



Water and Sanitation in **Madhya Pradesh**

A Profile of the State, Institutions and
Policy Environment

WaterAid India
2005



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Policy Environment

Conducted by
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WaterAid India
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Acknowledgements

On the occasion of the World Water Day 2005, WaterAid India reaffirms its commitment to ensure access to safe water and effective sanitation for all.

We hope that this Review alongwith our ongoing projects in Madhya Pradesh will contribute to the efforts of improving the access and equity of water and address the serious concerns of sanitation.

Depinder S Kapur
Country Representative
WaterAid India

Abbreviations

bn	billion
CEPP	Child Environment Protection Programme
DPAP	Drought Prone Area Programme
IEC	Information, Education and Communication
mn	million
M & E	Monitoring and Evaluation
MP	Madhya Pradesh
NADEP	Nadep pit – A compost pit invented by a farmer popularly known as, 'Nadepkaka'
NGOs	Non-governmental Organisations
O&M	Operations and Management
PHED	Public Health Engineering Department
SC	Scheduled Caste
ST	Scheduled Tribe
TSC	Total Sanitation Campaign
UNICEF	United Nations Children's Fund
WAI	WaterAid India
WATSAN	Water and Sanitation
ZP	Zilla Parishad

Executive Summary

Madhya Pradesh – A Profile

Madhya Pradesh is a landlocked state that underwent a change in its boundary with the formation of the state of Chhattisgarh in November 2000. The state encompasses 9% of the land mass and 6% of the country's population. The low density of population in the state reflects the spread and sparse nature of the 1,26,310 habitations of the state.

While the state registered a growth rate of population that was higher than the national average, the urban areas within the state grew at a higher rate in comparison to the rural areas. With the addition of 24 towns during the past decade, the state is indicating a definite, though gradual shift towards urbanisation.

About 35% of the state's population belongs to either Scheduled Castes (SC) or Scheduled Tribes (ST) categories. These groups are concentrated in 19 and 13 of the 45 districts of the state, respectively.

Though agriculture is the main occupation providing employment to 71% of the work force, the contribution of agriculture to the state's domestic product is only 30.72% as against 43.27% of the tertiary sector, signifying low levels of productivity in agriculture.

Madhya Pradesh is one of the three least developed states in the country. With a substantial proportion of population below the poverty line (37.43%) the state has been increasing its spending in the social sector (38.77% in 2000).

Decentralised governance in the state has endowed Gram Sabhas with substantial powers to set in motion a system of participative democracy. The three-tier system of Panchayati Raj Institutions is in place to support and coordinate the activities of the Gram Sabha. Similarly, in urban areas powers have been delegated to the urban local bodies to plan for their own development.

Water as a Resource

Madhya Pradesh is dependent on rainfall for its water requirements that range from 60–120 cms in different regions of the state. The western (nine districts) and northern (five districts) regions are low-rainfall regions (less than 100 cms) of the state. During the decade 1992–2002, the state has had normal rainfall except for the three year period from 2000–2002. Over a much longer period 22 districts of the state have been declared as drought prone districts.

The amount of surface water available to the state has to account for the water to be made available for downstream states. The state encompasses drainage areas of five major river basins and can use 56.8 km³ of surface water. Thirty per cent of the surface water available in the state is stored in ponds and lakes and the remaining 70% in irrigation reservoirs.

The total Net Ground Water availability of Madhya Pradesh (1998) is 31093575.60 hectare metres. The state is currently exploiting 46% of the available ground water. Among the 48 districts, current ground water condition is semi-critical in 21 districts, critical in seven districts and over-exploited in eight districts.

Issues in Water as a Resource

- ▶ Variability in rainfall necessitates region-specific water use policy
- ▶ Despite being richly endowed with surface water there is too much reliance on ground water
- ▶ Evidence of conjunctive exploitation of ground water and surface water not found
- ▶ Presence of fluoride, salinity and iron will lead to adverse and irreversible health problems
- ▶ Lack of data on different demands for water, their quantum, and how they are currently being fulfilled

Under the Environment Protection Act, the Central Ground Water Authority had to issue notifications in six blocks and one urban area where the exploitation of ground water had reached alarming levels. In such areas, the new installations to exploit ground water was permitted only for drinking water purposes and that too with prior permission from the District Collector.

Fluoride, salinity and iron affect the quality of water in Madhya Pradesh. Fluoride contamination has been found in 22 districts, while 13 districts were found to be affected by salinity and eight districts by iron.

About 99% of the drinking water needs are being fulfilled with ground water and 90% of the ground water is being used for irrigation purposes.

Rural Water Supply

Nearly 60% of the habitations in the state are fully covered, 25% partially covered and 15% fall under the 'not covered category'. Thus 40% of the habitations in the state do not get

Issues in Rural Water Supply

- ▶ There is lack of critical data related to water supply and demand. On the supply side slippage of habitations from fully/partially covered to partially or not covered category is not available. The data gaps on demand side-different demands for water, seasonality of demand, cost of procuring water, notions of quality and levels of satisfaction, etc. are not available. In the absence of this data it is difficult to assess how the PHE department plans to shift from a supply driven approach to a demand driven approach.
- ▶ There are multiple factors responsible for increasing stress on quality of water – increased use of fertilizers, allowing untreated water to flow into ground and surface water, increased exploitation of ground water, etc. The current strategy of the government does not seem to address the issue of water quality in a holistic manner.
- ▶ There is lack of convergence among departments, especially PHE and Health.
- ▶ A large proportion of households depend on sub-surface water (dug wells) for fulfilling their drinking water needs.
- ▶ The main approach to provision of drinking water is habitation-centric. This approach does not dwell on issues of source sustainability or on achieving an optimal mix of ground water and surface water for fulfilling the demand for water by the communities.
- ▶ The fact that a substantial proportion of piped/spot sources are not functioning on account of non-payment of electricity dues and non-repair of motor pumps indicate that the water scheme was/is not properly managed.

adequate supply (40 lpcd) of water. The proportion of not covered habitations for the districts varies from 3% to 51%.

About 48% and 36% households get water from handpumps and dug wells respectively. Only 11% of the households get piped water. Moreover 13% and 18% handpumps and piped water schemes respectively were found to be non-functional. The main reason being the decrease in water level followed by non-payment of electricity dues and break down of pumps.

Only 14% of the rural households in the state are able to access the water source within the premises of their house. Of the remaining households two-thirds have the water source at a distance of more than 500 meters from their house.

The data on water quality with respect to iron, fluoride and salinity is available. However, the information related to other contaminants like nitrates and, arsenic is not available. The increase in use and intensity of fertilizers indicate a likelihood of the presence of other contaminants in water as well.

There has been an increase of 92% in cases of diarrhoeal diseases, 3.2% in jaundice cases and 162% in meningitis cases. The Department of Health has identified 15% villages (8,536) in the state as problem-affected villages.

Rural Sanitation

Only 9% and 19% of the households in rural areas of the state have private latrines and are connected with waste water drainage respectively. The districts with poor coverage for private latrines are Sidhi (2%), Rewa Shahdol and Dindori (4% each).

The sanitation policy in the state is guided by the Total Sanitation Campaign that includes the construction of private latrines, community sanitary complexes, toilets in schools and Anganwadi, NADEP pits for solid waste disposal and drainage for liquid waste.

Issues in Rural Sanitation

- ▶ The coverage of households with respect to construction of private latrines is extremely low across all regions and districts of the state.
- ▶ The main premise of the governmental intervention is that provision of facilities will lead to a behavioural change within the community. As a result there is an emphasis on construction whether they relate to private latrines or community sanitary complexes or to disposal of solid and liquid waste.
- ▶ Behavioural changes that lead to better sanitary and hygiene practices have not been accorded the importance they deserve in the policy.
- ▶ The strategy does not relate the water availability with the construction and use of sanitary facilities.
- ▶ There is no systemic evidence that indicates that the efforts of different departments converge at the village level to provide resources for construction of latrines, NADEP pits and drainage.

Institutions in Rural WATSAN

Panchayati Raj Institutions and PHE Department are the two major institutions that are expected to play a complementary role and provide for water and sanitation services in the state. In practice, however, the PHE department performs most of the functions with minimal consultation with the Panchayat institutions. At the village level these consultations are largely with the *Sarpanch* and at the *Zilla* and *Janpad* levels, these are with the heads of these institutions.

Issues in Institutions in Rural WATSAN

- ▶ Effective decentralisation of water and sanitation has not taken place in the state. There has been transfer of power without consequent transfer of funds and functionaries.
- ▶ The demand driven water and sanitation approach can only work when the powers given to communities are appropriately backed with technical and financial support.
- ▶ PHE department is primarily a works department. It does not have a cadre of extension workers to work with communities.
- ▶ The elected representatives are generally ill informed about the schemes and programmes and do not have adequate skills to undertake community-based planning on water and sanitation.
- ▶ In the absence of regular meeting of the standing committees in the Panchayat institutions most decisions in these institutions have come to rest with the President/ Sarpanch. This has led to centralisation within institutions of decentralised governance.

Non-government approaches

Voluntary effort in the state has been largely restricted to implementation of watershed programmes. The programme has been well supported by the state government and has covered an area of 3.5 mn hectares in 7,500 villages.

There has not been any noteworthy effort in sanitation by NGOs in the state. UNICEF has formulated and implemented a Child Environment Protection Programme (CEPP) in three pilot districts of the state. The programme has demonstrated a community-based and demand-driven approach. Based on its experience, UNICEF has moved from a role of facilitating implementation to influencing the government.

Issues in Non-government approaches

- ▶ There has been a general failure on part of the voluntary sector in the State to recognise Water and Sanitation as critical sub-sectors for interventions.
- ▶ The NGOs that were part of the UNICEF CEPP Project have not been recognised by the state government as having specific sector experience, nor has UNICEF pushed for the inclusion of these organisations as specialist organisation while developing plans under Swajaldhara and TSC.
- ▶ There is a general lack of understanding among the organisations about the core issues in sanitation and hygiene practices.

Financing

The state government is securing funds from centrally sponsored schemes. The scope for community contribution is only in the case of interventions related to sanitation. The budget for water and sanitation is Rs 1.78 bn (2004–05). Of this 77% is for water, 18% for sanitation and 5% for administration costs.

Policy Environment

The policy environment with respect to WATSAN is informed by the Water Policy and the Health Policy of the state government. The former accords priority to drinking water and makes the Water Resource department as the nodal agency. The health policy lays down targets to be achieved by 2011. Provision and access to safe drinking water do not figure in these targets.

Issues in Financing

- ▶ There are no state government schemes or programmes that have been formulated and funded from its own resources.
- ▶ No contribution from the community and virtually free water supply to the consumer will not promote an understanding of water scarcity among the people and motivate them to use water economically.
- ▶ The low level of priority accorded to sanitation is reflected in the budgetary provisions for the same by the PHE department.

Urban Water and Sanitation

Urbanisation in Madhya Pradesh

- ◆ The proportion of urban population and its rate of growth signify that the state is rapidly gaining an urban character, a fact that assumes significant importance for making provisions for water and sanitation in the state.

Issues in Policy Environment

- ▶ The existence of policy provides an opportunity for a dialogue between civil society and the government with respect to the policy framework as well as to plans and strategies formed within the policy.
- ▶ The Water Policy falls short of outlining a strategy for its implementation.
- ▶ The Water Policy recognises the importance of water but does not address the concerns of the poor and gender issues, issues of sustainability etc. do not find space within the current framework.
- ▶ The Water Policy does not create space for participation by civil society as an actor in the development of policy and planning for water.
- ▶ There is no mention of determinants of health in the proposed Health policy of the state government. This downplays the ability of the communities to take measures to improve their health status by improving the status of determinants.

- ◆ The urban landscape in the state is dominated by a large number of small and medium towns. The trend indicates that the medium-sized towns have faced a rapid growth in the past decade and these towns further are likely to be stretched in order to make provisions for water supply and sanitation services to their inhabitants.
- ◆ The urban centres in Madhya Pradesh do not necessarily represent islands of economic prosperity. These centres are characterised by poor living conditions with a substantial proportion of population unable to meet their daily calorie requirement.
- ◆ There has been a long history of the functioning of urban local bodies in the state and with the state government modifying its laws to conform to the provisions of the 74th amendment, there is an opportunity to work with a legally constituted and democratically elected body in urban areas that has the mandate for ensuring services in water and sanitation to its inhabitants.

Water Supply Management

The 337 urban local bodies in the state are primarily dependent on ground water for their water requirement of which 64% local bodies receive only ground water and the rest 25% receive both ground and surface water.

The current policy of the government is to go farther to cater for the incremental demand for water in urban areas. The immediate implications of this strategy are :

- ◆ Increase in cost of water supply for the urban local body
- ◆ The complimentary activities of protecting the water source and installing recharge structures does not form part of the implementation
- ◆ Does not take in to account the need for water in a rural-urban continuum
- ◆ Regional variations in availability of water, location specific requirements of urban areas, identification of urban centres with high rate of growth, etc. do not figure in either policy or plans of the state government.

As a result, the best that the local bodies and the district administration are able to achieve is managing water scarcity crisis during summer season every year. There is no medium or long term strategy that addresses the issue of source sustainability.

The state government has initiated measures for recharging of ground water through the construction of rain water harvesting structures. The Land Development Rules have been modified stipulate mandatory construction of rain water harvesting structures for plots with size more than 250 sq. m. Till March 2004, the local bodies had granted building permission to 18,256 cases with provision of rain water harvesting structures.

With respect to availability of water, 93% of the towns in the state have less than 70 lpcd as against a minimum supply of 135 lpcd. The data related to supply of water indicates that only 63% of the urban centres receive water daily, while 28% towns receive water supply once in two days and 9% towns once in two or more days.

The water distribution system and water charges are under the control of the urban local body. In all the local bodies in the state the water charges are un-metered.

For slum settlements, there are no specific investments made for water distribution by the PHE Department. The local body connects the slums with the main pipeline and creates a

Issues in Urban Water and Sanitation

- ▶ The rate of urban growth rate in the state – both in terms of population and increase in number of urban centres indicates that the state is steadfastly acquiring an urban character. Hence as a sub-sector urban water and sanitation is assuming importance in the state.
- ▶ There is inadequate supply of water in urban areas. All the urban centres face water crisis during summer months.
- ▶ The current strategy for providing incremental supply of water in the urban areas is not sustainable as it does not address the prime need for source sustainability.
- ▶ Un-metered water supply in urban areas. The regime of fixed charges is inequitable and also does not promote conservation from the side of the consumer.
- ▶ Need of urban poor not addressed.
- ▶ Lack of role clarity among different institutions responsible for water and sanitation in the state.
- ▶ Lack of institutional convergence in designing and implementation of water related schemes in urban areas.
- ▶ Untreated waste is released into surface water bodies due to the absence of sewerage systems in urban areas.
- ▶ No segregation of solid waste from the point of generation to final disposal.
- ▶ The practice of manual scavenging is still prevalent in the state despite the claims to the contrary by the state government.

spot source or invests in installing a handpump within its vicinity. The water supplied is free and no charges are collected from people living in slums.

The census figures indicate a very poor coverage of urban population through piped water supply and inadequacies in proximity of source. Both these factors point towards the insufficiency of water availability and a high degree of dissatisfaction by the consumer. These factors also account for poor recovery of water charges by the urban local body.

