isolated importance in other districts. The presence of iron in ferruginous rocks of parts of the eastern districts of Maharashtra affects quality particularly in Yavatmal, Chandrapur, Nagpur and Bhandara. Saline groundwater occurs naturally in parts of Akola, Amravati and Buldhana. Along the coastal belt high TDS is arising due to overpumping of sandy aquifers. Very isolated cases of arsenic contamination are in evident in Nagpur district.

Issues Concerning Rural Drinking Water Supply in Maharashtra

Disadvantaged Hydrogeology

Maharashtra's hydrological and geographical features make the process of water conservation and recharge difficult. For instance,

- More than 90 per cent of the area of the state is comprised of hard rock, the basaltic Deccan Trap, which is nonporous and unsuitable for recharge.
- One-third area of the state falls under rain shadow mainly from Western Maharashtra and Marathwada but the same area grows high water intensity crops.
- Heavy rain-fed areas that account for 40 per cent of state's rainfall have porous rock, which drains water quickly and as a result there is no water retention.
- The areas having plentiful shallow groundwater aquifers suffer from chemical contamination such as salinity (Amravati, Akola, Buldhana), fluoride (Bhandara, Chandrapur, Yavatmal, Nanded, Satara) and nitrate (Nagpur, Satara, Sangli).

These factors have a dramatic impact on sustainability of sources for water supply, especially during February-May. The geology and spatially variable rainfall with extremes of high monsoon precipitation in some areas and drought situation in others also constrain the state's ground water sources. The situation is worsened by unregulated groundwater abstraction for irrigation and industrial uses. Holistic management of ground and surface water resources is typically absent.

Sustainability of Sources

Sustainability of the sources during summer months is a problem faced by majority of the districts in the state. There are many water supply schemes that have been implemented in the state during the last 30 years. But, a large number of them have become defunct. The reasons stated include drying up of sources, mechanical or electrical failure, continuous pipe bursting and other operational issues including non-availability of funds. The White Paper places on record its concern for the failure of sources.

Dug Wells: Out of the total 90,000 dug wells, majority are dry in summer and have been abandoned as main source of supply. Many are sources of aquifer pollution (increased TDS) due to deposition of debris into the wells. There is no move to use these wells as potential recharge points as is done in other parts of the country (Saurashtra in Gujarat).

Handpumps: Information available with groundwater surveys and development agencies indicate that out of 2.10 lakh bore/tubewells installed with hand pumps, 12,871 are damaged, beyond repair and therefore abandoned. No reliable data exist about seasonal failure due to depleted aquifer, but statements from the Rajiv Gandhi National Drinking Water Mission support the fact that due to excessive withdrawal of groundwater, sources are becoming dry in many places and systems are becoming defunct as a result.

Piped Water Supply Schemes: As far as the piped water supply schemes are concerned, a system of monitoring and reporting has been introduced recently but appears not to be very effective or complete in relation to seasonal variation in the sustainability of sources.

The main problem faced is the lack of accurate information on the status of a source. For example, issues such as partial functioning of sources (due to villages receiving less than 40 lpcd of water or reduced supply during summer), quality problems and poor reporting by village bodies or ZPs are not adequately addressed.

Institutional/ Departmental Lacunae

It has often been held that for water supply schemes, whereas designs are not sustainable, equipment and construction are sub-standard.. Existing Schedule of Rates also needs to be revised. Proper yield testing, source protection, community awareness and monitoring are essentials that currently are ignored, which results in wastage of funds.

RGNDWM advises that at least three options should be prepared for consideration by a village under Sector Reform Guidelines and include capital cost and operation, maintenance and renewal cost estimates per household, villagers generally are not involved/ consulted by the MJP, ZP and GSDA engineers. They present only one option which according to them is the best. This is one issue that needs to be addressed so that decisions regarding location of the source as also levels of service and system are taken more rationally and democratically. .

