Working Paper No.100
WASHCost - CESS Working Paper No.12
May, 2011

Financing the WASH Sector in India
Cost of provision and budget Allocations

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Acknowledgements

Thanks are due to Dr. Charles Batchelor and Prof. Manoj Panda for useful comments on the earlier drafts of the paper. However, the usual disclaimers apply

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ABSTRACT

This paper attempts to estimate the fund requirements for the provision of water and sanitation services in rural and urban areas at the all India level as well as in the state of Andhra Pradesh. These estimates are compared with the actual budget allocations to the sector during the recent years. The analysis brings out three important issues: i) allocations towards WASH sector are not commensurate with requirements and allocations have been declining during recent the years both at the national and state level, ii) sanitation sector gets marginal allocations, and iii) budget allocations are biased in favour of infrastructure to the neglect of demand management and governance issues. It is argued that the present allocations are not sufficient to deal with the challenges at hand. There is need for a paradigm shift in terms of mainstreaming sanitation rather than tagging it with drinking water. A balanced approach of allocation of sufficient resources with appropriate composition coupled with integrating supply and demand aspects at the policy level is necessary for ensuring water security at the household level and other levels.

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I Background

Water, Sanitation and Hygiene (WASH) are among the most strident problems, both in rural and urban areas in India. Waterborne diseases affect 37.7 million Indians annually, 1.5 million children are estimated to die of diarrhoea alone and 73 million working days are lost due to waterborne disease each year. The estimated annual economic burden is about $ 600 million a year (Reddy, 2010). Despite the magnitude and severity of the problem the achievements in the sector falls short of the commitment and attention the sector deserves despite policy pronouncements. The investments in the sector in India since independence (more than $ 27,000 million) have not resulted in achieving the objective of providing access to water and sanitation to the entire population yet. According to the Government publications 94 percent of the rural population has access to infrastructure that has the potential to supply safe drinking water i.e., 4 million hand pumps and 0.2 million-piped water schemes (GoI, 2008). However, the sources often provide irregular and scanty water supplies in rural areas. Urban areas are plagued with distributional problems with limited coverage of household connections. While metropolitan cities are better off in terms of WASH services, lower class cities and towns face irregular and poor service levels (NIUA, 2005). Besides, the appalling sanitation conditions in rural as well as urban areas cause severe health hazards.

The reasons for the poor service levels, especially water and sanitation, are many. They include: i) poor planning and implementation; ii) absence of proper governance structures; and iii) low allocations towards operational expenditure (OpEx) and capacity building (IEC). While the low allocations towards OpEx are well recognised, the overall allocations towards the sector for attaining full coverage and achieving sustainable service delivery against the requirement is less explored and understood. Some of the estimates at the global level suggest that the allocations range between 0.03% (Korea republic) and 6.29% (Congo DR) of their respective Gross Domestic Product (GDP) (Hall and Lobina, 2010). For India the required allocation for achieving the 100 percent household coverage is 0.64 percent of its GDP, which is modest given its current growth rates. But, these estimates take only the infrastructure requirements and do not take a comprehensive view of the cost of providing sustainable service delivery. As a result the cost allocations

can only ensure infrastructure provision rather than service delivery or water security at the household level. Service linked unit costs are necessary for estimating total resource requirements. This paper attempts to estimate the allocations required towards WASH sector in India and Andhra Pradesh using different unit cost estimates. These estimates are compared with the actual budget allocations.

How the estimates of required resources based on unit costs (normative as well as actual) compare with the plan outlays and actual expenditure through annual budgets? How these allocations are spent is critical for assessing the feasibility of achieving the targets in the WASH sector. The paper covers both rural and urban WASH sector. These two sectors fall under different major budget heads. While the budget allocations for rural WASH are part of panchayati raj and rural development, urban water supply comes under municipal administration. While Panchayati Raj institutions are responsible under the guidance and support of Rural Water Supply and Sanitation (RWSS) Department, education and health departments are responsible for institutional systems such as school and anganwadi (child care centres) sanitation and hygiene programmes. Within the sector the paper specifically examines the budget allocations to the WASH sector in the overall budget during the recent years, allocations towards drinking water vis-a-vis sanitation sub-sectors and expenditure on different components in the sector. It may be noted that there is no separate budgetary allocations towards hygiene promotion in the budget heads, as hygiene is part of sanitation sub-component. Therefore, no separate analysis is carried out for hygiene.

The main objective here is to assess the status of resource provision or budget allocations in comparison with resource requirements for achieving sustainable service delivery. Major issues in this regard include the rationale for present level of resource allocation vis-a-vis requirements, allocations towards drinking water vis a vis sanitation / hygiene; distributional aspects of expenditure in terms of capital costs, working costs, etc. In order to understand some of these aspects an attempt is made here to examine the trends in WASH expenditure in lieu with coverage and access in detail during the recent years at the all India level and also in one of the states i.e., Andhra Pradesh.

This paper is organised in six sections. The following section describes the approach and data base for the study. Status of water and sanitation sectors is presented in section three. The estimates pertaining to the unit costs and the resource requirements for the provision of WASH services are assessed in section four. Section five reviews the budget expenditure on rural and urban WASH sectors and the last section makes some concluding remarks.

II Approach

This paper is based on the analysis of data drawn from different sources for rural as well as urban areas at the all India level and in the state of Andhra Pradesh (AP). The rationale for selection of AP for the state level analysis is that unit cost data is being generated at the village and household level under WASHCost project[1], which is located in AP. Therefore, the cost estimates are more realistic in the case of AP. Unit costs of providing water and sanitation services are drawn from the publications of WHO / UNIECEF; The World Bank; Government of AP and the estimates from WASHCost project using the Life-cycle Cost Approach (LCCA). While all the estimates are based on norms the WASHCost estimates are real costs over a period of time using LCCA cost components. LCCA cost components include not only the construction and operational costs but also the capital maintenance and IEC (information, education and communication) costs. They include capital expenditure (CapEx); Capital maintenance expenditure (CapManEx); Operational expenditure (OpEx); Expenditure on direct support costs (ExDS) and Cost of Capital (CoC). These costs are briefly described here.

CapEx or capital expenditure has two components, namely hardware (CapExHrd) and software (CapExSft). CapExHrd is the establishment of water infrastructure, water extracting elements, purification equipment, storage reservoirs, distribution systems, etc. CapExSft includes the costs of planning and designing the water and sanitation schemes at village level and costs of building capacity to operate and maintain the schemes. The capital costs, hardware as well as software are one-time costs. For the purpose of the present analysis we have taken only investments in infrastructure that are still functional. All the CapEx investments are cumulated over the years. All costs are converted to current values (2008-09) using the National GDP inflator for the specific years.

Capital maintenance expenditure (CapManEx) is another major expenditure head that is spent on renewal and rehabilitation of systems, i.e., replacement of major equipment like pump sets, boreholes, plant equipment, distribution systems, etc. CapManEx is also summed over the years and converted to current values. OpEx is the operational expenditure spent on the regular maintenance of the systems. OpEx is the responsibility of the panchayati raj (local government) institutions in AP. This information is gathered from the panchayati records. OpEx is spent annually and hence we have taken the average of the years for which data are available after bringing them to the current value. Often OpEx is available for the current year only. ExDS or the expenditure on direct support costs that are defined as the investments or expenditure on supporting post

[1] See www.washcost.info for more details

implementation of the WASH systems such as staff, establishment, etc. These could be in the form of staff salaries, expenditure on establishment, IEC activities, demand management initiatives. But, such investments were negligible in the case of drinking water, especially in the sample villages. Limited allocations could be observed in the villages falling under the reform programme. But the staff costs are salary component is drawn from the annual budget documents and calculated per capita. These costs are assumed constant across the villages.