Urban Sanitation

Liquid Waste

In Madhya Pradesh none of the cities are fully covered by a sewerage system. The larger cities are partially covered by a sewerage network but the waste water is not treated before being finally discharged, usually into rivers.

Only 76% of the urban households in the state have the facility of being connected to either a closed or an open drain. The districts in the Bundelkhand region, namely, Damoh, Chhatarpur, Panna, Satna, and Rewa; and districts in the southern tribal belt namely, Shahdol, Sidhi, and Umaria have a high proportion (more than 35%) of households who are not connected with drains for the disposal of waste water.

Septic tanks have been installed in most urban centres. However, only 11–13% of the septic tanks are in working condition.

There is wide prevalence of manual scavenging in different cities of the state.

Solid Waste Management

The State Pollution Control Board is the nodal agency for providing technical clearances to the schemes for solid waste management formed by respective local bodies. All the 337 local bodies have applied for authorisation to the Board. So far 116 bodies have received the authorisation and 65 bodies have either land or have been allotted land for land-fill sites. The remaining local bodies are in the process of either identifying appropriate land or getting the identified land allotted to them.

Private Latrines

Only 68% of urban households have private latrines within the house. Of these 60% have water closet latrines. The districts with higher proportion of households with private latrines are districts that have a high degree of urbanisation – Bhopal, Indore, Ratlam, Ujjain and Gwalior. The districts that have a poor coverage of any type of latrines are in the Bundelkhand region – Tikamgarh, Chhatarpur, Damoh, Panna, Satna, Rewa and Sidhi. The tribal districts, in the southern part of the state, also have a poor coverage of households with private latrines – Dindori, Umaria and Balaghat.

Institutional Framework

Powers and responsibilities have been transferred to the urban local bodies under the State Municipal Act. However, the functionaries of the PHE department have not been transferred. The net result of this half-hearted decentralisation is that, there are in effect, three institutions – the urban local body, the PHE Department at the state level, and a section within the local body responsible for water and sanitation.

The dual control over the PHE section within the local body dilutes the responsibility and accountability with respect to ensuring supply of water and maintenance of water installations in the city. During shortages, the local body and PHE Department trade charges on their respective inefficiencies.

Recommendations

In terms of geographical targeting, water has been used as a parameter to determine geographical priorities, since the coverage of sanitation is extremely low in the state and issues related to sanitation are generic and global in nature. On the basis of water as a

parameter, the western region of the state and the districts comprising the southern tribal belt, emerge as areas requiring intervention to address the issue of over-exploitation of water, problem of water quality and deficiencies in supply of water. WAI needs to develop strategies that are specifically focused on the regional issues in these areas.

Programming strategies of WAI should be focused in developing strategies that lead to successful demonstrations in the field, intervening to strengthen the institutions involved in provision of water and sanitation, undertaking advocacy for replication of successful strategies and for influencing changes and policies related to water and sanitation in the state. The research-based activities also form part of the programming strategies, in addition to providing support to on-going field effort, to make the dialogue on policy development more credible.

WAI can enter into a partnership with voluntary agencies and the local bodies in urban and rural areas. In the absence of a civil society network on water and sanitation, WAI needs to facilitate formation of such a forum and provide proactive support for the forum to take advocacy with policy and decision makers in the state. WAI can also partner with the state government to provide support on soft components like mechanism to develop community-based plans, IEC and M&E activities.

Thematically sanitation should include ways of generating demand for and use of private latrines, household connectivity to drainage and disposal of solid waste generated from the households. In case of water accessibility and adequacy, the notion of clean and safe drinking water needs to be addressed along with measures for water conservation and mechanisms where the community is able to plan, design, implement and maintain water schemes in their areas.

Madhya Pradesh – A Profile

The state of Madhya Pradesh came into existence on 1 November 1956 with the amalgamation of the then existing states of Bhopal, Madhya Bharat, Mahakoshal, Vindhya Pradesh and Chhattisgarh. The boundaries of Madhya Pradesh underwent a change when the state of Chhattisgarh was carved out from Madhya Pradesh in November 2000.

A landlocked state, Madhya Pradesh is bound by the state of Uttar Pradesh in the north, Bihar in the north-east, Chhattisgarh in the east, Andhra Pradesh in the south, Maharashtra in the south-west and Gujarat and Rajasthan in the west.

At present, Madhya Pradesh accounts for 9% of the landmass of the country and is home to 6% of the country's population. There are 1,26,310 habitations in the state spread across 52,143 villages (including 923 forest villages) and 394 towns. The low density of population in the state (196 persons per sq. km) reflects the spread and the sparse nature of habitations in the state.

During 1991–2001, the population of the state had registered a growth rate of 24.34% which was higher than that of the country (21.35%). However, within the state the growth rate of population was higher in urban (31.19%) than in rural areas (22.02%). Though 73.6% of the state's population currently resides in rural areas, yet the trend seems to indicate a gradual and a definite demographic shift towards urbanisation in the state. This trend is further supported by the fact that there has been an addition of 24 new towns in MP during the past decade, representing a growth of 6% in towns in the state.

The SC and ST population of the state is concentrated in few regions of the state. There are 19 districts in the state where the proportion of SC is higher than the state's average. Similarly, there are 13 districts where the proportion of ST is higher than the state's average. In case of ST, 89 out of 313 blocks in the state, are classified as Tribal Development blocks.

Agriculture accounts for 48.01% of land-use in the state and provides employment to 71.6% of the work force. However, the contribution of primary sector in the state domestic product is only 30.74% (constant prices 1993–94) which is well below the share of tertiary sector at 43.27% signifying the low levels of productivity in agriculture.

Though proportion of population below poverty line in the state came down from 42.52% in 1993–94 to 37.43% in 1999–2000, it is considerably higher than the national average of 26.1%. In Madhya Pradesh, the proportion of poor is higher in urban areas as compared to rural areas – 38.44% and 37.06% respectively.

In terms of Human Development Indicator for selected 15 states in the country, Madhya Pradesh has been able to improve its rank from 14 to 12 between 1981 and 2001, yet it is one of the three least developed states of the country.

The state has witnessed increased government investment in the social sector. The plan expenditure on social services was 23.64% in 1994–95, which increased to 38.77% in 1999–2000.

Table 1
Madhya Pradesh – Fact Sheet

Area (in '000 sq. km.)	308
Population (2001)	60385118
(a) Per cent Rural Population	73.6
(b) Per cent Urban Population	26.4
(c) Per cent SC Population	19.9
(d) Per cent ST Population	15.4
Decadal Growth Rate (1991–2001)	24.3
Sex Ratio	920
IMR	82
Districts	48*
Blocks	313
Gram Panchayats	22,039
Villages	52,143
Municipal Corporations	14
Municipal Councils	86
Nagar Panchayats	237

* Three new districts were created in 2003. The data in the current report however pertains to 45 districts as the data has not been disaggregated for the new districts.

In Madhya Pradesh, each village in the state has its own Gram Sabha that is recognised as a body corporate. The Gram Sabhas have been endowed with substantial powers and functions to usher in the processes of self-governance through a model of dynamic participative democracy. The three-tier Panchayati Raj system – at the village, block and district level has been established to coordinate and support the activities of Gram Sabha. Similarly, in urban areas powers have been delegated through the legislation to Municipal Corporations, Municipal Councils and Nagar Panchayats.

Map 1
Districts of Madhya Pradesh with concentration of SC and ST



Water as a Resource

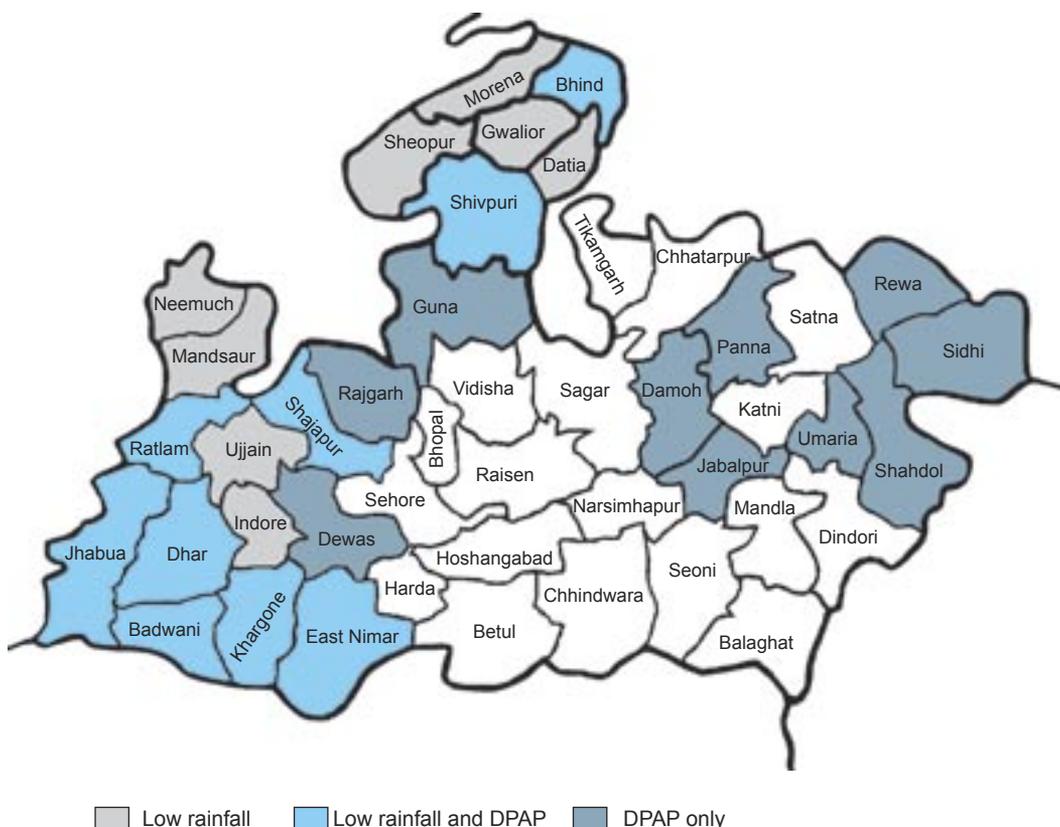
Rainfall and Drought

Madhya Pradesh is dependent on rainfall for its water requirements. Climatically the state is dependent on the hot torrid zones, South-west and North-east monsoon. The total annual rainfall in the state varies from 60 cms, over the extreme north and western parts, to 120 cms over the central, eastern and southern parts of the state.

The two regions in the state receiving less than 100 cms of normal rainfall are the western and the northern regions. The western region comprises nine districts (culturally referred to as Malwa region) and the northern region comprises five districts (referred to as Chambal area). The rainfall data from 1992–2003 for the state reveals that, except for the three-year period from 2000–02, the state has had adequate rainfall (above 75% of the average rainfall). Except for Tikamgarh and Rajgarh, the districts had by and large received rainfall above 75% of their normal rainfall.

However, taking into account a much longer time period, there are 22 districts that have been declared as drought-prone districts. Most of the western, southern and eastern regions of the state were classified as drought-prone.

Map 2
Districts with Low Rainfall and Drought-Proneness



Surface Water

The State has an estimated surface flow of 8.15 mn hectare metres (at 75% dependability), of which 5.68 mn hectare metres is usable by the State and remaining 2.47 mn hectare metres is left for use of neighbouring states. After considering the reservation of surface water for downstream states and after considering the annual practicability it is estimated that the state can utilise approx. 56.8 km³ of water annually from the surface sources and about 34.5 km³ from the ground water sources.

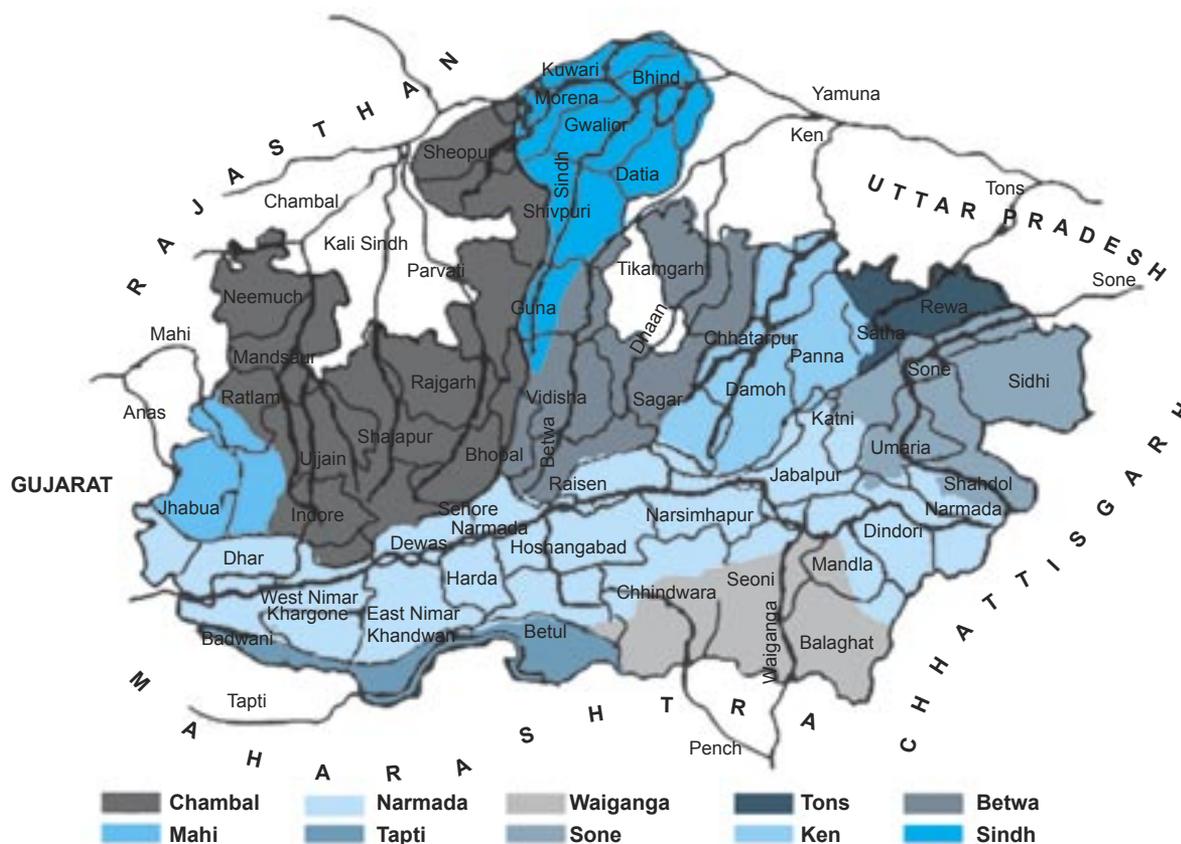
Madhya Pradesh is a plateau state from which many rivers originate and flow in different directions. The rivers Narmada, Chambal, Betwa, Son, Mahanadi, Tapti and Mahi originate from the state. These rivers are rain-fed and contribute to the water flow of the Ganga in the north, Narmada and Tapti in the west, and to the tributaries of Godawari in the south.

The drainage area of the five river basins is shown below:

Major Basin	Catchment Area (sq km)		Per cent area in MP
	Total	In MP	
Ganga	10860000	188824	1.74
Narmada	98796	85930	87
Tapti	65145	9804	15
Mahi	34543	6695	19.4
Godawari-Wainganga	312812	16747	5.35

Thirty per cent of the surface water available in the state is stored in ponds and lakes and the remaining 70% in irrigation reservoirs. In terms of utilisation the state is currently utilising only 49% of the available surface water.