Delay in Implementation of Schemes

Individual rural water supply schemes for single villages are generally based on groundwater as source and are simple for execution. These schemes can be executed in about 18-24 months after tendering or 24-30 months after approval of the schemes. Schemes with surface water as a source like jack well; canal intake etc. could take 6 to 12 months extra. The regional water supply schemes are usually complex and could take 3 to 4 years for completion.

In practice however, there are very few schemes that have been completed within the given schedule. The delay would be anywhere between 6 months to 2 years. Major reasons for delay during execution can be summarized as:

- Inadequate survey and investigations.
- Source found to be inadequate and a new source is to be studied and located. New source is also to be proposed if the first one is subjected to pollution.
- Resistance of the people to the scheme as a whole or to the selected location of the source as recommended by GSDA.
- Land acquisition problems.
- Resistance of the people to take up a scheme common for a group of villages, with an apprehension of other villages dominating and not allowing water to be carried further to a distant village.

- Resistance of the people to the choice of the pipe. They would prefer metal pipes and would not like asbestos cement pipes.
- Insistence on the construction of an elevated service reservoir in place of a ground reservoir proposed, or insistence to have a reservoir of larger capacity.
- Absence of smooth flow of funds, which is at times erratic.
- Lack of materials, particularly specials and fixtures.
- Designs required to be changed during execution.
- Failure on the part of contractor for several reasons.
- Failure of officers to take timely action against the erring contractors.
- Tendency of the contractors to carry out the easy items of work or paying items first and then try to avoid other items of work.
- Unworkable rates adopted in estimation.
- Terminating the contract of first contractor for various reasons, the major reason being delay in execution, and thereafter difficulties in fixing new agencies.
- Failure of structures during execution like jack wells, reservoirs etc.
- Increase in cost during execution for reasons such as excess quantities, extra items etc. and cost escalation during delayed implementation, which requires revised administrative approval of Government. This is delayed for several reasons, particularly inability to convince the Government of the validity of reasons for delay and cost escalation. The delay on this account could be anywhere in the range of 1 to 4 years.
- Lack of permission from Irrigation Department, particularly at mid level offices.
- Delay in obtaining permission for crossing of road, rivers and railways.
- Incompetence of the contractor and/ or inadequate financial resources on the part of the contractor.
- Delay in obtaining electricity connection.

In case of major regional schemes, apart from any of the above-mentioned reasons, there are a good number of cases where 50 to 60 per cent of the work is completed, part commissioning is also possible for some villages, but the scheme as a whole is required to be recast. Approval of the Government to the modified form and execution thereafter requires considerable time. Cases can be cited where the schemes have taken a period of 6 to 8 years for completion.

Financial Constraints

During the last two decades and over, the GoM has spent over Rs 6000 crores on rural drinking water projects. However, a huge gap can be seen in the availability of financial resources for both new investments as well as maintenance and operation of existing facilities. A large number of water supply schemes are not functioning due to poor O&M.

Maharashtra's resource requirements for the rural water supply and sanitation sector, based on 40-lpcd norm, could range from $3.7 to $4 billion over the next 10 years. The GoM expects to mobilize the resources from the Minimum Needs Programme, market borrowings, special Government of India (Go1)-GoM supported programmes (including ARWSP, SRP, TSC, Scarcity, and Swajaldhara) and external assistance from KfW. While on a broader fiscal front, GOM has launched a medium term fiscal reform programme with a focus on improving tax collection, containing growth in government spending, and enhancing efficiency of government expenditures, its ability to raise additional resources from the general budget to fill the existing gap remains significantly constrained.

In Maharashtra, as in most other states in the country, the state government's commitment to economic pricing of water is lacking. This has reduced the reliability of underground water sources and forced the use of more expensive surface water sources, which often involve pumping water over long distances. Both the capital and O&M costs of these RWS schemes are higher than that of simpler schemes (based on handpumps or gravity). As a result, rural people are unable or unwilling to pay for the services they receive. The services are, therefore, often unsustainable in the absence of significant and continued support from the government.