The cost of capital (CoC) is the interest payments on any borrowed money. In the context of AP the borrowed money and the interest paid on it is shown in the records only in the case of peri-urban / urban locations. In the case of rural water supplies, there is no information on the money borrowed from external agencies even at the departmental level (state). Therefore, we have not included CoC in financial analysis of rural sector. CapExHrd and the CapManEx are annualised using the actual life of the systems. The actual life span is the actual number of years the component lasts. Usually technical and economic life spans are used to represent normative lifespan.

Further, the normative unit costs are also estimated using the recent guidelines of the National Rural Drinking Water Programme (NRDWP). For, most of the unit cost estimates take the allocations towards three components viz., CapExHrd; CapManEx and OpEx, with CapExHrd accounting for more than 80 per cent of total expenditure (WASHCost India, 2010). Expenditure on CapManEx is not planned. CapManEx should be included as a depreciation charge in the accounts to provide funds as needed, but without that facility, the systems are not maintained and the actual lifespan is much lower than the normative life span in most cases. And this does appear to be the case. As a result CapManEx is often spent in an ad hoc manner. On the other hand, the new guidelines propose six components that include CapExHard; CapExSft (GIS-based planning, etc.); OpEx; source sustainability; water quality and natural calamities though they do not include CapManEx. While the guidelines indicate relative shares of these components, they do not provide any specific amount in absolute terms or on per household or per capita basis. Here the per capita expenditure is estimated given the present official cost estimates. As per the Andhra Pradesh Rural Water Supply and Sanitation Department (APRWSS) the annual costs are Rs. 4400 (US$ 98) per household or Rs. 1065 (US$ 24) per capita. This entire amount is spent on hardware with a normative life span of about 15 years, though the actual life span of the systems is much less (Reddy, et. al., 2010).

Data from budget documents of All India and Andhra Pradesh (AP) for the recent years have been used to assess the allocations and their composition towards WASH sector.

Besides, secondary information at the all India and state levels were obtained from official publications such as economic survey, departmental web-sites, etc. The analysis is carried out for the recent years i.e., 2002-03 till 2008-09. Data were analysed on the basis of major components and heads such as plan and non-plan expenditure and by salaries, major / minor works, etc. The budgetary data provides number of sub-heads under which expenditure is classified for WASH sector. For the sake of clarity we have grouped the sub-heads under salaries, major works, minor works and others.

Salaries include regular staff costs and daily wages of temporary staff, office expenses, pensions, professional fee, etc. Works are divided into major and minor. Major works include the capital costs of infrastructure creation and repairing or replacement costs of major breakdowns, which include machinery, equipment, investment and materials. Minor works are largely in the nature of regular operation and maintenance costs. And the 'others' component is an uncategorized item which includes miscellaneous costs. There was a change in the sub-heads from year 2004-05 due to the direct fund flows to the Zilla Parishads (district administration unit), which are given under the sub-head of Grant-in-aid. The RWSS officials clarified that the grant-in-aid is spent mainly on major works. Therefore, we have clubbed the grant-in-aid with major works from 2004-05 on words. The analysis is carried out by plan and non-plan as well as actual budget expenditure. The annual expenditure has been converted into constant prices with the help of wholesale price index for all commodities with the base year of 2002-03 (GoAP, 2009).

III Status of WASH Sector

Progress made in the WASH sector (Figs. 1 & 2 and Table 1) is not commensurate with the economic growth India is recording over the last decade. Coverage and quality of WASH services in India remains lower than that in other countries with similar per capita gross domestic product (GDP) (Banu and Kim, 2009). Further, the progress in coverage and access is measured in terms of infrastructure like distribution systems and household connections with least concern for the service levels in terms of access, quantity, quality, reliability, etc. Though norms talk about these attributes they are not used while monitoring the progress. Due to the focus on infrastructure various evaluation studies such as Joint Monitoring Programme (JMP), etc., have erroneously concluded that India has achieved the MDG targets. Even investment requirements are estimated with regard to access to infrastructure rather than access to water (Hall and Lobina, 2010). Poor WASH service levels measured in terms of access to water is evident from the extent of slippage in rural water supplies and the demand supply gap in the urban areas. The extent of slippage (slip back of service levels from full coverage to partial coverage) is estimated at about 30 percent at the all India level with wide variations

across the states (Reddy, et. al., 2010). In the case of urban areas 46 percent of the centres receive less than the Central Public Health and Environmental Engineering Organisation (CPHEEO) norms, while 77 percent receive less than city norms based on population (Table 1).

Though sanitation coverage has improved over the last two decades, it is estimated that of the 1.2 billion people worldwide who use "open defecation," 665 million live in

Figure 1: Status of Full Coverage of Drinking Water in Rural Areas across States in India (% habitations)

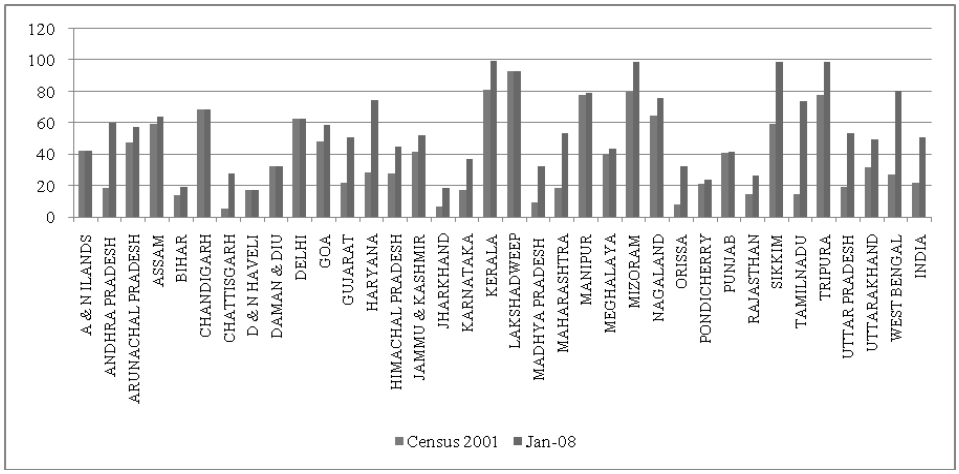
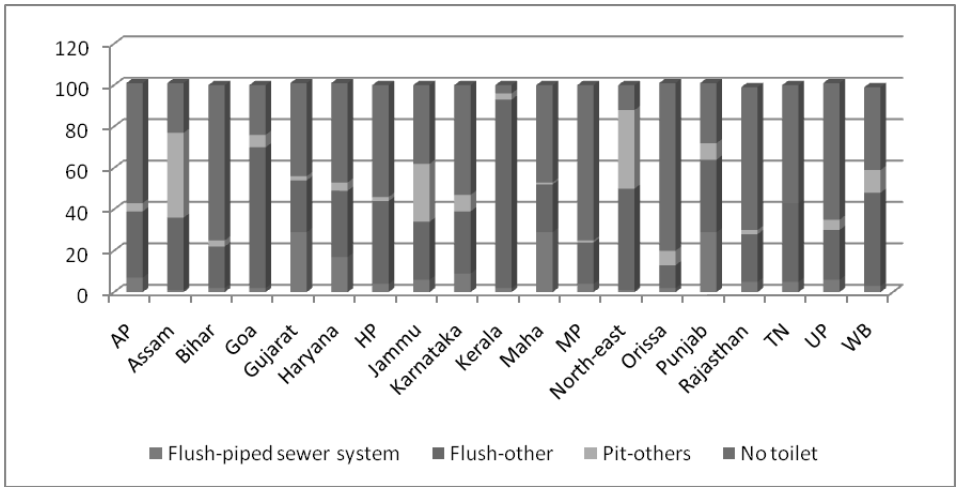


Figure 2: Status of Sanitation Coverage of Various Types of Sanitation (Rural and Urban) across States in India (% households)



Source: Adopted from Banu and Kim (2009).