Map 3
River Basin Map of Madhya Pradesh



Ground Water

The total Net Ground Water availability of Madhya Pradesh (1998) is 31093575.60 hectare metres of which total current Ground Water Draft is 1437520.00 hectare metres. The state is currently exploiting 46% of the available ground water. On 70% dependable yield, ground water usage is around 66%.

Among the 48 districts of the state, current ground water condition is safe in 24 districts. In 21 districts (38 blocks), the ground water condition is in a state of semi-criticality; in seven districts (12 blocks) it is critical and in eight districts (17 blocks) it is over-exploited.

In six blocks, the state of groundwater exploitation has reached alarming levels that the Central Ground Water Authority has notified these blocks including one urban area under the Environment Protection Act. In these areas, the new installations to exploit groundwater can only be done for drinking water purposes (with prior permission from the District Collector).

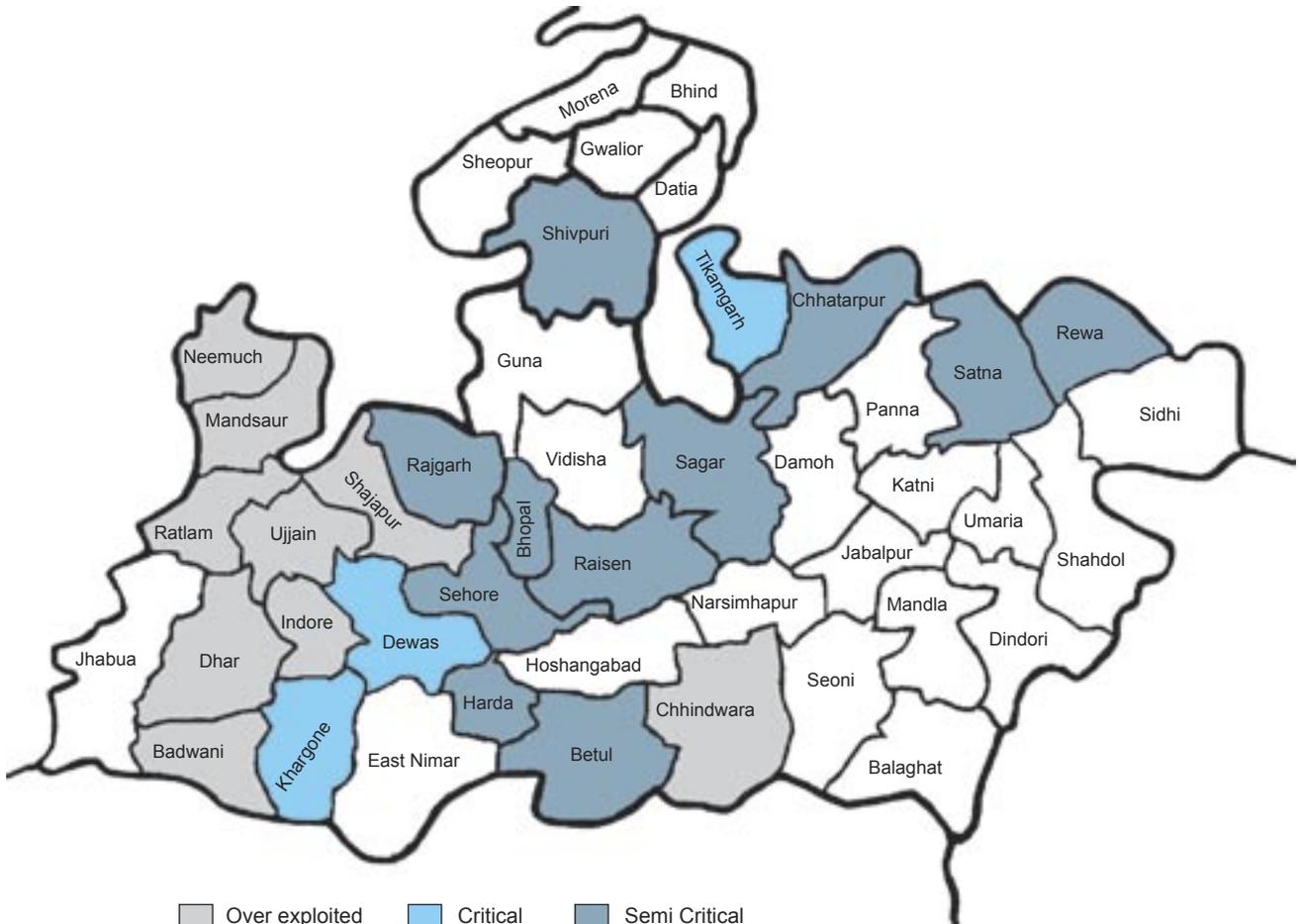
In terms of geographical spread the over-exploitation of groundwater has taken place in the western region of the state. This region is also characterised by low rainfall. Alarms have been sent on the state of groundwater in the central and north-eastern regions of the state where the rate of exploitation is more than 70%.

Water Quality

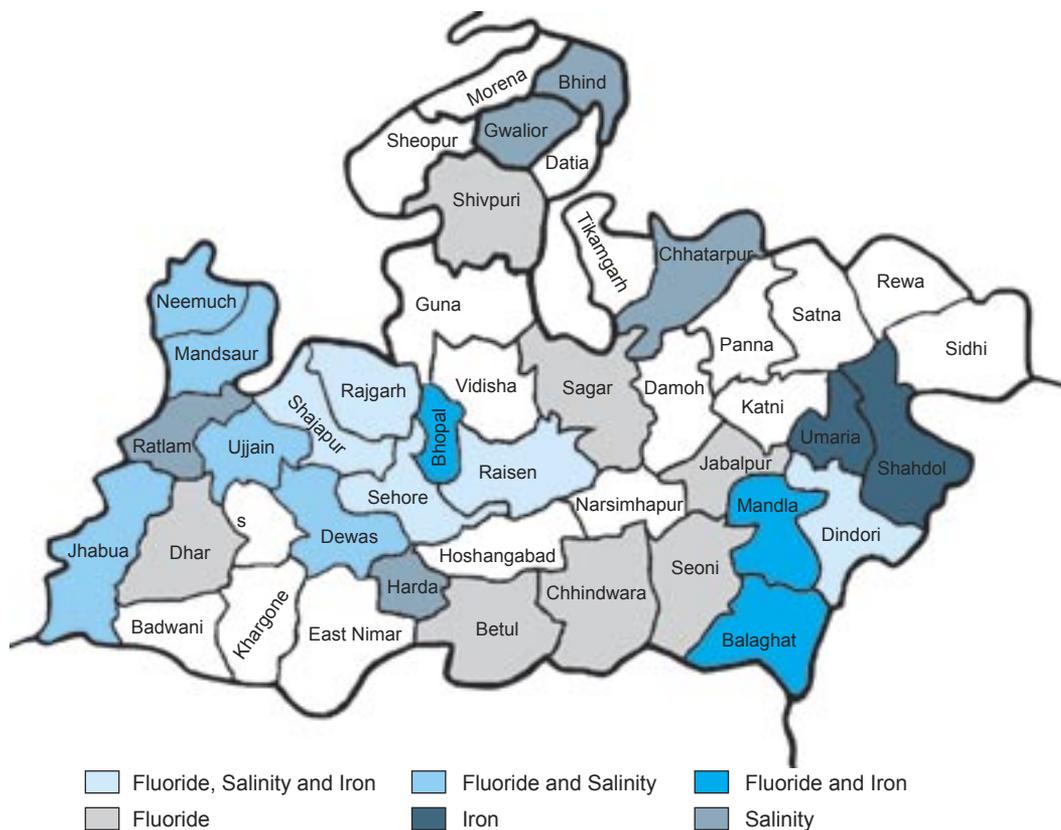
Fluoride, salinity and iron affect the quality of water in Madhya Pradesh. There are 4,018 villages with 7,746 sources in 22 districts that have been affected by fluoride; 562 villages with 1,269 sources in 13 districts that have been affected by salinity; and 856 villages with 1,449 sources in eight districts that have been affected by iron.

Map 4

Ground Water Development Status in Madhya Pradesh



Map 5
Districts Affected by Problems of Water Quality



Water Use Pattern

There is no data available at the state level to identify demand for water for different uses. However, it is clear that 99% of the drinking water and 64% of the irrigation needs are being fulfilled by the groundwater.

In terms of use, 90% of the groundwater is being used for irrigation and 10% of it is being used for drinking water purposes.

Issues – Water as a Resource

- ◆ The variability in rainfall across regions in the state necessitates a water use policy that is region-specific and takes into account the demand for and the availability of water in each region.
- ◆ Despite being richly endowed with surface water the state relies excessively on exploitation of groundwater for irrigation and drinking water purposes.
- ◆ The over exploitation of groundwater is increasing the cost of procuring water and is also adversely affecting the availability of ground water for future use and its quality.
- ◆ Presence of fluoride, iron and salinity in ground water is a cause for serious concern. It makes the water unsafe and has adverse and irreversible effect on health.
- ◆ There is lack of data and information available on the different sources of demand for water in the state, their quantum and how this demand is being fulfilled.
- ◆ There is no evidence of conjunctive operation of ground water with surface water.
- ◆ Among the ecological regions, the Malwa region needs to be prioritised. It is this region that suffers from shortage of rainfall (less than 100 cm); has 16 blocks (of the 17 in the state) where groundwater is over exploited; and has six (of the 21) districts where fluoride has been detected. This region comprises districts of Indore, Ujjain, Shahjapur, Mandsaur, Neemuch, Ratlam, Dhar, Jhabua, Barwani, West Nimar and East Nimar.

Water and Sanitation in Rural Areas

Water Supply

Coverage

The PHE department monitors the coverage data in terms of habitation. According to the Fresh Habitation Survey of the department (2003), there are 126310 habitations in the state. In terms of coverage 60% of them have been fully covered and 25% have been partially covered. The proportion of not covered habitations is just 15%.

The districtwise coverage data reveals that only one district, namely, Bhopal has been entirely covered. No habitation in this district has been enumerated as not covered. In the remaining 47 districts (including the newly formed districts) the percentage of not covered habitations varies between 3% and 51%. The latter proportion is for Dindori district where only 49% of the habitations were found to be either fully or partially covered.

Availability

The norms for rural water supply in the state are as follows:

- ◆ Provision of a minimum water supply of 40 lpcd.
- ◆ The water source should be within a radius of 1.6 kms in plains and 100 m in hilly area.
- ◆ There should be one handpump or standpost for a population of 250 persons. For hamlets with population less than 250 and without access to safe drinking water then a handpump/stand post will be provided for the hamlet.
- ◆ Settlements with population less than 100 persons comprising of either SC or ST will be covered under the Accelerated Rural Water Supply Programme (ARWSP).

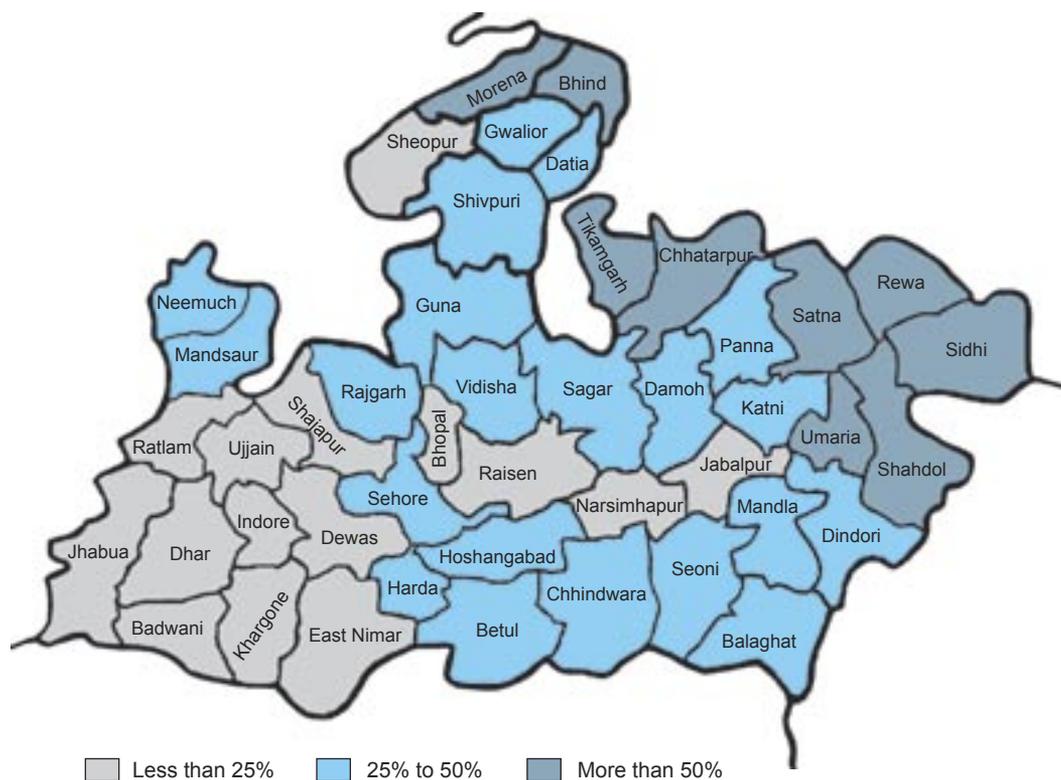
The data for coverage, partially indicates the adequacy of water supply to habitations. The habitations that are fully covered are those that have the provision of 40 lpcd for the population of the habitation, whereas the habitations which are categorised as partially and not fully covered, are those where even water supply of 40 lpcd has not been ensured.

Source

According to Census 2001, 48% of the households in the state are getting water from handpumps for the greater part of the year. The second most important source of drinking water for the rural households are wells where 36% of the households in the state draw water for domestic use. Tap water is available to 11% of the households and 3% of the households are getting water from tubewells. In terms of surface water sources 3% of households in the state fulfill their water requirement from rivers, canals or springs.

Handpump is the major source of drinking water in 32 of the 45 districts of the state. In the remaining 13 districts, wells are the major source of drinking water for rural households. These districts are clustered in the Chambal region (Bhind and Morena), Bundelkhand region (Tikamgarh, Chhatarpur, Panna, Satna, Rewa, Sidhi and Sagar), and Neemuch and Madsaur districts of the Malwa region and in Shahdol and Umaria districts of the Mahakoshal region of the state.

Map 6
Districts with Proportion of Household by Source of Water



Khandwa, Khargone and Neemuch are the top three districts in terms of coverage of households getting tapped water (42%, 32% and 31% respectively). It is interesting to observe that these districts fall within the low rainfall regions. Among these, Khandwa and Khargone are drought prone districts as well. The state of ground water is over-exploited in Neemuch and critical in Khargone. Moreover Neemuch also has the problem of water quality (fluoride and salinity).

As stated earlier 99% of handpumps, spot source and piped water depend on ground water. There are 335,000 handpumps and 7,690 spot/piped water sources in rural areas of the state. However, 13% of the former and 18% of the latter were found to be non-functional. The main reason for the failure of handpumps is the decrease in water level (59%). Among the piped/spot sources the reasons for failure were due to the water sources becoming dry (44%); non payment of electricity dues (20%) and break down of pumps (18%).