Reforms in the Water Sector

In common with other states there is little real understanding of the SRP-Swajaldhara beyond the fact that communities have to contribute 10 per cent of capital cost. A clear understanding of community development processes, involvement of communities in design and choice of scheme and the responsibilities that communities need to understand and accept is almost totally lacking. Moreover, with the experience of nearby villages having been covered with piped water supply schemes with huge Government investment, villages are expecting that their own problems will be solved in a similar manner and there is no need to accept the new principles involving community contribution.

The issue of sustainability is also very poorly understood; socially, technically and financially. The fact that habitations are being offered an opportunity to choose a sustainable system that will satisfy their needs as a one-off solution is being totally missed. The institutional support structure to facilitate this process is not in place and the state is poorly equipped to build capacity of the district, NGO and village stakeholders. These are common problems in all states implementing reforms.

Rural Sanitation

The Rural Sanitation Programme in Maharashtra has achieved impressive coverage status since 1996 under the Centrally sponsored Rural Sanitation Programme and the Minimum Needs Programme. The state has also been in the forefront in implementing community-based sanitation programs to promote "total sanitation" with a shift of focus from construction of latrines to changing people's habits and behaviour. The two government programmes in addition to the subsidized sanitation strategy were the Sant Gadge Baba Gram Swachatha Abhiyan (Clean Village Campaign) initially and the TSC adopted later based on the lessons from CVC (SSP-Local Governments lead in the Sanitation Campaign). This embodies a shift in policy thinking in the following manner:

- A focus on behavioural change of individuals rather than on construction of latrines
- Individual construction subsidies to community development rewards
- A shift in focus from targeting individuals and households to targeting the community
- Greater emphasis on personal hygiene and environmental sanitation as essential prerequisites for achieving total sanitation

As a part of this strategic move, the GoM proposes to discontinue financing or subsidizing construction of latrines for individual households. Instead, the new strategy focuses on eliminating "open defecation" through well designed IEC campaigns and community based incentives, supplemented by construction of sanitary complexes for women and in rural schools.

Sant Gadge Baba Sanitation Campaign Approach

Analysing the results of conventional sanitation campaign activities, mainly through subsidised toilet construction on a target achievement basis, the GoM strongly felt that a new approach was essential to avoid waste of valuable funds.

A state-wide sanitation campaign based on the "Clean Village" philosophy of Sant Gadge baba was developed. This entails villages competing in an annual "Clean Village" Campaign for a variety of prizes. The campaign is becoming a movement that has effected a social revolution in the attitudes to sanitation, both personal and community.

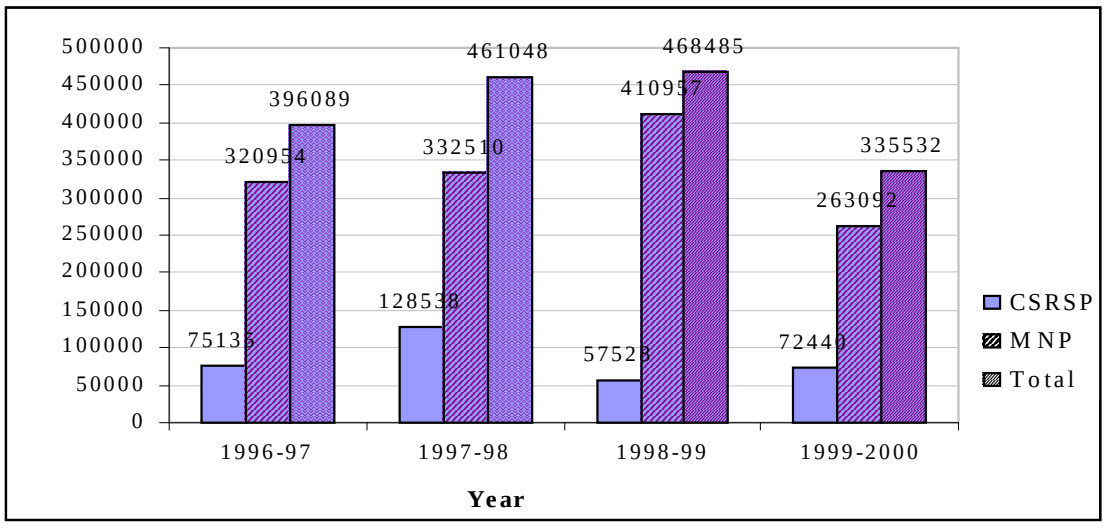
It is estimated that the public has created an estimated Rs 500 crores worth sanitation infrastructure since July 2000 as against a State and Central Government expenditure of Rs 40 crore on Sanitation IEC. This has been promoted largely through the Sant Gadgebaba Clean Village Sanitation Campaign. Works are being completed through shramdan and personal activity which has had a profound impact on the village environment. Such efforts directly contribute to improved sanitation and indirectly to the health and well-being of the community.