India (Banu and Kim, 2009). Besides, wide variations exist between urban and rural as well as across the states (Fig. 2). Percentage of households with access to toilets ranges between 10 percent in Orissa to above 90 percent in Kerala with an all India average of 54 percent. In the case of urban areas only 34 percent of the population depend on low cost sanitation (LCS) indicating that LCS is not a preferred option. With regard to wastewater treatment only 49 percent of the towns have sewerage treatment plants (STPs) and only 37 percent of the wastewater generated is being treated at present (Table 1). On the other hand, 88 percent of the solid waste generated is being collected in the urban areas.

Table 1: Status of Urban Water Supply and Sanitation

Item	Water Supply	Waste Water Management	Solid Waste Management
Coverage (% Population)	94	58	92
Domestic Water Supply (LPCD)	128	---	---
% Waste Water Treated	---	37	---
% Solid Waste Collected	---	---	88
% of Urban Centres with STPs	---	49	---
% of Urban Centres getting below CPHEEO Norms of water supply	46	---	---
% of Urban Centres getting below CPHEEO Norms of water supply	77	---	---
% Population Depending on LCS	---	34	---
Additional Capital Required (Rs. Millions/Year up to year 2022)*	13960-15400	22760-37440	172

Note: These estimates are for covering the entire population from 1999 till 2022.
Source: NIUA (2005).

IV Unit Costs and Resource Requirements of WASH Sector

One of the reasons for the poor service levels is the insufficient and distorted resource allocations over the years. Estimates vary widely across agencies and studies in terms of resource requirements for providing WASH services to the entire population. It is estimated that resource requirements are in the range of Rs. 1759 million (US$ 38 million) by 2010 towards providing drinking water and sanitation (only construction of toilets at the household level) in the selected states (NCMH, 2005). In order to meet MDG targets in the urban areas the resource requirements for meeting urban drinking water and sanitation by 2015 alone are Rs. 301500 million ($6700 million)

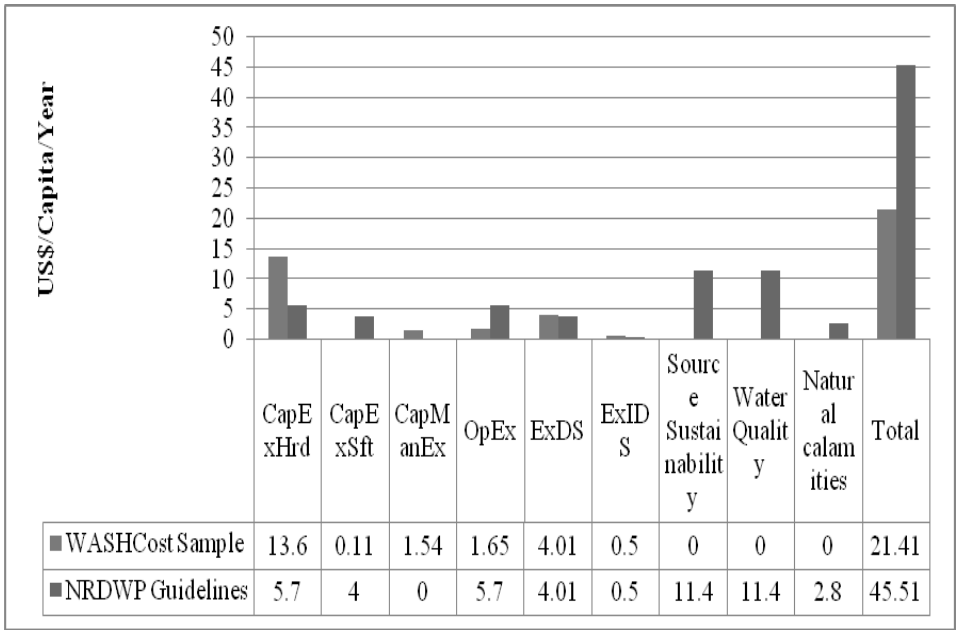
(www.indiawaterportal.org). The latest estimates from Asian Development Bank (Banu and Kim, 2009) put the resource requirements for complete sanitation coverage, including sewerage facilities, at Rs. 212 million ($ 4.7 million) for providing household toilets in the rural areas and Rs. 149 million ($ 3.3 million) in urban areas. The cost of providing underground drainage systems is estimated at Rs. 112500 million ($ 2500 million) in rural areas and Rs. 34650 million ($ 770 million) in urban areas. Together the cost of total sanitation is Rs. 147511 million ($ 3278 million), which is much higher than that of the estimates of NCMH for the entire sector though the NCMH estimates are for selected states. The national institute of urban affairs study has estimated these costs to range between Rs. 563150 (US$ 12514 million) and Rs. 900570 (US$ 20013 million) million to cover the entire population from 1999 till 2022 i.e., an average of Rs. 24480 (US$ 544 million) and Rs. 39160 (US$ 870 million) millions per year. For drinking water in urban areas the estimated costs range between Rs.13960 (US$ 310 million) and Rs. 15400 (US$ 342 million) million per year with different per capita norms (NIUA, 2005). The aggregate cost of achieving MDGs during the next 10 years for both rural and urban are estimated at Rs. 259380 million (US$ 5764), when annualised these costs account for 0.64 of the GDP in 2006 (Hall and Lobiana, 2010).

It may be noted that most of the above estimates are either partial (covering either rural or urban / drinking water or sanitation) and are not based on realistic unit costs. For most of the estimates take only the infrastructure costs in to account. Studies have revealed that unit costs could be much higher especially when all the costs i.e., source protection, water quality, etc., are included. Therefore, it would be meaningful if the unit costs become the basis for estimating the financial requirements. The updated (2005) cost estimates of the global water supply and sanitation assessment report (WHO/ UNCEF, 2005) indicated that the unit costs are much higher i.e., initial installation costs of household water connection vary by region between US$ 148 (Rs. 6660) and US$ 232 (Rs. 10440) per capita, while for sewerage this cost ranges between US$ 193 (Rs. 8685) and US$ 258 (Rs. 11610). Initial installation costs of community water improvement options are considerably less, varying by region from US$ 50 (Rs. 2250) to US$ 72 (Rs. 3240) per capita, while the costs of non-piped options for sanitation vary from US$ 93 (Rs. 4185) to US$ 134 (Rs. 6030). Recent field research from ***Andhra Pradesh State also indicated that at the village level the cost of provision of water when actual costs are included was about Rs. 971 (US$ 21.41) per capita, which ranges between Rs. 450 (US$ 11) and Rs. 4534 (US$ 100) per capita across villages.***[2]

[2] These estimates are based on the data collected from 40 habitations spread over six districts of two agro climatic zones. These estimate are likely to alter when the data from all nine agroclimatic zones are compiled.