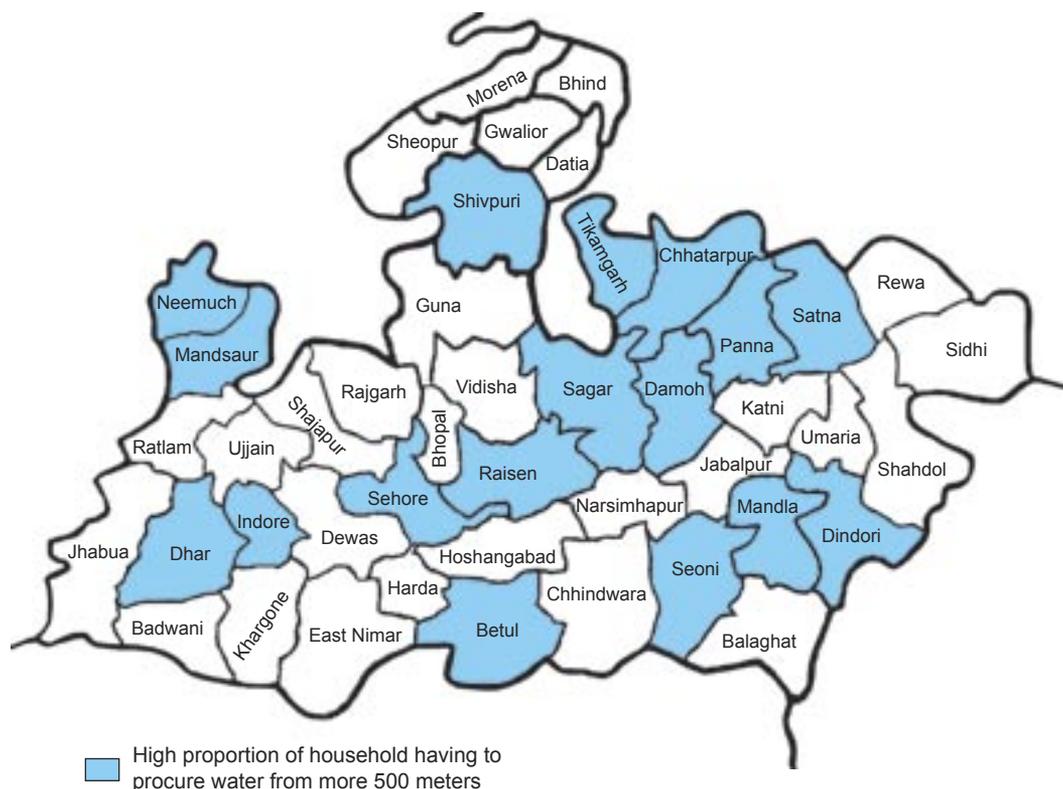
Distance

The distance of water source from the households has also been computed by the Census 2001. According to this information there are only 14% of the households that have drinking water source within their premises. A substantial proportion, i.e, 59% of the households have water source near their premises (less than 500 meters). The remaining 27% of the households have a water source which is more than 500 meters away.

There are 16 districts where the proportion of households that have to fetch water from a distance exceeding 500 meters, is more than the state average. These districts form regional clusters in the Bundelkhand region (Tikamgarh, Chhatarpur, Sagar, Panna and Damoh); Malwa region (Indore, Neemuch, Mandsaur and Dhar); Shivpuri in Chambal division; central region of the state (Raisen and Sehore) and the southern tribal belt (Betul, Seoni, Mandla and Dindori). In fact in Dindori which has 51% of the habitations not covered, 43% of households have to travel a distance exceeding 500 meters to get water.

Map 7

Districts with High Proportion of Households with Water Source more than 500 meters from the Household



Quality

The data on water quality with respect to habitation is not available. State level and district level figures for water quality in terms of number of villages and source are available. According to these figures there are 1,545 villages with 2,767 water sources that have been identified as having fluoride contamination. In addition, there were 583 villages with 1,052 sources that were found to be contaminated with iron.

The data on nitrate, arsenic or heavy metal contamination of surface and ground water is not available at present. However, the trend in fertilizer consumption (a major source for nitrate contamination) provides an indication of the stress on water quality on account of nitrate pollution. The fertilizer consumption in the state increased from 774 thousand metric tonnes to 1,081 thousand metric tonnes during 1993-99. The per hectare of fertilizer consumption increased from 35-51 Kg per hectare between 1993-99 (before bifurcation of the state). This indicates that not only was there an increase in fertilizer consumption *per se* but the intensity of its use had also increased at the same time.

Another indicator to assess water quality is the trend of water-borne diseases in the state. The available data pertains only to government hospitals and is recognised to be grossly under reported. Nevertheless, assuming that it has been under reported in the base as well as the current year, the trend indicates that there has been an increase of 92% in diarrhoeal diseases (including gastroenteritis, cholera and dysentery) between 1998-2003. The cases of jaundice increased by 3.2% and that of meningitis increased by 162%. The Department of Health has identified 15% villages (8,536) in the state as problem-affected villages. The department has constituted a combat team to deal with the health-related problems in these villages.

The problem districts with respect to the above mentioned diseases according to the Department of Health are:

Health Department Fact Sheet

District	Diarrhoeal diseases	Jaundice	Meningitis	Problem Villages
Jhabua	✓	✓		68
Dhar	✓			117
Sheopur	✓			81
Shivpuri	✓			147
Seoni	✓		✓	91
Mandla	✓			196
Dindori	✓			174
Rewa		✓	✓	2379
Sagar		✓	✓	173
Ujjain		✓		46
Satna		✓		150
Betul		✓		211
Katni		✓		135
Barwani			✓	168
Hoshangabad			✓	157
Damoh			✓	76
Ratlam			✓	137

Together these districts account for 53% of the problem villages in the state. Though the Department of Health has formed combat teams, it is pertinent to note the manner in which these teams have been formed across districts. For example, there are 55 villages that have been identified as problem villages in Bhopal district. There are 18 combat teams to respond in the district (approx. 3 villages per team). As against this there are 11 combat teams for the 211 villages of Betul (approx. 19 villages per team).

The Department of Health has undertaken an exercise and has identified problem villages and is monitoring data related to water-borne diseases. Similar exercises are conspicuous by their absence in the case of the PHE Department. The department is neither relating the data collected by the Health Department nor does it monitor the water quality in terms of its impact on people. The PHE Department is unidimensional in its approach, namely, treating water as a resource and as a chemical agent devoid of its social and economic implications.

Water Demand

The data related to sources of water actually used by the households, i.e, availability, quantum and impact of seasonality, different demands for water by households, dependence on drinking water for miscellaneous activities like bathing, etc., cost of procuring water, the level of satisfaction in terms of water quality, etc. are not available at the state level. The PHE department is too pre-occupied with making adequate provisions for safe and clean drinking water.

The lack of data at the state level restrains one from drawing conclusions regarding the levels of demand, the demand-supply gap, and also used by people coping strategies used by people in times of stress.

Issues in Rural Water Supply

- ◆ There is lack of critical data related to both water supply and water demand. In the case of the former the data does not reveal the proportion of fully/partially covered habitations slipping to partially or not-covered categories. Similarly, coverage does not imply adequate availability of water.
- ◆ The data gaps on demand side are more glaring. There seems to be a lack of understanding within the PHE department on this issue. In its absence it is difficult to assess how the department plans to shift from a supply-driven approach to a demand driven approach.

- ◆ Water quality in the state is increasingly coming under stress. This is on account of a number of associated factors – increased use of fertilizers, allowing untreated water to flow in to ground and surface water, increased exploitation of ground water, etc. The current strategy of the government does not seem to address the issue of water quality holistically.
- ◆ There is lack of convergence among departments, especially PHE and Health. The product of the former as a determinant of the latter has not been recognised by either of the departments.
- ◆ A large proportion of households depend on sub-surface water for fulfilling their drinking water needs as is exemplified in the proportion of households dependent on dugwells for a greater part of the year.
- ◆ The main approach to the provision of drinking water is habitation-centric. The norms and the coverage data is collected and used for monitoring at the habitation level. The Census data on the other hand is collected at the household level and provides information on the type of source and the distance of source from the household. The latter data is however not used in determining policies (norms for water supply) nor in preparation of plans.
- ◆ The habitation-centric approach does not dwell on issues of source sustainability or on achieving an optimal mix of ground water and surface water for fulfilling the demand for water by the communities. Given the fact that a substantial proportion of sources are not functioning on account of their having gone dry, source sustainability is a problem that needs to be addressed at the policy level.
- ◆ There are issues related to management as well. The fact that a substantial proportion of piped/spot sources are not functioning on account of non-payment of electricity dues and non-repair of motor pumps indicate that the water scheme is not properly managed.

Sanitation

The data on rural sanitation is available from the Census 2001 which pertains to coverage of households with private latrines and their type, and the type of connectivity for waste water.

Only 9% of the rural households in the state have latrines within the house. Among these 44% are pit latrines and 33% are water closet latrines.

Among districts, the lowest coverage of households is in the case of Sidhi (2%) followed by Shahdol, Rewa and Dindori (4% each). The districts with highest coverage are Indore (25%) and Narsimhapur (22%). It needs to be pointed out that this data relates to the coverage of households with private latrines. It does not indicate whether the households are actually using this facility.

About 19% of the households in the state have the facility of drainage for disposal of waste water from house, of this 90% are connected through open drainage.

With respect to coverage of households among the districts 50% of the households in Datia are connected to a drainage system. The other districts where more than one-third households have this facility are Bhind, Khandwa, Khargone, Shahjapur, Neemuch, Mandsaur and Gwalior.

The policy for sanitation at the state level is guided by the Total Sanitation Campaign. Under TSC there has been an achievement of construction of 0.3% (of APL households) and 3% (of BPL households) so far. The data on actual use is not available.

The other components of TSC, namely, construction of community sanitary complexes and school sanitation have, however, fared better. The targeted community sanitary complexes, 11% have been constructed and 14% of the targeted schools provided with sanitation facilities. There are 62% of the schools (high and higher secondary) in the state that have toilets, of these 34% of the schools have toilets for girls.

The main intervention for solid waste disposal in the villages has been to promote construction of NADEP pits. The strategy for liquid waste is to tap the infrastructure funds received by the Gram Panchayats and use them for construction of drains. Since funds for

these activities are tapped from other departments (Agriculture and Panchayat and Social Welfare) the progress achieved under these programmes is not available at the state level.

Issues in Rural Sanitation

- ◆ The coverage of households with respect to construction of private latrines is extremely low in the state. This low coverage is across all regions and districts and does not have any regional, caste or class based trend.
- ◆ The main assumption of the strategy regarding rural sanitation is that provision of facilities will lead to a behavioural change within the community. As a result there is an emphasis on construction, whether of private latrines or community sanitary complexes or to infrastructure for disposal of solid and liquid waste.
- ◆ Behavioural changes that lead to better sanitary and hygiene practices have not been accorded the importance they deserve.
- ◆ The strategy also does not relate water availability with the construction and use of sanitary facilities. For example, if there is water shortage in a habitation there is less likelihood for demand for private latrines, even lesser will be their usage.
- ◆ The provisions for solid waste and liquid waste disposal in rural areas are not emphasised in the overall strategy for rural sanitation in the state. Construction of NADEP pits and open drains has recently been taken up as activities under TSC for improvement of sanitation conditions in the villages. However, these schemes are under the purview of different departments (Agriculture and Rural Development) and there is no systemic evidence that the efforts of these departments converge at the village level.

Institutions

The major institutions for the provision of water and sanitation in rural areas are the Public Health Engineering (PHE) Department and the Gram Panchayat/Gram Sabha.

The Public Health Engineering Department is an independent department of the Government of Madhya Pradesh. The objectives of the department with respect to rural areas are:

- Conduct surveys, investigations, preparation and execution of safe and clean drinking water schemes in rural habitations.
- Maintenance of handpumps in rural areas.
- Work under total sanitation campaign.
- Assist the rural communities to prepare plans under *Swajaldhara* schemes and coordinate the implementation of these plans.
- Undertake works related to recharging and rainwater harvesting to increase sustainability of different sources of water.
- Monitor the quality of water from different sources and to undertake works related to providing alternative sources of safe and clean drinking water in places where the quality of water has been adversely affected.

The PHE department is headed by an Engineer-in-Chief at the state level. The state is divided in to four zones, each headed by a chief engineer. The zones are further divided in to regional circles (seven), headed by superintendent engineers. The regional circles look after the work of the division (co-terminous with districts) that are headed by executive engineers. The divisions are further divided in to sub-divisions depending on the size of the district. Each sub-division is headed by an assistant engineer. The organogram of the PHE department is given in Annexure 10.

With the introduction of TSC and *Swajaldhara* in the state, an additional post of Project Director has been created at the state level to coordinate the efforts of the districts in the planning and implementation of these programmes.

Panchayat Institutions in the state comprise of elected bodies, the Zilla, the Janpad, and the Gram Panchayat at the district, block and village levels, respectively. In addition, the Gram Sabha (comprising registered voters of the village) in the state has been recognised as a body corporate and has been endowed with powers and responsibilities under the State Act on Panchayat Raj.

The Zilla, Janpad and Gram Panchayats work through a system of standing committees comprising of the elected members of the respective bodies. Each of these committees has been allocated specific work under the act/rules. The responsibility for drinking water at the Zilla and Janpad level is that of the Communication and Works Committee and the responsibility for sanitation is that of Health, Women and Child Welfare Committee. At the Gram Panchayat level the responsibility for Water and Sanitation is that of the Education, Health and Social Welfare Committee.

The primary responsibility for the provision for drinking water and sanitation in rural areas is that of the Gram Sabha. This function has been assigned to the Gram Sabha under section 7

of the MP Panchayat Raj and Gram Swaraj Act, 1993. The relevant part of the section states that the Gram Sabha shall have the following powers and functions, namely:

- ◆ Sanitation, conservation and prevention and abatement of nuisance.
- ◆ Construction, repair and maintenance of public wells, ponds and tanks and supply of water for domestic use.
- ◆ Construction and maintenance of sources of water for bathing and washing and supply of water for domestic animals.
- ◆ Construction, maintenance and clearing of public streets, latrines, drains, tanks, wells and other public facilities.
- ◆ Filling up of unused wells, unsanitary ponds, pools, ditches and pits and conversion of step wells to sanitary wells.
- ◆ Regulating the construction of household latrines, urinals, drains and water closets
- ◆ Earmarking place for dumping refuse.

To enable the Gram Sabha to function effectively, the Act has provided for the formation of the Standing Committees of the Gram Sabha and also that it can have its own seal and account. There is provision for the formation of eight standing committees of the Gram Sabha. Among these, the Health Committee is responsible for ensuring clean environment and to make provision for safe drinking water for the village community. The Education Committee has the responsibility for ensuring the same for schools within the jurisdiction of the Gram Sabha.