As far as coverage is concerned, 13 Districts of Maharashtra are covered under the Government of India supported TSC:

Sanctioned in the year 2000 - Dhule, Raigad, Nanded and Amravti
Sanctioned in the year 2001 - Chandrapur, Yevatmal, Sangli, Aurangabad and Ratnagiri
Sanctioned in the year 2002 - Jalgon, Nandurbar, Jalna and Ahmadnagar
Proposed - Pune, Nagpur, Akola and Satara

Figure 8 provides details of latrines constructed in the state during 1996-2000 under different schemes.

Figure 8: Number of Latrines Constructed in Maharashtra: 1996-2000



Source: Scott and JPS (2005), p 82.

Issues in Rural Sanitation

Health Issues: The prime indicator of impact of efforts on personal and environmental sanitation is the health of the rural population. In particular, the incidence of water borne diseases relates directly to poor sanitation and hygiene practices. The recent status of water borne diseases in the state is given in Table 6.

Table 6: Status of Water Borne Diseases in Maharashtra

Disease	1999-2000		2000-2001		2001-2002	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
Gastroenteritis	65067	68	32479	128	67295	119
Diarrhoea	1023194	18	1146395	31	1104841	16
Inf. Hepatitis	16159	289	13343	197	12066	142
Typhoid	13079	3	15438	5	13320	7
Cholera	348	1	1043	4	1326	3

Source: State Public Health Laboratory, 2002.

These figures only relate to cases reported at the Primary Health Centres and are, therefore, underestimates as many families visit local doctors or quacks for remedies. There appears to be little change in the overall health status even after a massive programme of subsidised toilet construction in the state.

***Latrine Use*:**

A number of field surveys have revealed that a high proportion of toilets are not being used for its designated purpose. Households without proper hygiene awareness have been using them as private bathing areas or have simply converted them into storage spaces. Table 7: 7 shows the variety of ways in which latrines are used, pointing to the failure of the sanitation awareness campaigns.

Table 7: Latrine Use in Rural Maharashtra: 2002

Number of districts evaluated	31
Number of Panchayat Samithis evaluated	230
Number of villages evaluated	1662
Latrines constructed during 1996-99	177471
Number of latrines examined	152029
Latrine regularly in use for defecation	86444
Latrine used as bathroom	39678
Latrine used for keeping cattle	797
Latrine used to keep fuel	4892
Latrines used for keeping food grains	59
Latrines used as shop etc	118
Latrines used for other purposes	934
Latrine not working after being in use	4305
Only women use in family for defecation	2094
Only used by guest for defecation	827
Only used in rainy season	1941
Never used after construction as latrines	9494

Not using for different reasons	93
Total number of latrines not in use	60370
Total number of latrines in use	91306
Percentage of latrine in use for defecation	56.86

Source: Scott and JPS (2005), p 87.

Even though Maharashtra's efforts at rural sanitation have been laudable, much needs to be achieved through greater participation and awareness generation in people. In terms of technology options, affordability issue needs key emphasis. An inclusive approach to rural sanitation would be most effective.

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