When all costs as per the National Rural Drinking Water Programme (NRDWP) new guidelines (source protection, water quality, climate change, etc) are included they come to Rs. 2063 (US$ 45.51) (Fig. 3). In the case of sanitation these costs are about Rs. 453 (US$ 10) (WASHCost India, 2011). On the other hand the Total Sanitation Campaign Guideline (GoI, 2010) provides cost norms on five components. When all these costs are included as per the norms they come to Rs. 900 per capita (US$19.9) (Fig. 4). The costs based on the TSC guidelines are more than the actual costs observed in the WASHCost sample villages due to the full coverage as in the NGP villages along with other components. Note that these norms are lower than the market costs and hence often compensated by the households. These costs however do not include the underground drainage costs. When underground drainage costs are included these costs would range between Rs. 4500 (US$ 100) and Rs. 10100 (US$ 224) per capita in rural areas and between Rs. 5400 (US$ 120) and Rs. 9900 (US$ 220) in the peri-urban areas (WASHCost India, 2011).

Figure 3: Estimates of Annualized costs - Actual vs. New Guideline Norms

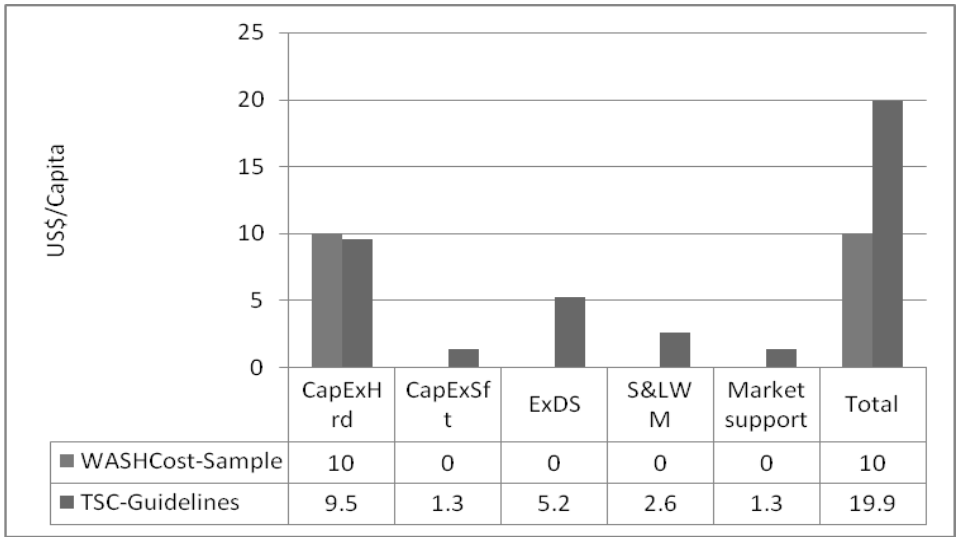


	CapExHrd	CapExSft	CapManEx	OpEx	ExDS	ExIDS	Source Sustainability	Water Quality	Natural calamities	Total
WASHCost Sample	13.6	0.11	1.54	1.65	4.01	0.5	0	0	0	21.41
NRDWP Guidelines	5.7	4	0	5.7	4.01	0.5	11.4	11.4	2.8	45.51

These estimates from different sources (studies) vary due to the reasons: i) extent of coverage, ii) type of coverage, and iii) per unit costs. For instance, in the case of National Commission on Macro Economic and Health (NCMH, 2005) estimates are for 30 percent of the uncovered population to be covered with piped water and the remaining 70 percent with hand pumps, with unit costs: Rs. 1200 (US$ 26.5) per capita for piped

water and that of hand pumps at Rs. 140 (US$ 3.1) per capita; unit cost of Rs. 1000 (US$ 22) was used for building a toilet per household. An additional 10 percent of the capital cost was included for maintenance of the water supply systems. ADB estimates for sanitation include all the uncovered households using the unit costs of Rs. 2500 (US$ 55) and Rs. 1500 (US$ 33) for construction of toilets in urban and rural areas respectively and Rs. 8000 (US$ 176) per household for underground drainage in both urban and rural areas (Banu and Kim, 2009). While the ADB estimates for India could be over estimates at the aggregate level, the costs could vary widely based on the location and population density (WHO/UNCEF, 2000; WASHCost India, 2010). In one of the villages it was observed that the expenditure on sanitation including underground drainage was to the tune of Rs. 10100 per capita (US$ 223), which is more than five times that of ADB estimates. On the other hand, there are simplified sewerage systems that cost US$ 45-60 in Pakistan and Srilanka during 1984 (Peterson, Mara and Curtis, 2006). While the simplified systems are argued to be more efficient, why they have not become popular even after 25 years remains a moot point (Table 1).

Figure 4: Estimates of Annualized costs - Actual vs. New TSC Guideline Norms



	CapExHrd	CapExSft	ExDS	S&LWM	Market support	Total
WASHCost-Sample	10	0	0	0	0	10
TSC-Guidelines	9.5	1.3	5.2	2.6	1.3	19.9

Of all the unit costs available the estimates of WHO / UNICEF, WASHCost and the estimates based on new NRDWP and TSC guidelines are found to be appropriate for estimating resource requirement. These unit costs are annualised using the lifespan of 10 years for the investments and are used to estimate the resource requirements for providing drinking water and sanitation in rural and urban areas separately. It is assumed that with proper allocations to all the components of life-cycle costs, the life span of the systems would increase thus reducing the total costs. It is assumed that 30 percent of

the rural as well as urban population needs to be covered in the case of drinking water; 50 percent of the rural and 20 percent of the urban population needs coverage in the case of sanitation without underground sewerage provision and 90 percent of the rural and 70 percent of the urban population needs coverage in the case of sanitation with underground sewerage provision. Annual resource requirements are estimated using the three unit cost measures (WHO/UNCEF; WASHCost and Guideline Norms) for all India and Andhra Pradesh.

Total resource requirements[3] for rural and urban WASH sector at the all India level range between Rs. 537540 million (US$ 11856 million) and Rs. 1395967 million (US$ 30789 million) with no underground sewerage[4]. With underground sewerage the requirement ranges between Rs. 1278815 million (US$ 28205 million) and Rs. 8093859

Table 2: Cost of Provision by Various estimates and their share in GDP and Budget allocations in India

(Rs. in Millions / Year)

		Rural	**Urban**	**Total**	**% of GDP**	**% of budget**
Total Cost of WASH (without UG sewerage)	WHO/ UNICEF	423300 (78) [50]	114240 (22) [71]	537540 (100) [55]	1.0	4.8
	WASHCost	284109 (22) [85]	308960 (78) [100]	1278815 (100) [94]	1.3	6.3
	Guidelines	587391 (42) [73]	808576 (58) [87]	1395967 (100) [79]	2.2	10.6
Total Cost of WASH (with UG sewerage)	WHO/ UNICEF	969855 (76) [22]	308960 (24) [26]	1278815 (100) [23]	2.4	11.5
	WASHCost	5694879 (43) [04]	2127072 (57) [19]	7821951 (100) [08]	14.7	70.5
	Guidelines	5966789 (52) [09]	2127072 (48) [19]	8093859 (100) [11]	15.2	73.0

Note: UG= Underground.

Figures in '(...)' indicate respective percentages to total. Figures in '[...]' indicate the share of drinking water to total. GDP estimates are for 2009-10 and budget estimates are for 2010-11.

[3] It may be noted that the estimates of costs from the data of 40 habitations in Andhra Pradesh is used to estimate the resource requirements at all India level as well. Hence all India estimates are not accurate.

[4] In the case of sanitation the cost of ISL at the household level is take for the below poverty level population only. The private investments by the households is not included.

million (US$ 178515 million) (Table 2). In terms of share in GDP the requirements account for 1 percent to 15.2 percent by different unit cost estimates and type of sewerage. In terms of annual budget share they range between 4.8 percent and 73 percent. These requirements are much higher than the earlier estimate of 0.64 percent of the GDP.