The existence of the two institutions and their roles – the PHE Department and the Panchayat institutions – is expected to complement each other. For example, the Panchayat institutions are expected to plan, implement and maintain the works related to water and sanitation and the department is expected to provide technical assistance at each of these stages. In practice however the department performs most of these functions with minimal consultation with the Panchayat institutions. At the village level these consultations are largely with the Sarpanch and at the Zilla and Janpad level these are with the President of these institutions. The role performed by the two institutions at each stage are as follows:

Functions of PHED and Panchayat Institutions

Function	Functional domain of	Functionaries controlled by	Funds available with
Generating demand	Gram Sabha	PHED	PHED
Planning	Gram Sabha/PHED	PHED	PHED
Sanction	ZP/PHED	ZP/PHED	PHED
Implementation	PHED	PHED	PHED
Verification	Gram Sabha		
O&M	Gram Panchayat/PHED	PHED	Gram Panchayat/PHED
Quality Monitoring	PHED	PHED	PHED

The cost for O&M is borne by the Gram Panchayat in case of spot source and piped water supply. In case of handpump it is borne by the PHE Department. It needs to be pointed out that previously the cost of handpump maintenance was also borne by the Gram Panchayat, but this function has been transferred back to the department.

The funds for construction of piped and spot source were initially handed over to the Health Committee of the Gram Sabha. But at present it is the Gram Panchayat which is spending these funds.

A glance at the above matrix reveals that though most of the functions are within the functional domain of the Panchayat Raj institutions, the functionaries and the funds are controlled by the department.

Issues in Institutions

- ◆ Effective decentralisation of water and sanitation has not taken place in the state. There has been a transfer of power without consequent transfer of funds and functionaries.

- ◆ The demand-driven water and sanitation approach can only work when the powers given to communities are appropriately backed by technical and financial support.
- ◆ The PHE department is primarily a works department. It does not have a cadre of extension workers that are required to work with communities. Moreover, its approach to most of the work including IEC is that of a works department guided by the works manual. As a result, all work for the department is part of a tendering process and it expects it to be accomplished as such. This may work very well for the technical aspects but the department seems to be ill equipped for social engineering and not adequately informed.
- ◆ The elected representatives are generally ill informed about the schemes and programmes and do not have adequate skills to undertake community-based planning on water and sanitation.
- ◆ The standing committees in the Panchayat institutions do not meet regularly and as a result, most decisions in these institutions have come to rest with the President/ Sarpanch. This has led to centralisation within institutions of decentralised governance.

Non Governmental/Innovative Approaches

Voluntary efforts in the state with respect to water have largely been restricted to the implementation of watershed programmes. The main aim of these programmes has been to integrate concerns of poverty reduction and environmental regeneration through a participatory approach to watershed management. The focus of the programme has been on degraded and dry land areas to build environmental and food security. The programme has been expected to impact agricultural production and incomes of farmers in the community. The institutional arrangement under the programme involves formation of user-groups, self-help groups, womens' thrift and credit groups and watershed committees at the community level.

The state government on its part had pooled the funds available under the Employment Assurance Scheme, Drought-Prone Area Programme and Integrated Wasteland Development Programme under the umbrella of Rajiv Gandhi Watershed Mission.

The Mission, which started in August 1994, has grown in to India's largest watershed management programme covering nearly 3.5 mn hectares, i.e, 1% of India's land. It now covers 7,600 villages out of the 51,086 villages in the state. The impact of the programme has been assessed on environment regeneration, agriculture production and community organisations. The evaluation and impact studies have shown that groundwater level has improved in 3,294 villages, area under plantation increased by 23,579 hectares, and area under irrigation increased by 59%. In terms of agricultural production, area under *rabi* increased by 16% with an increase in productivity of 30%. However, the high rate of failure of handpumps (44%) on account of declining water table is indicative of the excessive ground water exploitation. There are 43,612 user groups and 14,005 self-help groups – that have generated an income of Rs 24 mn and 7,557 women thrift and credit groups that have accumulated savings of Rs 32.4 mn and have received assistance to the line of Rs 74.7 mn.

In respect to sanitation there has not been any noteworthy attempt made by NGOs so far.

An attempt was made by UNICEF in pre-reform days to implement a water and sanitation programme on a pilot basis in three districts (Betul, Chhindwara and Sehore) of the state. The programme was titled Child Environment Protection Programme (CEPP) and was implemented in collaboration with government and NGOs. The programme involved investments in IEC activities related to hygiene behaviour and sanitation practices. These interventions were expected to generate demand for private latrines and bring behavioural changes in hand washing and other hygiene habits within the community. The project worked through WATSAN committees that were formed at the village level and cleanliness clubs at the school level. The programme wound up in 2002 and has been under evaluation since then.

UNICEF has, however, moved into the second phase of its strategic intervention in WATSAN. According to its assessments, the project has demonstrated that the demand-based and community-driven approach works and that there is sufficient experience that can be used to influence the government. Accordingly UNICEF's strategy is now to work with the government at the state level by providing critical inputs in development of plans under Swajaldhara and the Total Sanitation Campaign. This is being accomplished by appointing specialist consultants who are placed in the PHE Department at the state level under both the above mentioned projects.

Issues in Voluntary Sector

- There has been a general failure on part of the voluntary sector in the state to recognise water and sanitation as critical sub-sectors for interventions. The NGOs working in the watershed development programmes have exclusively focused on water that is required for irrigation. Their focus has not been to address issues in drinking water.
- The NGOs that were part of the UNICEF CEPP Project have not been recognised by the state government as having specific sector experience, nor has UNICEF pushed for the inclusion of these organisations as specialist organisations while developing plans under *Swajaldhara* and TSC.
- Sanitation as a sector for intervention, either at the household or the community level, has not been taken up by the voluntary organisations in the state. There seems to be a general lack of understanding among the organisations as to the core issues in sanitation and hygiene practices.

Financing

Financing

The financing under different water and sanitation programmes of the state government is as follows:

Water Supply

Accelerated Rural Water Supply Programme and Minimum Needs Programme for Rural Habitations	State: Centre	50:50
Accelerated Rural Water Supply Programme and Minimum Needs Programme for Rural Schools	State: Centre	50:50
Completion of Piped Water/Spot Source Water Supply	State: Centre	50:50
Maintenance and O&M of water supply schemes	State: Centre	50:50
Establishment of Laboratories	State: Centre	25:75
Fluorosis Control Programme	State: Centre	25:75
Salinity Control Programme	State: Centre	25:75
Water Supply Schemes for Urban Areas	State: Centre	0:100
Accelerated Water Supply Schemes for Urban Areas	State: Centre	50:50

Sanitation

Construction of Private Latrines (households below poverty line)	State:Centre:Beneficiaries	20:60:20
Community Sanitary Complexes	State:Centre:Beneficiaries	20:60:20
School Sanitation	State:Centre:Beneficiaries	30:60:10
Anganwadi Sanitation	State:Centre:Beneficiaries	30:60:10
Rural Sanitary Mart	State:Centre	20:80
Production Centre	State:Centre	20:80
Urban Sanitation Works	State:Centre	0:100

Community contribution is only in case of programmes related to sanitation. The programmes related to water supply in rural areas do not have any component of community contribution.

Budgetary Provisions

The budget for water and sanitation that are made available to the PHE Department primarily flows from three different sources: Normal Plan, Special Component Plan and tribal Sub-Plan. The ratio of these sources in 2004–05 was 52:26:22 in a budgetary provision of Rs 1788.5 mn.

Looking at a five year trend 2000–04, the department has moved from a low level of funding for sanitation (2 to 6% between 2000–03) to a higher level of funds for this particular activity in 2004–05 (18%). In 2004–05 of the total budgetary provisions, of 77% funds are for water supply programmes, 18% for sanitation programmes and the remaining 5% for administration and other costs.

Issues in Financing

- The department relies heavily on the Central Government to provide funds for water and sanitation services in the state. The state government has not formulated or funded any schemes or programmes from its own resources.
- Virtually free water supply with no contribution from the community. This will lead to a lack of understanding of water scarcity among people and motivation to use water economically.
- The low level of priority accorded to sanitation is reflected in the budgetary provisions for the same by the PHE department.

Policy Environment

There are two policies of the state government that have a direct bearing on the WATSAN issues in the state. The first is the State Water Policy and the other is State Health Policy (Draft).

Water Policy

The State Water Policy elucidates the need for a sound policy on water on the ground that *Water is a natural resource, fundamental need of living being and invaluable national wealth.* Based on its economic use on *an equitable basis*, a sound water policy is needed. This would keep in view the decisive and *multifaceted role* played by water in the development planning of the state.

The State Water Policy gives priority to drinking water and makes the Water Resources Department the nodal agency for permitting different uses of water. The policy directive with respect to drinking water stipulates that facility of sufficient drinking water will be extended to the entire urban and rural population. This facility will be based on charging of water rates that conveys to the consumer the scarce value of water, its importance and motivates them to use water economically. The Policy envisages a system of integrated water resource planning that will be based on a basin and sub-basin approach correlating water availability with demand base of water. This approach is expected to undertake conjunctive use of surface and ground water giving priority to exploitation of ground water for drinking water purposes. The Policy also talks of formulating appropriate laws for protecting water resources from unauthorised encroachments and for maintaining the standard quality of water.

With respect to participation, the Policy states that considering the scarcity of water and the need for a multi-dimensional planning for development of water resources, there is a need to prepare development plans for water resources at the level of apex institutions of the state. However, to improve water planning and to avoid disparity in water distribution and status of available services rendered to farmers, participation of beneficiary groups in operation and maintenance shall be ensured.

Health Policy

The State Health Policy envisions that *“all people living in the state of Madhya Pradesh will have the knowledge and skills required to keep themselves healthy, and have equity in access to effective and affordable health care, as close to the family as possible, that enhances their quality of life, and enables them to lead a healthy productive life.”* The policy further states that the targets are to be achieved by the year 2011. Notably the provision of or access to safe drinking water and sanitation is not one of the targets listed within this policy.

The Rajiv Gandhi Mission on Community Health that has been launched in the state since 2003 however recognises water as one of the determinants of health. The Swasthya Jeevan Guarantee Yojana under the Mission seeks to bring about a paradigm shift in public health service delivery in the state. It does this by identifying a set of services within the health sector and some key determinants of health like safe drinking water supply, sanitation and nutrition that will be provided within a *rights based framework guaranteed by the government to be operationalised at the district, panchayat and village level.*

Issues in Policy Environment

- The fact that the state government has a Water Policy provides an opportunity to the civil society to initiate a dialogue with respect to the policy framework as well as the plans and strategies formed within the policy.
- The Water Policy gives specific directives with respect to use of water but does not specify the outlines of a strategy for implementation of the policy. The directives are too broad (e.g. conjunctive use of surface and ground water or water charges that conveys scarce value of water) and need to be interpreted in terms of their implementation.
- The Policy recognises the importance of water and lays down the broad principles for its supply, but lacks a clear vision statement. As a result the concerns of the poor, gender issues, issues of sustainability, etc., do not find space within the current framework.
- The Water Policy does not within itself create space for participation of the civil society. No Institutional framework has been defined in the policy. At best it recognises the role of user groups in maintenance and operationalisation of water schemes. Their role in planning for water is also not clearly defined.
- There is no mention of determinants of health in the proposed Health Policy of the state government. Consequently neither does access to safe drinking water nor improved sanitation practices find mention in the policy. This omission of determinants of health has made the policy service delivery oriented and seeks the participation of people in bringing about improvements in health services. Improved health on account of better control over factors that affect health, knowledge of preventive and promotive aspects of health do not figure in the Health policy at all. This downplays the ability of the communities to take measures to improve their health status by improving the status of determinants.

Water and Sanitation in Urban Areas of MP

Urbanisation

The process of urbanisation in Madhya Pradesh gained momentum between 1971–81 when the state registered an urban growth rate of 52.92%. The rate of growth seems to be tapering off since then, yet the growth of urban population in the state (31.19%) was higher than the national average (31.13%) during 1991–2001.

The urban population constitutes 26.6% of the total population of the state which is comparable to the national average of 27.7%. Among the ten big states (population more than 50 mn) of the country, Madhya Pradesh ranks as the sixth most urbanised state. The state accounts for 5.64% of the urban population of the country.

The proportion of urban population and its rate of growth signify that the state is rapidly gaining an urban character, a fact that assumes significant importance for making provisions for water and sanitation in the state.

Urban Landscape

The spread of urban population is uneven within the state. There are 26 towns that account for 55.8% of the urban population of the state. The other 311 towns account for the remaining 44.2% of urban population. The uneven spread of urban population is also evident from the fact that there are 42 tehsils in the state which did not register urban population in 2001.

The skewed distribution of urban population has led to the growth of a large number of small towns in the state. There are 61% urban centres that have a population less than 20 thousand. These towns account for only 16.3% of the urban population. On the other extreme there are only four towns that have a population of more than 0.5 mn and they account for 29.8% of the urban population of the state. There are only two million-plus cities in the state, namely, Indore and Bhopal. Between the two extremes are 115 towns (34%) which have a population in the range of 20,000 to 0.1 mn and another 6% urban centres with population in the range of 0.1 mn to 0.5 mn.

The trend in growth of towns in the state is indicative of the growth of large (population more than 0.1 mn) and medium sized towns (population between 20,000 and 0.1 mn) in the state. There are an additional eight and 37 towns, respectively in the above population ranges in 2001 as compared to 1991 and their population registered a growth rate of 30% and 35% during the decade. In comparison, the numbers of small towns (population less than 20,000) have decreased in number since 1991 and their decadal growth rate of population is less than the large and medium towns.

Thus, the urban landscape in the state is dominated by a large number of small and medium towns with four centres where there is a heavy concentration of urban population. The trend is indicative that the medium sized towns have experienced a rapid growth in the past decade and it is these towns that are likely to be stretched in making provisions for supply of water and sanitation services to their inhabitants.

Urban Poor

The 2001 Census surveyed the existence of and the nature of slums in urban areas. The criterion adopted by the Census for the definition of slum was as follows:

- towns with population more than 50,000
- area should have been notified as slum by the state or local self government
- a compact area of at least 300 population or 60–70 households living in poorly built congested tenements in unhygienic environment with inadequate infrastructure and lacking proper sanitary and drinking water facilities.

This enumeration identified 43 urban centres in the state with slums. The slum population accounts for 24% of the population of these towns. In terms of size of the town, the four cities with population more than 0.5 mn have slum population in the range of 8% (Bhopal) to 28% (Jabalpur) of the total population of the city. There are 22 towns in the state with a population more than 0.1 mn but less than 0.5 mn. Among these 19 towns had a slum population ranging from a minimum of 1.6% (Singrauli) to 79% (Morena) of the population of the city. The Census 2001 has enumerated and classified the entire city area of Burhanpur Municipal Corporation as slum. For towns with a population more than 50,000 and less than 0.1 mn, 20 out of 26 towns had slum population in the range of 5.7% (Balaghat) to 81% (Jawra).

The estimate for proportion of urban poor in the state as per 1999–2000 is 38.4%. This proportion is higher than the extent of rural poverty in the state and is also higher than the proportion of urban poor at the national level.

The urban centres in Madhya Pradesh thus do not necessarily represent islands of economic prosperity. These centres are characterised by poor living conditions with a substantial proportion of the population unable to meet their daily calorie requirement.

Urban Local Bodies

The State Government modified its laws consequent to the implementation of the 74th Amendment. This led to the formation of 337 urban bodies in the state. Amongst these 14 are Municipal Corporation, 86 are Municipal Councils and the remaining 237 are Nagar Panchayats. Prior to implementation of the 74th Amendment the Municipal Councils in the state were categorised as Category A, B and C. Among these categories the Municipal Councils with population less than 20,000 (as per 1991 Census) were re-designated as Nagar Panchayats and the towns that were under A and B category Municipal Councils were designated as Corporations and Municipal Councils based on the criteria of population.