Table 3: Cost of Provision by various estimates and their share in GDP and Budget allocations in Andhra Pradesh

(Rs. In Millions / Year)

		Rural	**Urban**	**Total**	**% of GDP**	**% of budget**
Total Cost of WASH (without UG Sewerage)	WHO / UNCEF	27132 (77) [50]	8140 (23) [71]	35272 (100) [55]	0.9	3.1
	WASHCost	27547 (45) [56]	33801 (55) [87]	61348 (100) [73]	1.5	5.4
	Guidelines	64393 (66) [51]	33801 (34) [87]	98194 (100) [64]	2.4	8.6
Total Cost of WASH (with UG sewerage)	WHO / UNCEF	62164 (74) [22]	22013 (26) [26]	84178 (100) [23]	2.1	7.4
	WASHCost	365021 (71) [04]	151554 (29) [19]	516575 (100) [09]	12.9	45.5
	Guidelines	382449 (72) [09]	151564 (28) [19]	534003 (100) [12]	13.1	47.0

Note: UG= Underground.

Figures in '(...)' indicate respective percentages to total. Figures in '[...]' indicate the share of drinking water to total. GDP estimates are for 2009-10 and budget estimates are for 2010-11.

Resource requirements are of similar magnitude even at the state level as reflected in the estimates of Andhra Pradesh (Table 3). The fund requirements are higher when unit costs are based on the norms of guidelines. Actual costs arrived at by WASHCost are closer to the guidelines. Unit costs given by WHO / UNICEF are on the lower side when compared to the other two estimates. Given the fact that guidelines also do not include an important component like capital management costs which could be around 10 percent (Reddy, et. al., 2010), the annual requirement of allocations could be higher. Note that guidelines provide a comprehensive coverage of components that may not be part of either WASHCost or WHO / UNICEF estimates. At the same time WASHCost estimates are the actual costs that were spent in order to assure present service levels.

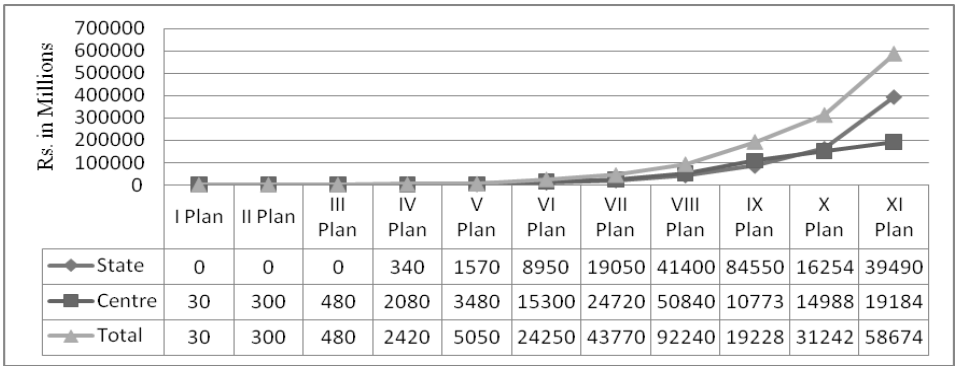
As per the WHO / UNICEF unit costs fund requirements towards rural WASH service provision account for 78 percent of the total requirements, while the reverse is the case when WASHCost unit costs are used. When underground sewerage costs are included the share of rural increases with WASHCost unit costs and Guideline norms. The share of drinking water ranges between 55 percent to 94 percent when underground sewerage costs are not included and they range from 08 percent to 23 percent with underground sewerage costs (Tables 2 and 3). The share of drinking water is more in the case of estimates based on WASHCost and guideline norms of unit costs. The share of drinking water is on the lower side in the rural areas when compared urban. It would be interesting to compare and contrast the resource requirements with actual allocations. A detailed review of budget expenditure on WASH sector is taken up in the next section.

V Expenditure on WASH Sector

i) All India

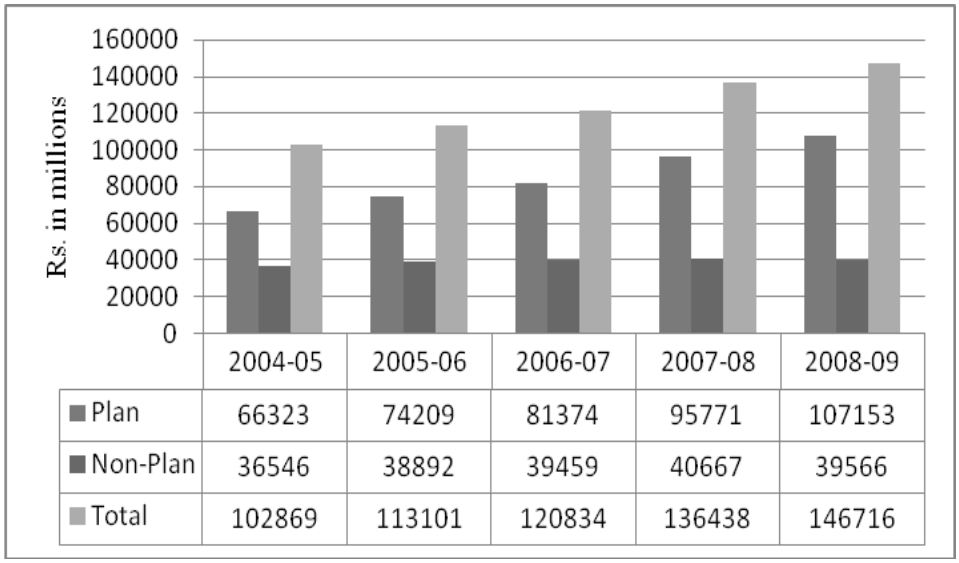
At the all India level the outlays towards WASH sector during the 11th plan period (2009-14) are about Rs. 586740 million (US$ 12941 million) (Fig. 5). Though water is a state subject the share of the central government in the plan outlays is steadily increasing over the plan periods i.e., the share of the centre has gone up from 'Zero' percent during the first and second plans to more than 50 percent during the tenth plan. Over all it is more than 50 percent and if the trend continues it may cross 60 percent during the 11th plan. Annual budgetary allocations have gone up from Rs. 91143 million ($ 2010 million) during 2002-03 to Rs. 152684 million ($3368 million) during 2008-09 in constant prices in the case of rural WASH sector (fig. 6). The increase is mainly through plan expenditure indicating the priority for new schemes (improving the coverage and access). Though this is almost an increase of 67 percent over the period of seven years in absolute terms, in relative terms the share of WASH sector in the national budget was more than halved during the same period (Fig. 7).

Figure 5: Investments in Water and Sanitation in India over the Plan Periods



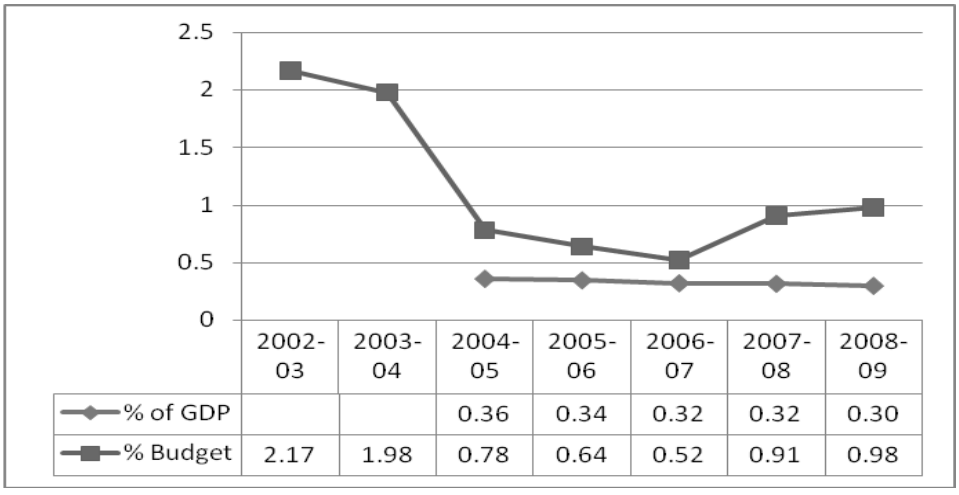
	I Plan	II Plan	III Plan	IV Plan	V Plan	VI Plan	VII Plan	VIII Plan	IX Plan	X Plan	XI Plan
State	0	0	0	340	1570	8950	19050	41400	84550	16254	39490
Centre	30	300	480	2080	3480	15300	24720	50840	10773	14988	19184
Total	30	300	480	2420	5050	24250	43770	92240	19228	31242	58674

Figure 6: Plan and non-Plan Budget Allocations towards rural WASH Sector in Constant Prices in India



	2004-05	2005-06	2006-07	2007-08	2008-09
Plan	66323	74209	81374	95771	107153
Non-Plan	36546	38892	39459	40667	39566
Total	102869	113101	120834	136438	146716

7: Share of Rural WASH Sector in the Annual GDP and Budget allocations in India



	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
% of GDP			0.36	0.34	0.32	0.32	0.30
% Budget	2.17	1.98	0.78	0.64	0.52	0.91	0.98

The allocations are meagre in the case of urban WASH sector, which could be due to the reason that the responsibility of urban WASH sector is with the state governments (figures 8-10). Even in the case of urban WASH the allocations are declining. The share of WASH sector (urban as well as rural) is about 0.3 percent of the GDP in 2008-09, which is much less than the required investments (ranging between 1 and 2.2 percent without underground sewerage). The allocations are half that of the modest estimates

for providing infrastructure i.e., 0.64 percent (Hall and Lobiana, 2010). The budgetary allocations are also much below the required levels of investments.

Figure 8: Budget (plan) Allocations towards Urban WASH Sector in Constant Prices in India

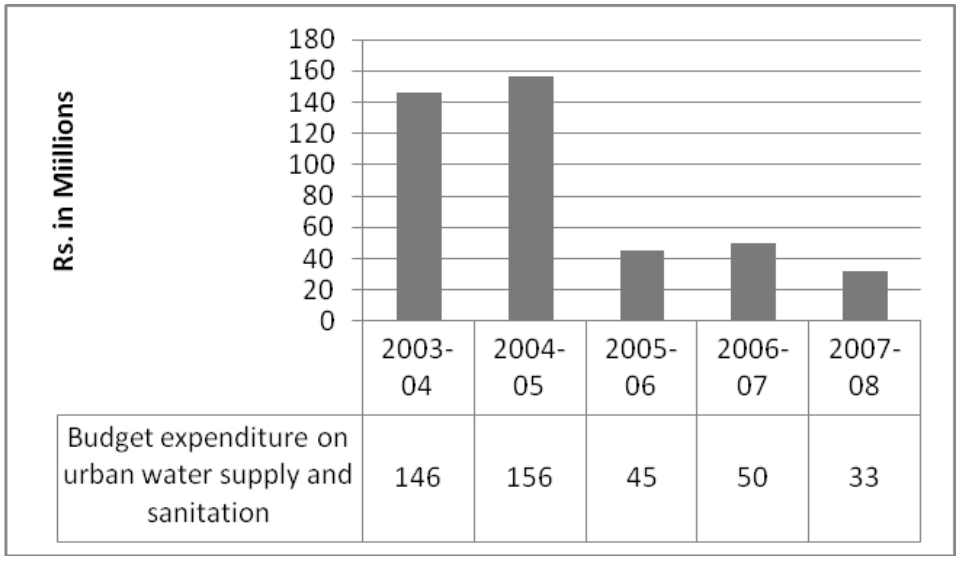


Figure 9: Share of Urban WASH Sector in the Annual GDP and Budget allocations in India

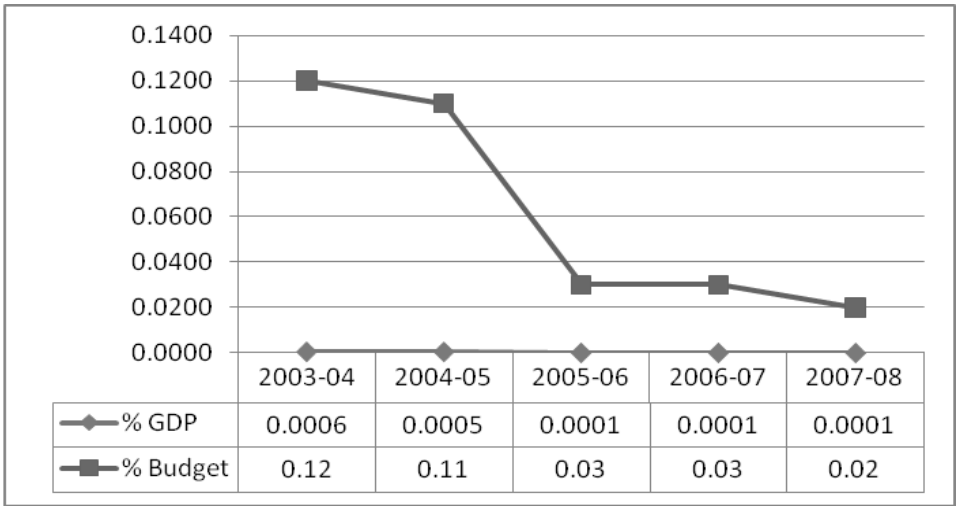
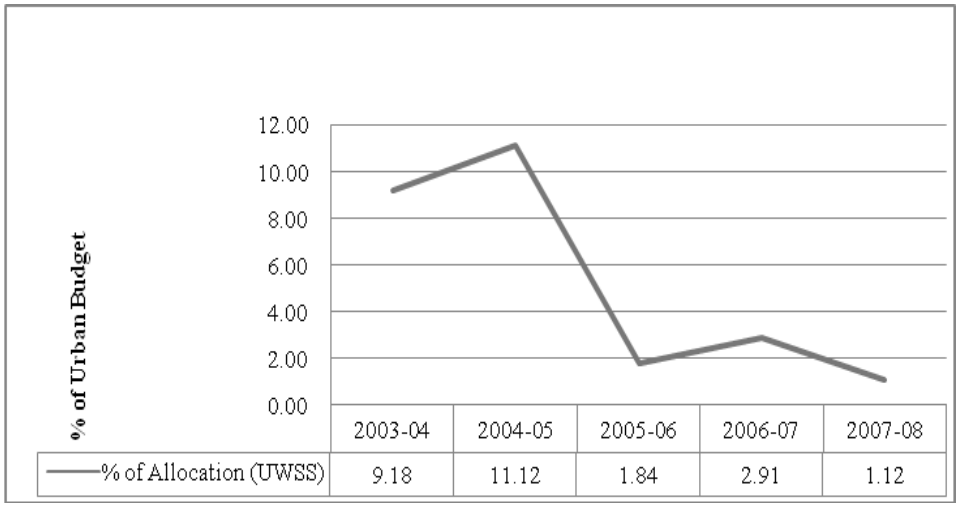