The 74th Constitutional Amendment had envisaged Nagar Panchayats as a *rural area in transition to urban areas*. However, the manner in which the state has used this provision has led to a situation where the urban areas that were governed by Municipal Councils earlier are now governed by the local body designated as a Nagar Panchayat. Thus, the 237 Nagar Panchayats in the state should not be confused as *areas in transition to urban areas*. These are areas that had been urbanised for a much longer time and had been governed by an urban local body for a much longer time.

The political system of urban local bodies in the state is designed as Mayor-in Council for Corporations and as President-in Council for Municipal Councils and Nagar Panchayats. The Council in both the cases is constituted by the Mayor/President by nominating elected councillors. The members of the Council hold office during the tenure of the President/ Mayor and each member is in-charge of a department of the municipal body. The Council is empowered with specific financial and substantive powers under the municipal acts of the state.

The state municipal acts have categorised the functions to be carried out by the local body as mandatory and discretionary functions. The responsibility for ensuring water supply and sanitation in their respective areas has been categorised as the mandatory functions of the urban local body.

Thus, with a history of the functioning of urban local bodies in the state and with the state government modifying its laws to conform to the provisions of the 74th amendment, there is an opportunity to work with a legally constituted and democratically elected body in urban areas that has the mandate for ensuring services in water and sanitation to its inhabitants.

Urban Water and Sanitation

Water – Supply Management

Water Source

The 337 urban local bodies in the state are primarily dependent on ground water for their water requirement – 64% of the local bodies receive only ground water and another 25% receive both ground and surface water. There were 11% local bodies that receive only surface water. The level of ground water exploitation in urban areas has reached an alarming state. The Municipal Corporation of Indore has already been notified for banning any new installation for ground water, except for drinking water purposes, and even then special permission will have to be sought from the district administration.

The current policy of the government is to go deeper or farther or both to cater to the incremental demand for water in urban areas. The immediate implication of this strategy is increase in cost of water supply for the urban local body. In most cases (read as all) the complimentary activities of protecting the water source and installing recharge structures does not form part of the implementation. The strategy of water supply does not take in to account the need for water in a rural-urban continuum. In fact, the government officials in the urban department are of the view that in cases where the rural areas create problems (breaking of pipeline or not allowing withdrawal of water) the law should be enforced and the urban local body be allowed to draw water!

At the state level there is absence of a clear policy and a strategy that lays down the principles on which incremental water supply will be ensured to the urban areas in the state. At present the urban local bodies and the PHE Department design schemes at the local level to tap in to existing or nearby sources of water. Regional variations in availability of water, location specific requirements of urban areas, identification of urban centres with high rate of growth, etc, do not figure in either the policy or plans of the state government. As a result, the best that the local bodies and the district administration are able to achieve is managing the water scarcity crisis during the summer season every year. There is no medium or long-term strategy that addresses the issue of source sustainability.

Going Farther

To cater to the drinking water requirements of Bhopal in 2021, the state government has prepared and received sanction to lift water from River Narmada from a distance of 40 kms. The scheme is worth Rs 3 bn. This will be funded by the state and central government (Rs 1 bn each) and a loan of Rs 1 bn from HUDCO.

The proposed ADB loan for six municipal corporations in Madhya Pradesh includes water supply as a major component. This component involves augmentation of water source for four corporations – Gwalior, Indore, Jabalpur and Bhopal. Water for Indore will be lifted from a distance of 70 kms by pumping and through gravity mains from the Narmada River.

Rain water harvesting – an option

The state government has initiated measures for recharging of ground water by implementing construction of rain water harvesting structures. The Land Development Rules have been modified, once in 2000 and later in 2001 stipulate mandatory construction of rain and water harvesting structures for plots bigger than 250 sq. m. Till March 2004, the local bodies had granted building permission to 18,256 cases with provision of rain water harvesting structures. Of these 1557 are reported to have complied with these provisions.

Water Availability

The norms for water supply in urban areas in the state are as follows:

Towns with Piped water with no sewerage	70 lpcd
Towns with Piped water and sewerage	135 lpcd
Mega cities (above 0.1 mn population)	150 lpcd

With respect to the availability of water on the basis of these norms, 93% of the towns in the state have less than 70 lpcd of water available. The project preparatory data collected for the ADB loan reports that the six major corporations in the state receive between 50 lpcd (Ratlam) to 93 lpcd (Gwalior). In summers all the towns are reported to face the problem of water scarcity.

The data related to supply of water indicates that 63% of the urban centres receive water daily. There are 28% of the towns that receive water supply once in two days and 9% towns receive water supply once in two or more days. The water supply falls woefully short of the target of supplying water daily for at least 3–4 hours in all the urban areas.

All the urban areas the state thus receive inadequate supply of water. During periods of crisis there have been instances of people resorting to buying water from private sources. If the trend continues there is all likelihood of water markets appearing in and around most urban areas.

Water distribution and water charges

At present, the water distribution system and water charges are under the control of the urban local body.

In all the local bodies in the state the water charges are un-metered. The consumers pay a fixed rate irrespective of the amount of water consumed. In 1995 the rate for water was decided by the state government. In case of Municipal Corporations and Nagar Panchayats the rates were fixed. In case of Municipal Councils the rates were decided on the basis of population within the municipal limits of the local body. In 2000 the state government wrote to urban local bodies indicating that they are free to determine their own water charges. However, while doing so they need to take in to account the expenses on O&M for water distribution and other charges.

At present two types of water charges are collected by the local bodies. One is based on the diameter of the pipe that the consumer installs from the main pipeline (fixed charge) and another as part of integrated tax. This latter includes fire, sanitation, street light and water tax. Integrated tax is calculated through a formula that includes a minimum rate and a proportion of the property tax. In the absence of metered charges and a separate payment for water, the consumers are not aware of how much they are paying for water. Similarly, the local body is unable to monitor the expenses on water distribution and O&M charges of water supply as the receipts from water cess and integrated tax are booked under different heads and they are unable to assess the gap in funds. Seldom are any measures taken by the local body for improved efficiencies in water supply and distribution.

For slum settlements, there are no specific investments made for water distribution by the PHE Department. Generally, the local body connects the slums with the main pipeline and creates a spot source or invests in installing a handpump in the vicinity. The water supplied is free and no charges are collected from people living in slums.

The current policy for water distribution is thus devoid of considerations of equity either in terms of affordability, quantum of usage or any other criteria. The officials of the PHE Department take the view that recovering cost for at least O&M is the responsibility of the local body and once a water scheme is handed over to them after implementation these bodies should take appropriate measures. The local bodies, on the other hand, take the view that the design that determines the cost of the scheme, cost overruns due to delays in implementation, inefficiencies in maintenance are on account of the PHE Department and hence if they face a shortfall in incurring O&M costs then the department should arrange for funds.

Water Quality

The responsibility for monitoring the quality of water is that of the urban local body. This data at the state level to make an assessment of the quality of water being supplied in urban areas is not available.

The occasional water quality monitoring undertaken by PHE Department for fluoride, iron and salinity has indicated presence of fluoride in ground water in Jabalpur city.

In the absence of data it is difficult to make an assessment of the quality of water being supplied in urban areas. Neither are indirect indicators of water quality, e.g., incidence of water-borne diseases available that would enable an assessment on water quality

Water – Demand Management

Coverage

Drinking water from handpumps (39%) and dug wells (29%) are the most important source of drinking water for most urban households in the state. Tap water is available to 25% of the urban households.

The districts with large urban centres having a higher percentage of households (more than 80%) getting water from taps are Bhopal, Ratlam, Indore, Ujjain, Khandwa, Khargone, Barwani, and Neemuch. Interestingly the districts of Gwalior, Jabalpur and Sagar where more than four fifth of urban households get tap water do not figure in the group.

The urban households in the districts in the Chambal and Bundelkhand region get their water from handpumps and dug well for most part of the year.

More than half the urban households (55%) are able to get their water from a source that is located within their premises. Of the remaining households, 30% are able to get water within 500 meters from their house where as 15% households have to get water from a distance of more than 500 meters.

There are 19 districts that have a higher percentage of households drawing water from within their premise than the state average. These districts are spread across different regions of the state and do not reveal any particular trend. Damoh, Tikamgarh and Chhatarpur are the districts where a higher proportion of urban households have to fetch water from a distance of more than 500 meters.

The Census figures indicate a very poor coverage of urban population through tap water source and inadequacies in proximity of source. Both these factors point towards the insufficiency of water availability and a high degree of dissatisfaction by the consumer. These factors also account for poor recovery of water charges by the urban local bodies. Since a large proportion of the population is getting its water from sources outside their premises it is difficult to charge for water by usage and establish control over the use of water. Secondly, with low satisfaction among consumers there is no motivation on their part to pay for water charges regularly and in full amount.

Demand for water in urban areas

The demand for water in urban areas faces competition from the demand for water from industry as well. At present, estimates for the industrial demand for water are not available either at the state level or at the regional level. The main source of water for industry is also from ground water. In the absence of a policy and legal framework for use of ground water, the exploitation of water from this source is largely uncontrolled.

Urban Sanitation

Urban sanitation comprise of the following dimensions:

- (a) Disposal of liquid waste including rain water
- (b) Disposal of solid waste
- (c) Across and use of private latrines

Managing Liquid Waste

The system for disposal of liquid waste comprise of a sewerage system that collects the waste water and treats it before letting it in to a *nullah* or a river. In Madhya Pradesh none of the cities are fully covered by a sewerage system. The larger cities are partially covered by a sewerage network but the waste water is not treated before being released in a river. Bhopal and Indore Corporations are in the process of installing waste water treatment plants.

In the absence of a sewerage network, the liquid waste from the households is transported through open drains. Rain water and poor maintenance in terms of regular cleaning often leads to choking and flooding of drains.

76% of the urban households in the state have the facility of being connected to either a closed or an open drain for waste water disposed. The districts in the Bundelkhand region, namely, Damoh, Chhatarpur, Panna, Satna, and Rewa; and districts in the southern tribal belt namely, Shahdol, Sidhi, and Umaria have a high proportion (more than 35%) of households who are not connected with drain for disposal of waste water.

Septic tanks have been installed in most urban centres. However, only 11–13% of the septic tanks are in working conditions.

There was a wide prevalence of manual scavenging in different cities of the state. The state government enacted The Employment of Manual Scavengers and Construction of Dry Latrines (prohibition) Act, 1993 and the rules under the act were framed in 1998. This Act was notified for all the urban bodies in the state. The Department of Urban Administration and Development claims that it had converted 505056 dry latrines in to pour flush latrines. Only 1515 dry latrines are remaining as of March 2003. The department also claims that manual scavenging is not practiced in the state any more. This condition is however challenged by Action Aid, Bhopal which has a programme 'Garima Abhiyan', with the Manual Scavenger Community in nine districts of Madhya Pradesh.

Solid Waste Management

The system of solid waste disposal in urban areas is governed by the Municipal Solid Wastes (Management and Handling) Rules 2000. These rules have been framed under the Environment Protection Act, 1986. The rules are comprehensive and detail out the procedures

Sewerage in Bhopal

The Upper and Lower lakes of Bhopal were receiving untreated waste water to the tune of 650 lakh litres per day from 14 and 28 sewer lines respectively.

The Bhoj Wetland Project constructed 61.78 kms of gravity sewer lines and 23 kms of force main pipelines to divert the waste water towards eight new sewage pump houses. The liquid component is then pumped to the four treatment plants that have an installed capacity to handle 53.99 mn litres per day.

and the standards to be adopted for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes.

It is estimated that cities with a population up to 0.5 mn, on an average generate solid waste of 210 gm per capita per day (pcpd). For cities with population more than 0.5 mn the solid waste generated is around 250 gms pcpd. According to the manual of the Government of India on Solid Waste one cubic meter of solid waste weighs around 500 kgs. The manual further stipulates that in a city the number of containers for solid waste disposal should be twice the volume of solid waste that is generated in the city.¹

The process of solid waste management is being governed under a public interest litigation filed with Supreme Court. The local bodies and the state governments are bound to establish a system for collection of solid waste from the point of its generation to its safe disposal. Efforts are being made to identify and secure land that will be used as land fill sites for the solid waste. In addition, plants for conversion of waste in to organic manure and installation of incinerators for safe disposal of non-decomposable waste are also to be established. The State Pollution Control Board is the nodal agency for providing technical clearances to the schemes formed by respective local bodies.

All the 337 local bodies have applied for authorisation to the State Pollution Control Board. So far 116 bodies have received the authorization and 65 bodies have either land or have been allotted land for land-fill sites. The remaining local bodies are in the process of either identifying appropriate land or getting the identified land allotted to them.

In all cities have some system for collection and transportation of solid waste. Its appropriateness in terms of segregation of solid waste, coverage and frequency of collection and disposal, etc., however, are inadequate. The ADB project appraisal report for six major corporations in the state found out that only 60% of the city is being covered through a system of garbage collection and that one of the corporations had a system for safe disposal of solid waste.

Private Latrines

Sixty eight per cent of urban households have private latrines within the house of these 60% of the houses have water closet latrines. The districts with higher proportion of households having private latrines are districts with a high degree of urbanisation – Bhopal, Indore, Ratlam, Ujjain and Gwalior. The districts that have a poor coverage of any type of latrines are in the Bundelkhand region – Tikamgarh, Chhatarpur, Damoh, Panna, Satna, Rewa and Sidhi. The tribal districts in the southern part of the state too have a poor coverage of households with private latrines – Dindori, Umaria and Balaghat.

Despite claims of the government that open defecation is not prevalent in cities, a casual observation in large, medium and small cities reveals that open defecation is prevalent near slum settlements and also in 'gentile' areas of the city. The system of community toilets is not popular and has not taken root in the urban areas.

¹ A city with 0.1 mn population will generate 21 mt of solid waste that will have a volume of 42 cubic meter. The city will require containers to handle 84 cubic meters of solid waste.

Institutional Framework in Urban Areas

The institutional space for provision of water and sanitation in urban areas is comprised of PHE Department and the urban local body. The functional domain of the municipal bodies is defined as 'obligatory' and 'discretionary' under the state Municipal acts. The functions related to water supply and sanitation are the obligatory function of the local bodies. These functions are defined in the act as:

1. Water supply for domestic, industrial and commercial purposes
2. Public health, sanitation, conservancy and solid waste management

In July 2000, the state government took the decision that the local bodies would be responsible for implementation of water supply programme/schemes. The local bodies were free to seek technical expertise if required from the PHE Department or any other technical agency (including private bodies). This necessitated transferring the existing programme/schemes along with the staff responsible for maintenance to the local body.

However, due to resistance and unwillingness of the personnel of PHE Department to work under the jurisdiction and control of the local body, the state government resorted to administrative jugglery whereby the staff of the department is deputed to the local body. This staff works under the *executive control* of the local body and is under the *administrative control* of the PHE department.

The net result of this half-hearted decentralisation is that there are in effect three institutions – the urban local body, the PHE Department at the state level, and a section within the local body responsible for water and sanitation.

The institutional role performed by these institutions in relation to water supply is as follows:

Activity to be undertaken	Function performed by	Functionaries performing the function	Control over Funds
Raising demand for incremental supply of water	Local Body	PHE Section of local body	PHE Department at the state level
Planning for water supply	PHE section of local body*	PHE section of local body*	PHE Department at the state level
Sanctioning scheme for water supply	State level committee	PHE Department	Government of India
Implementation of scheme	PHE section of local body*	PHE Department at the state level	Local Body
O&M of the scheme	Local Body	PHE section of local body	Local Body
Monitoring water Quality	Local Body	PHE Department Lab.	Local Body

* For major installations the planning and implementation for water supply is undertaken by the PHE Department at the state level.