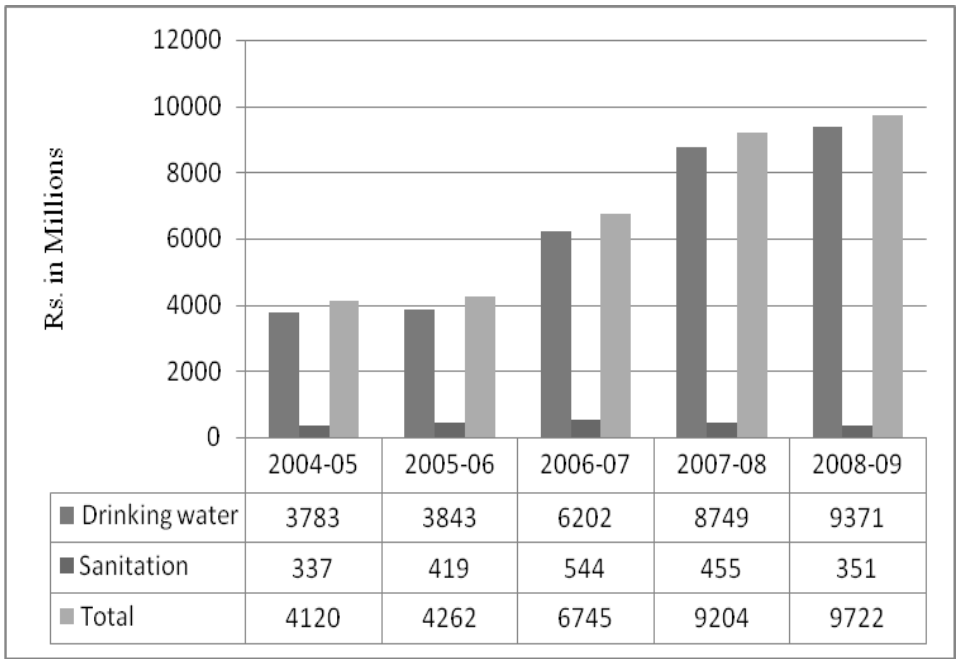
Figure 10: Share of Urban WASH Sector in the Urban Development Budget- India



ii) Andhra Pradesh

The macro picture provides only a partial picture, as the share of centre in the plan allocations is about 50 percent. The state budgetary analysis could provide a complete and detailed assessment of the expenditure in the WASH sector. Budgetary allocations for WASH sector at the state level, especially sanitation, are not straight forward. For, 90 percent of the funding for the rural sanitation programmes are entirely provided from the central funds, while the state RWSS is expected to add 10 percent of the funds to the central funds from its budget. And there is no separate subhead for sanitation in the RWSS budget provisions. Even these limited allocations are not spent fully in most of the years. As the data on RWSS expenditure on sanitation are not readily available the ten percent norm is adopted in the case of our estimates. Budgetary allocations towards rural WASH sector have more than doubled during recent years (Fig. 11). The increase in allocations is only in the drinking water while allocations towards sanitation remained stagnant with marginal increase in some years. In relative terms, the share of sanitation in the WASH sector has declined from 8 percent in 2004-05 to 4 percent in 2008-09. These allocations towards sanitation are too little to meet the requirements of rural sanitation.

Figure 11: Trends in Budget Allocations to Rural WASH Sector in AP in Current Prices



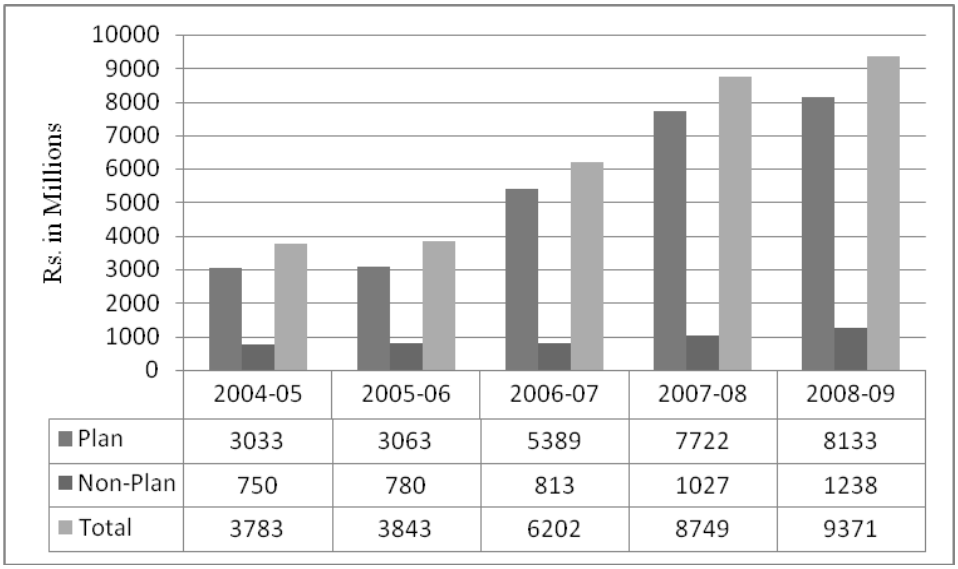
	2004-05	2005-06	2006-07	2007-08	2008-09
Drinking water	3783	3843	6202	8749	9371
Sanitation	337	419	544	455	351
Total	4120	4262	6745	9204	9722

The plan and non-plan breakup of the budget allocations towards drinking water are akin to central allocations. Plan expenditure takes a lions' share indicating policy focus on improving the coverage and access through creation of infrastructure (fig. 12), a supply side approach. But, the relative share of drinking water in the budget has increased only marginally between 2004-05 and 2008-09 (Fig. 13). This is mainly due to the increase in the share of non-plan expenditure as the share of plan expenditure has recorded a decline over the period, indicating that emphasis on new schemes has declined. This indicates that resource allocations are not in lieu with the requirements. This could be one reason, apart from others like source sustainability, governance, etc., for the continued high slippage rates (Reddy, et. al., 2009). This is true not only in AP but also across all the states in India. In majority of the cases costing does not include source sustainability.

Pattern of expenditure across sub-heads indicates that major works is the most important item followed by salaries and minor works[5] (Fig. 14). True to the expectations more than 80 percent of the allocations are devoted to infrastructure, which is also revealed at

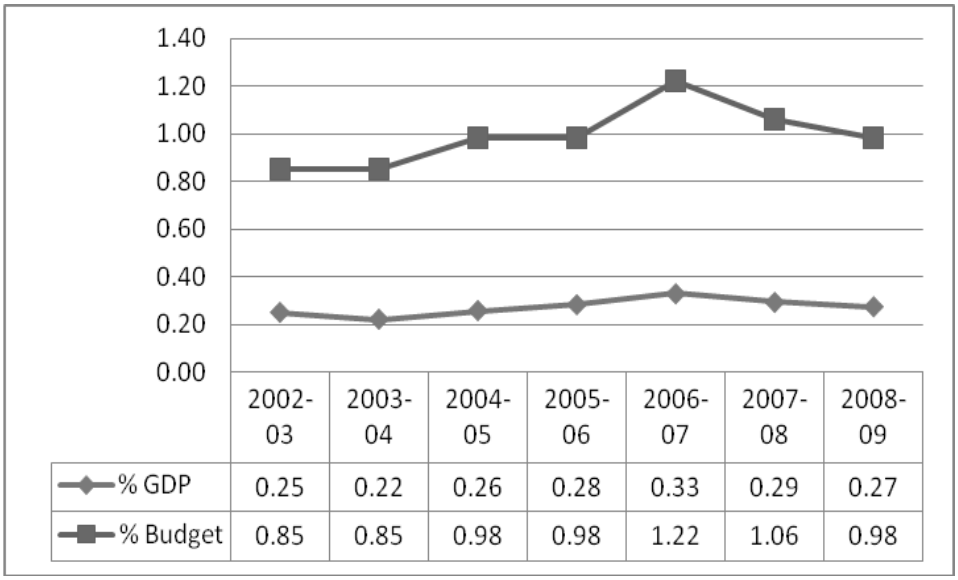
[5] The sub-head 'Interest payments' on borrowed capital does not figure in the budget documents. Though the housing development corporation gives loan for water schemes at 6.25 % interest rate, the details are not available either in the budget or the department. Besides, bilateral funds are also used for water supply schemes.