The dual control over the PHE section within the local body dilutes the responsibility and accountability with respect to ensuring supply of water and maintenance of water installations in the city. During shortages the local body and PHE Department trade charges on their respective inefficiencies. This is evident during discussions with the officials of the PHE Department at the state level where the officials generally have a hands-off attitude and they take the view that the responsibility of water supply is vested in the local body and their role comes in to play at the request of the local body.

WATSAN Issues in Urban Areas

Issue	Why is the Issue Important	Impact on Current Situation
Growing urban areas in MP	<ul style="list-style-type: none"> ◆ The growth rate of urban areas – both in terms of population and increase in number of urban centres – indicates that the state is steadfastly acquiring an urban character. ◆ The urban growth is unevenly distributed regionally and there is high concentration of population in few urban centres. 	Due to unplanned growth there is a likelihood of resources for water and sanitation being stretched in urban areas.
Water Supply	<ul style="list-style-type: none"> ◆ Unsustainable strategy for securing water for current and future needs ◆ Inadequate supply of water in urban areas ◆ Water crisis during summer months in all urban centres ◆ Un-metered water supply ◆ Needs of urban poor not addressed 	<ul style="list-style-type: none"> ◆ Excessive reliance on ground water leading to fall in water levels ◆ Increased cost of procuring incremental water ◆ Emphasis on supplying water in urban centres without taking in to account the need of adjoining rural areas ◆ Substantial proportion of un-accounted for water ◆ Poor recovery of O&M of water supply and distribution ◆ Consumers not aware of the amount they are paying for water-wastage in water usage
Water Demand	<ul style="list-style-type: none"> ◆ Verified data on coverage is not available 	<ul style="list-style-type: none"> ◆ Unable to assess the quantum of shortage in terms of households ◆ Prioritisation is not possible ◆ What are the water sources satisfying current demand for water not available
Institutional Framework	<ul style="list-style-type: none"> ◆ Lack of role clarity among different institutions ◆ Lack of Institutional Convergence 	<ul style="list-style-type: none"> ◆ Water as an issue of decentralized governance not fulfilled ◆ Expertise on account of institutional positioning not availed of ◆ Citizens participation not being achieved
Sanitation	<ul style="list-style-type: none"> ◆ Untreated waste being released in surface water bodies due to absence of sewerage system in urban areas ◆ Absence of system of segregating solid waste from the point of generation to safe disposal ◆ Practice of manual scavenging 	<ul style="list-style-type: none"> ◆ Unorganised waste disposal ◆ Cities being dump yards of waste ◆ Situation threatening to become unmanageable if corrective actions not undertaken soon

Annexures

ANNEXURE 1

Regional Concentration of SC and ST Populations in MP

Name of District	Proportion of SC population to total population (%)	Name of District	Proportion of ST population to total population (%)
Datia	24.67	Jhabua	85.67
Bhind	23.34	Mandla	60.84
Morena	19.89	Dindori	60.48
Rajgarh	18.00	Umariya	54.84
Shivpuri	19.36	Shahdol	46.32
Guna	18.08	Dhar	53.48
Tikamgarh	22.75	Khargone	46.23
Raisen	16.55	Barwani	66.50
Ujjain	24.56	Betul	37.51
Panna	20.40	Seoni	36.95
Shahjapur	22.34	Chhindwara	34.47
Sehore	20.30	Sidhi	30.43
Satna	17.85	Khandwa	26.77
Narsinghpur	16.59		
Chhatarpur	23.70		
Dewas	18.15		
Vidisha	20.31		
Sagar	21.09		
Damoh	20.08		

ANNEXURE 2

List of Districts with Low Rainfall and Drought prone Districts

Districts with normal rainfall below 100 cms	Normal rainfall (in cms)	Districts with normal rainfall above 100 cms	Normal rainfall (in cms)
Western Region		Eastern Region	
Indore	97.9	Jabalpur* (incl Katni)	127.40
Dhar*	83.3	Satna	139.68
Jhabua*	82.8	Rewa*	123.56
Ratlam*	89.5	Shahdol* (incl Umariya & Anupur)	109.99
Mandsaur (incl Neemuch)	82.4	Sidhi*	124.83
Khargone (incl Barwani)*	83.6	North Eastern region	
Khandwa (incl Burhanpur)*	80.0	Sagar	122.16
Ujjain	89.1	Damoh*	122.45
Shahjapur*	97.7	Tikamgarh	186.11
Northern Region		Chhatarpur	107.49
Morena (incl Sheopur)	72.0	Panna*	117.64
Bhind*	66.8	Central Region	
Gwalior	75.1	Guna (incl Ashok Nagar)*	105.35
Datia	73.9	Rajgarh*	110.05
Shivpuri*	81.6	Sehore	123.11
		Dewas*	108.32
		Hoshangabad (incl Harda)	129.45
		Raisen*	133.04
		Vidisha	113.38
		Narsinghpur	130.08
		Bhopal	115.41
		Southern Region	
		Betul*	108.39
		Chhindwara*	132.48
		Seoni*	138.45
		Balaghat	162.32
		Mandla (incl Dindori)	156.96

Note: the districts with *sign are drought prone districts. The definition of drought proneness is the one followed by Central Water Commission (a) the annual rainfall is less than 75% of the normal in 20% of the years examined and (b) less than 30% of the cultivated area is irrigated

ANNEXURE 3

Status of Groundwater in Madhya Pradesh

Revenue Division	District	Ground water						
		Net ground water availability (H am 1998)	Stage of development (in %)			Categories of district		
			1988	1990	1998	1988	1990	1998
Bhopal	Bhopal	32557.4	41.3	48.2	66.25	safe	safe	safe
	Sehore	67001.6	28.7	32.5	61.36	safe	white	safe
	Raisen	107418	18.7	24.7	50.06	safe	white	safe
	Rajgarh	87526	37.3	40.9	60.75	safe	white	safe
	Vidisha	60506.9	7.2	9.6	34.28	safe	white	safe
	Betul	90013.7	26.3	28.4	38.59	safe	white	safe
Hoshangabad	Hoshangabad	81337	12.97	15.55	20.74	safe	safe	safe
	Harda	23015	15.33	18.2	52.91	safe	safe	safe
Chambal	Sheopur	70855.7	4.26	7.33	8.76	safe	white	safe
	Morena	34207.1	24.72	29.42	42.42	safe	safe	safe
	Bhind	47091.2	24	27.3	33.32	safe	white	safe
Gwalior	Gwalior	34304.1	21.6	35.9	39.7	safe	white	safe
	Shivpuri	109171	21.3	22.5	41.95	safe	white	safe
	Guna	97144.9	19.9	21.5	30.47	safe	white	safe
	Datia	34578.2	18	19.9	60.7	safe	white	safe
Sagar	Sagar	113693	18.5	21.4	45.89	safe	white	safe
	Panna	47773.2	19.4	22.3	22.99	safe	white	safe
	Chhatarpur	86267	28.3	33	57.09	safe	white	
	Tikamgarh	61888	38.1	41.7	87.71	safe	white	semi-critical
Ujjain	Ujjain	77436.4	34.2	38.9	103.47	safe	white	over-exploited
	Dewas	85767.5	32.9	37.5	64.7	safe	white	safe
	Ratlam	61755.8	38.5	41.3	102	safe	white	over-exploited
	Shahjapur	61179.2	38	41.4	90.16	safe	white	critical
	Mandsaur	71978.9	44.94	50.1	100.8	safe	safe	over-exploited
	Neemuch	49216.1	34.1	37.83	87.66	safe	safe	semi-critical
Indore	Indore	53457.7	55.2	63	81.74	safe	grey	semi-critical
	Dhar	104292	30.5	35.1	86.12	safe	white	semi-critical
	Jhabua	50607.7	10.3	11.1	23.02	safe	white	safe
	Khargone	67828.6	31.2	33.62	67.56	safe	safe	safe
	Barwani	40820.3	31.72	33.75	62.57	safe	safe	safe
	Khandwa	93689.8	30.2	33.5	50.76	safe	white	safe
Jabalpur	Jabalpur	40533.6	26.54	31.02	50.64	safe	safe	safe
	Katni	32228.1	22.65	26.58	27.64	safe	white	safe
	Narsinghpur	110736	26	30.8	55.6	safe	white	safe
	Chhindwara	112475	27.7	29.2	43.14	safe	white	safe
	Seoni	91304.7	13.5	14.8	20.66	safe	white	safe
	Mandla	46225.3	3.05	3.24	6.57	safe	safe	safe
	Dindori	43062.6	1.6	1.88	3.74	safe	safe	safe
	Balaghta	107407	11.6	12.2	11.93	safe	white	safe
	Rewa	48312.1	17.5	20.5	42.08	safe	white	safe
Rewa	Shahdol	13049.4	2.37	2.65	6.24	safe	white	safe
	Umariya	65575.1	2.16	3.9	6.17	safe	safe	safe
	Sidhi	76289.3	21.7	24.9	19.58	safe	white	safe
	Satna	59830.4	16.5	18.9	56.43	safe	white	safe
	Sagar	Damoh	39050.3	18.7	23.6	50.75	safe	white

ANNEXURE 4

List of Districts and Blocks where Groundwater is Semi-Critical, Critical and Over-Exploited

District	Over Exploited (Name of Block)	Critical (Name of Block)	Semi Critical (Name of Block)
Western Region			
Barwani	Pansemal		Thikari
Dhar	Dhar*; Badnawar; Manawar*	Nalcha	Tirala; Dharmapuri
Indore	Indore*; Sanwer; Depalpur		
Khandwa			Chegaon
Khargone		Barwaha	Khargone; Maheshwar
Ratlam	Jawara*; Piploda	Ratlam	Alot
Shajapur	Barod	Susner	Kalapipal; Nalkheda; Agar; Momenbarodiya
Neemuch	Neemuch*		Jawad
Mandsour	Mandsour*; Malhagarh; Sitamau*		Garoth; Bhanpura
Ujjain	Ujjain; Badnagar	Ghatia	Tarana
Northern Region			
Shivpuri			Karera; Narwar; Khaniadhana
Central Region			
Bhopal			Phanda
Dewas		Sonkachh; Dewas	
Harda			Khirkhya
Raisen			Sanchi; Geratganj; Silwani
Rajgarh			Zeerapur
Sehore			Sehore; Astha
North Eastern Region			
Chattarpur			Chattarpur; Rajnagar; Nowgaon
Rewa			Rewa
Sagar			Rehali; Khurai
Satna			Satna (Sohawal)
Tikamgarh		Baldevgarh; Palera	Tikamgarh; Niwadi;
Southern Region			
Chindwara	Chindwara		
Betul			Amla
No of Blocks	17	12	38

* These blocks have been notified under the Environment Protection Act

ANNEXURE 5

List of Districts affected by Fluoride, Salinity and Iron

District	Water Quality					
	Fluoride		Salinity		Iron	
	Villages	Sources	Villages	Sources	Villages	Sources
Western Region						
Ujjain	9	19	171	413	0	0
Ratlam	0	0	32	194	0	0
Shahjapur	282	551	2	2	3	3
Mandsaur	1	1	26	62	0	0
Neemuch	5	9	15	33	0	0
Dhar	324	983	0	0	0	0
Jhabua	453	1278	35	48	0	0
Northern Region						
Bhind	0	0	120	276	0	0
Gwalior	0	0	7	12	0	0
Shivpuri	89	146	0	0	0	0
North Eastern Region						
Sagar	74	108	0	0	0	0
Chhatarpur	0	0	7	10	0	0
Eastern Region						
Jabalpur	7	7	0	0	0	0
Shahdol	0	0	0	0	400	779
Umariya	0	0	0	0	28	43
Central Region						
Bhopal	14	20	0	0	24	36
Sehore	208	336	24	25	76	107
Raisen	51	77	32	46	95	136
Rajgarh	477	715	32	41	75	115
Vidisha	335	507	0	0	0	0
Harda	0	0	20	45	0	0
Guna	126	184	0	0	0	0
Dewas	23	43	34	56	0	0
Southern Region						
Betul	2	2	0	0	0	0
Chhindwara	255	419	0	0	0	0
Seoni	631	1278	0	0	0	0
Mandla	413	660	0	0	39	54
Dindori	166	270	5	6	18	29
Balaghta	73	133	0	0	98	147

ANNEXURE 6

Proportion of Fully Covered, Partially Covered and Not Covered Habitations

PHED Zone	Revenue Division	District	Total Habitation	% Fully Covered	% Partially covered	% Not covered
Bhopal	Bhopal	Bhopal	747	65	35	0
		Sehore	1271	77	16	7
		Raisen	1969	57	39	4
		Rajgarh	2418	39	47	14
		Vidisha	2058	56	38	6
		Betul	2546	44	30	26
	Hoshangabad	Hoshangabad	1347	90	3	8
		Harda	889	68	21	11
Gwalior	Chambal	Sheopur	917	57	32	10
		Morena	4097	64	11	25
		Bhind	1887	76	18	6
	Gwalior	Gwalior	1192	61	36	3
		Shivpuri	2116	59	28	13
		Guna	3980	64	26	10
		Datia	1079	48	14	38
	Sagar	Sagar	2230	41	48	11
		Panna	1758	58	27	14
		Chhatarpur	1964	72	16	12
		Tikamgarh	2017	50	18	32
	Indore	Ujjain	Ujjain	1489	28	52
Dewas			1513	41	37	22
Ratlam			1638	23	67	10
Shahjapur			1092	22	72	6
Mandsaur			1236	38	50	11
Neemuch			1189	25	58	17
Indore		Indore	1073	40	56	3
		Dhar	6322	58	24	18
		Jhabua	9372	55	26	19
		Khargone	4046	59	20	21
		Barwani	5382	65	20	16
		Khandwa	1469	54	42	4
Jabalpur	Jabalpur	Jabalpur	1685	73	22	6
		Katni	1510	57	27	16
		Narsinghpur	2151	78	3	19
		Chhindwara	4481	69	21	10
		Seoni	2586	61	34	5
		Mandla	3860	54	21	25
		Dindori	3818	50	33	17
		Balaghta	3770	79	10	11
	Rewa	Rewa	8531	70	8	22
		Shahdol	6117	74	9	17
		Umariya	1914	46	4	51
		Sidhi	7090	62	29	9
		Satna	5044	60	30	11
	Sagar	Damoh	1450	79	14	6
			126310	60	25	15

ANNEXURE 7

Distribution of Households by Source of Drinking Water

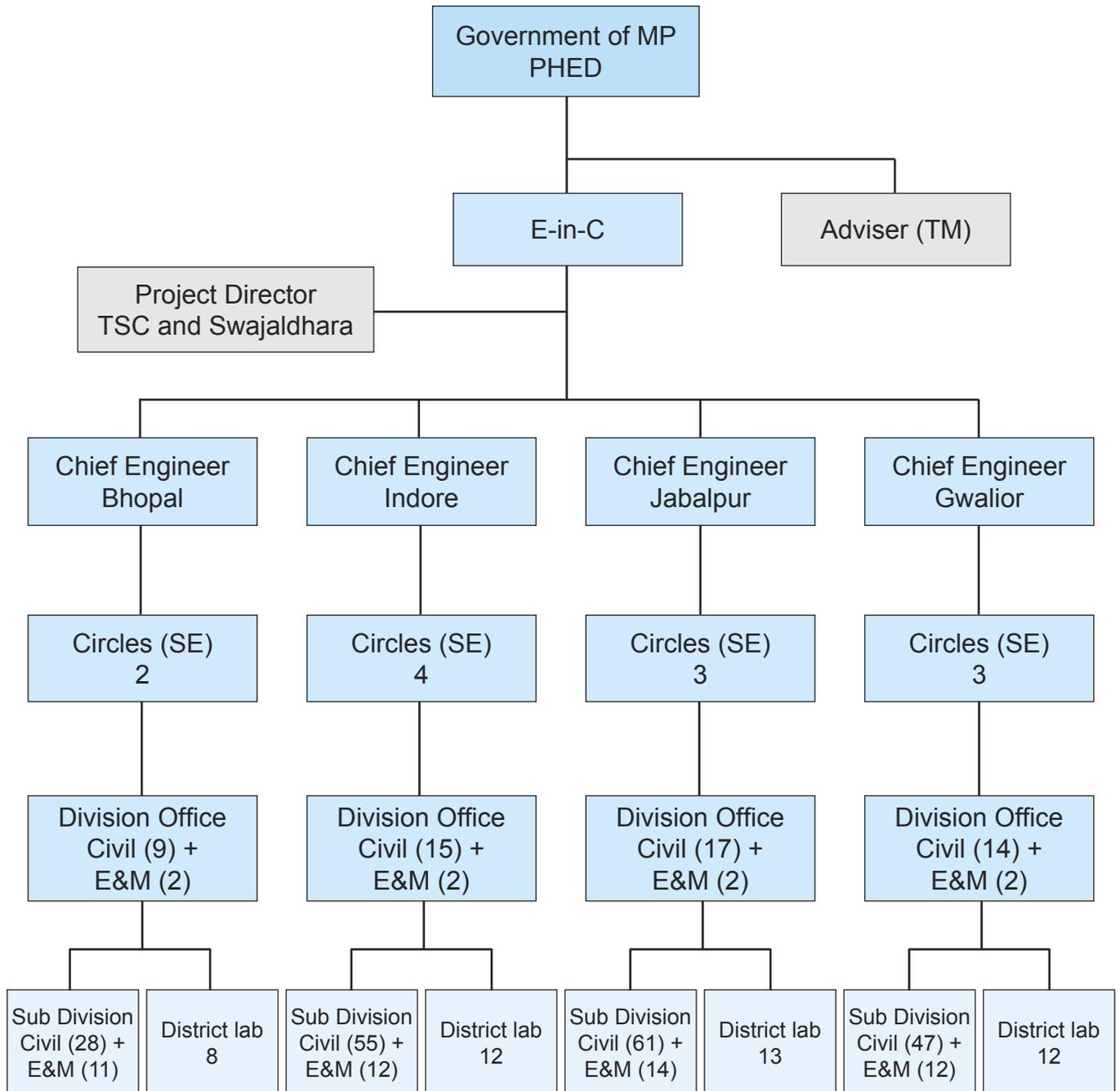
District	Total no. of HH	% Tap	% Hand-pump	% Tube-well	% Well	% Tank, Pond, lake	% River, Canal	% Spring	% Any other
Balaghat	316470	9	45	0	44	0	0	1	0
Barwani	170266	30	43	5	13	1	5	1	2
Betul	248131	25	44	4	26	0	1	0	0
Bhind	218489	18	36	1	45	0	0	0	0
Bhopal	335376	68	20	7	4	0	0	0	1
Chhatarpur	263817	8	28	2	61	0	1	0	0
Chhindwara	356244	38	33	2	24	0	1	1	0
Damoh	222743	14	40	1	38	0	5	1	0
Datia	106705	21	45	2	31	0	0	0	0
Dewas	222318	22	45	12	19	0	1	0	1
Dhar	304910	28	45	8	14	1	2	0	1
Dindori	126318	6	41	0	40	1	6	6	0
East Nimar	306115	47	36	2	13	0	1	0	0
Guna	275991	17	55	2	25	0	1	0	0
Gwalior	263601	50	27	6	17	0	0	0	1
Harda	81758	20	46	4	28	0	1	0	0
Hoshangabad	198176	31	43	4	20	0	1	0	0
Indore	419358	54	21	18	4	1	0	0	1
Jabalpur	421203	45	40	4	9	0	1	0	1
Jhabua	236053	11	67	1	14	1	5	1	0
Katni	222551	19	47	3	31	0	1	0	0
Mandla	191633	14	40	1	36	1	4	4	0
Mandsaur	215337	31	29	3	37	0	0	0	0
Morena	238398	17	37	2	43	0	0	0	0
Narsimhapur	179627	25	63	5	5	0	1	0	0
Neemuch	135865	44	21	7	27	0	0	0	1
Panna	173228	9	39	0	44	0	5	1	0
Raisen	197496	21	56	4	17	0	1	0	0
Rajgarh	218297	15	53	4	26	0	1	0	0
Ratlam	215477	35	46	5	12	0	1	0	0
Rewa	376469	8	35	3	52	0	1	1	0
Sagar	370377	19	35	3	41	0	1	0	0
Satna	353077	14	37	4	44	0	1	1	0
Sehore	183400	18	50	6	24	0	1	0	0
Seoni	234760	20	45	2	32	0	1	1	0
Shahdol	327008	15	23	1	56	2	2	2	0
Shajapur	219259	24	49	5	21	0	0	0	0
Sheopur	98694	12	67	5	15	0	1	0	0
Shivpuri	245089	15	42	2	41	0	1	0	0
Sidhi	338449	9	26	1	58	0	3	2	0
Tikamgarh	213744	7	26	1	65	0	0	0	0
Ujjain	293415	36	46	6	11	0	0	0	0
Umariya	105671	14	27	1	54	1	3	1	0
Vidisha	211320	17	55	3	25	0	1	0	0
West Nimar	266970	48	33	2	12	0	2	0	1

ANNEXURE 8

Distribution of Households by Availability of Bathroom & Type of Latrine within the House and Type of Drainage Connectivity for Waste Water Outlet

Sr. No.	District	Total Number of households	Type of latrine within the house				Type of connectivity for waste water		
			% Pit latrine	% Water colset	% Other latrine	% No latrine	% Closed drainage	% Open drainage	% No. drainage
1	Balaghat	316,470	4	6	3	87	2	16	82
2	Barwani	170,266	3	7	4	86	4	23	73
3	Betul	248,131	4	12	4	80	3	24	74
4	Bhind	218,489	13	2	6	78	3	42	55
5	Bhopal	335,376	10	42	14	34	40	34	27
6	Chhatarpur	263,817	4	9	3	85	4	19	77
7	Chhindwara	356,244	5	13	4	79	3	26	71
8	Damoh	222,743	4	7	3	86	3	15	82
9	Datia	106,705	11	5	5	79	5	52	44
10	Dewas	222,318	7	16	5	72	7	27	66
11	Dhar	304,910	7	11	5	77	6	23	71
12	Dindori	126,318	1	3	2	94	1	7	92
13	East Nimar	306,115	6	12	5	77	8	39	53
14	Guna	275,991	5	7	5	82	4	32	63
15	Gwalior	263,601	17	24	14	46	24	49	27
16	Harda	81,758	10	15	5	70	5	22	73
17	Hoshangabad	198,176	10	20	7	63	6	27	67
18	Indore	419,358	12	37	19	33	40	27	32
19	Jabalpur	421,203	6	29	10	55	13	39	48
20	Jhabua	236,053	3	8	2	87	2	9	88
21	Katni	222,551	4	10	3	83	5	19	76
22	Mandla	191,633	2	6	3	88	2	12	86
23	Mandsaur	215,337	4	11	4	81	7	38	56
24	Morena	238,398	11	4	5	80	3	37	60
25	Narsimhapur	179,627	10	13	5	72	3	20	77
26	Neemuch	135,865	4	13	4	79	9	38	53
27	Panna	173,228	4	4	3	89	4	11	84
28	Raisen	197,496	11	9	6	74	3	18	79
29	Rajgarh	218,297	6	7	4	84	3	37	60
30	Ratlam	215,477	4	20	6	71	10	34	56
31	Rewa	376,469	2	5	4	89	3	15	82
32	Sagar	370,377	5	12	5	79	6	22	72
33	Satna	353,077	2	8	4	86	4	18	78
34	Sehore	183,400	12	10	5	73	2	20	78
35	Seoni	234,760	4	7	3	85	2	13	86
36	Shahdol	327,008	2	10	5	84	5	17	78
37	Shajapur	219,259	5	9	4	82	4	42	55
38	Sheopur	98,694	6	2	3	88	2	23	75
39	Shivpuri	245,089	9	3	4	84	4	28	68
40	Sidhi	338,449	1	6	2	90	4	15	81
41	Tikamgarh	213,744	3	5	3	89	2	23	75
42	Ujjain	293,415	5	24	8	63	11	36	53
43	Umeria	105,671	2	6	6	86	5	13	82
44	Vidisha	211,320	8	9	4	79	4	38	58
45	West Nimar	266,970	5	8	4	83	6	44	50

Organogram of PHE Department



Structure of PHE Department

The Public Health Engineering Department is headed by the Engineer-In-Chief .

There are four Zones, each headed by a Chief Engineer with their headquarters at Bhopal, Indore, Gwalior & Jabalpur.

- ◆ Bhopal zone covers Bhopal and Hoshangabad revenue divisions.
- ◆ Indore zone covers Indore & Ujjain revenue divisions.
- ◆ Gwalior zone covers Gwalior, Chambal and Sagar revenue divisions.
- ◆ Jabalpur zone covers Jabalpur and Rewa revenue divisions.

Recently seven regional circles have been reconstituted and some of project circles have been converted/relocated to form regional circles. Now there are seven regional circles i.e. Bhopal, Indore, Gwalior, Jabalpur, Sagar, Ujjain, Rewa, looking after the normal works under zonal chief engineers. In addition to these circle there are five Project Circles at Bhopal, Jabalpur, Gwalior, Indore (Alirajpur) looking after the work of specific projects. One more project circle at Indore is exclusively working under Municipal Corporation Indore for Narmada Water Supply Project. Under the reorganised setup of the districts in Madhya Pradesh 45 districts have one civil Executive Engineer of department who looks after works related with water supply and sanitation programmes in respective districts. The work of three recently formed new districts i.e. Ashok Nagar, Burhanpur, Anoopur is being looked after by Executive engineers in neighbouring districts. In addition to these Executive Engineers there are 17 Civil Executive Engineers looking after various projects and water works.

There are 8 E&M Executive Engineers posted at various regional headquarters looking after drilling works by departmental rigs and maintenance of machineries.

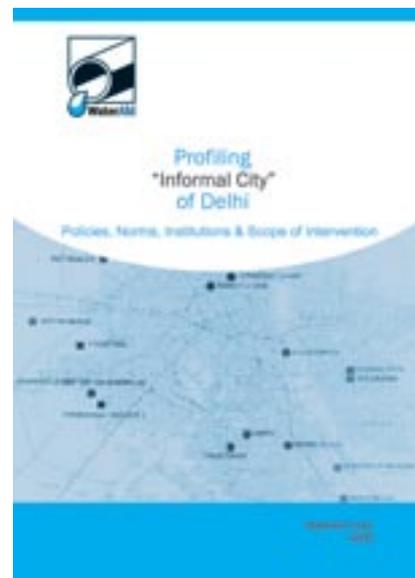
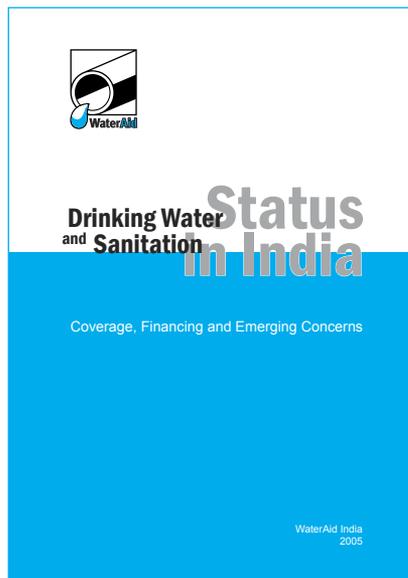
The work of each Division has further been divided into sub-divisions headed by an Assistant Engineer who are located upto block level.

MPPHED has its own State Research Laboratory located at Bhopal. This laboratory is fully equipped for testing of water samples. In addition to this state level laboratory there are 35 district level laboratories located at different districts in the state.

WaterAid's Partners in MP

1. Parhit Samaj Sevi Sanstha, Datia.
2. Vimal Siksha Samiti, Bhind.
3. Mahatma Gandhi Seva Ashram, Morena.
4. Dharti Gramothan Evam Sahabhagi Gramin Vikas Samiti, Morena.
5. Chambal Ghati Seva Sansathan, Morena.
6. Self Employed Women's Association, Bhopal.
7. Bal-Mahila Vikas Samiti, Gwalior.
8. Sambhav Social Service Organisation, Gwalior.
9. Energy Environment and Development Society, Bhopal.
10. Kalptaru Vikas Samiti, Guna.

Recent Reports



WaterAid – Water for All

WaterAid is an International NGO, established in 1981, in response to the United Nations declaration of the Water and Sanitation Decade, 1980–90, to enable better access of poor communities to adequate, safe water. WaterAid remains the UK's only major charity dedicated exclusively to the provision of safe domestic water, sanitation and hygiene education to the world's poorest people. WaterAid works in 15 countries across Asia and Africa, through local organisations and communities, helping them set up low cost, sustainable projects using appropriate technology that can be managed by the community itself. WaterAid also seeks to influence the water and sanitation policies of other key organisations, such as governments, to secure and protect the right of poor people to safe, affordable water and sanitation services.

WaterAid in India

WaterAid began working in India in the latter part of the 1980s with a few small projects and has since grown in strength and coverage. Today, WaterAid works in more than 10 states with two regional offices in Bhopal and Bhubaneswar, in partnership with local NGOs and government departments and ministries that seek assistance in the specific areas of rural and urban water supply, sanitation and hygiene promotion. Community sustained improvement in drinking water and sanitation has been WaterAid's watchword in all its programmes.

Different models of community participation and management, of both rural and urban water supply and sanitation, alternate delivery mechanisms, school hygiene promotion programmes, water conservation and recharge measures have been demonstrated to the sector. These projects have a strong partnering component with state governments and departments and have proved to be the inspiration behind successful replications in other states. A vast array of publications, including training manuals for development workers, issue sheets and concept papers for advocacy initiatives and IEC material have been jointly developed with NGO partners and are in wide circulation.

WaterAid has participated in collaborative initiatives with the government and other agencies including the Water Supply and Sanitation Collaborative Council (WSSCC), the Water and Sanitation Programme (WSP) of the World Bank, UNICEF and DFID. Alliances are important for core programming concerns of rural and urban programming for water and sanitation, Integrated Water Resources Management and Networking with a range of government departments and government organisations, at the national and regional levels in India. WaterAid India is committed to making its own contribution to the MDG challenge and is open to exploring ways of partnering with all stakeholders for achieving water and sanitation for all.

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WaterAid – water for life

The international NGO dedicated exclusively to the provision of safe domestic water, sanitation and hygiene education to the world's poorest people