Figure 12: Plan and non-Plan Budget Allocations towards Rural WASH Sector in Constant Prices in AP



	2004-05	2005-06	2006-07	2007-08	2008-09
Plan	3033	3063	5389	7722	8133
Non-Plan	750	780	813	1027	1238
Total	3783	3843	6202	8749	9371

Figure 13: Share of Rural Drinking Water in the Annual GDP and Budget allocations in AP

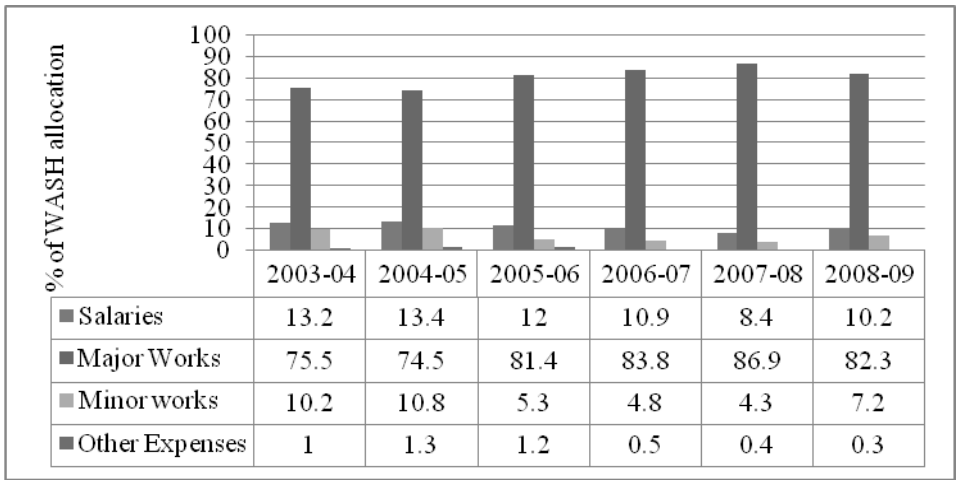


	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
% GDP	0.25	0.22	0.26	0.28	0.33	0.29	0.27
% Budget	0.85	0.85	0.98	0.98	1.22	1.06	0.98

the micro level (WASHCost India, 2011). Salaries account for about 10 percent of the total expenditure, which has declined over the period. Allocations towards minor works, covering mostly operation and maintenance costs, not only fluctuate (ranging between

11 and 4 percent) but also reveal a declining trend. This reflects the bias in favour of infrastructure with less emphasis on operation and maintenance. Given the high emphasis on infrastructure, efficient and sustainable allocation of these resources needs attention. For, as reflected in the slippage figures full service coverage has become elusive due to improper planning and allocation of funds. As mentioned in the previous section costing of WASH services does not include resource protection and rehabilitation costs. Moreover, demand / access aspects are given low priority. In the absence of investments towards resource protection costs and demand / access aspects, recurring investments on ad hoc basis may not help in addressing the sustainability aspects effectively.

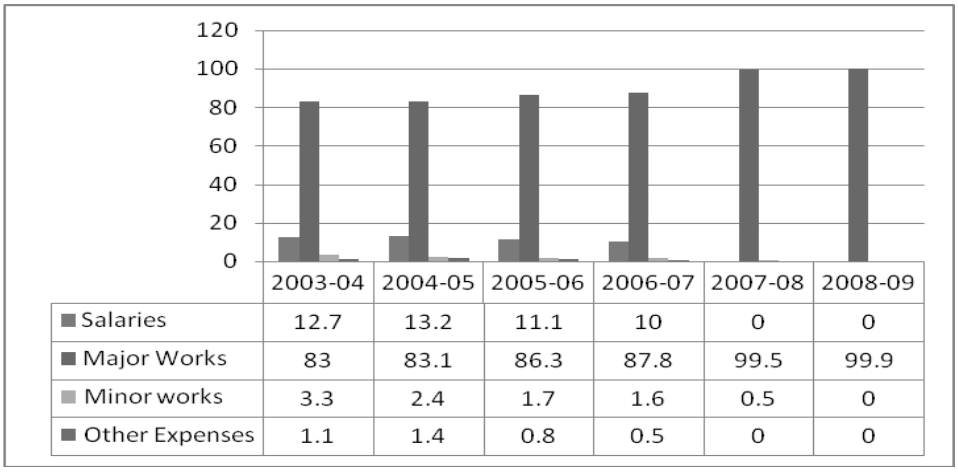
Figure 14: Composition of Budget Allocations towards Rural WASH Sector (Total)



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Salaries	13.2	13.4	12	10.9	8.4	10.2
Major Works	75.5	74.5	81.4	83.8	86.9	82.3
Minor works	10.2	10.8	5.3	4.8	4.3	7.2
Other Expenses	1	1.3	1.2	0.5	0.4	0.3

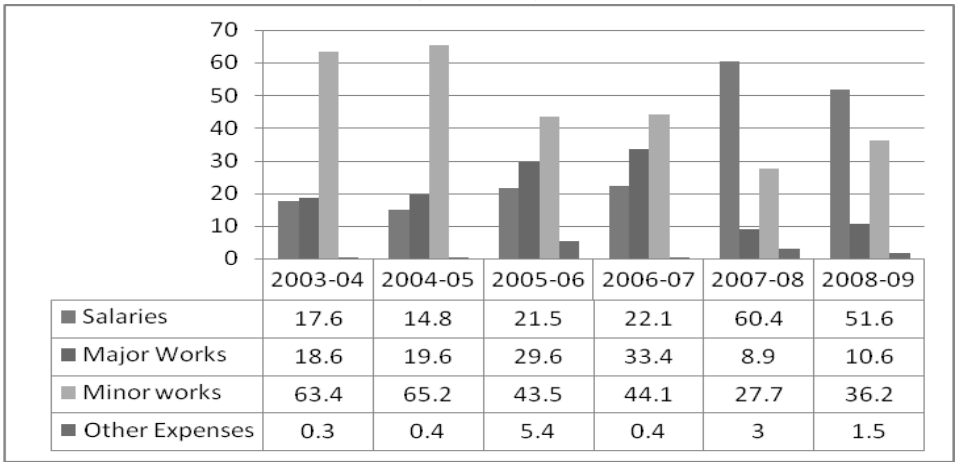
Sub-head wise break up of plan and non-plan expenditure reveals that entire major works component is placed under plan, which is the usual practice. The share of major works takes almost 100 percent of the plan expenditure in the recent years (Fig. 15). Salary component is totally taken out from the plan allocations from 2007-08 onwards. This could be due to the grant-in aid provision to the Zilla Parishads in the later years. As there is no detailed break-up of grant-in-aid component, the entire amount is placed under major works. In any case, more than 80 percent of the plan outlays are spent on major works. Salaries account for 52 percent of the non-plan outlays during 2008-09, which has gone up from 18 percent in 2003-04 (Fig. 14). A notable feature of non-plan allocations is that the entire minor works or O & M expenditure is booked under non-plan and the share of minor works declined from 63 percent in 2003-04 to 36 percent during 2008-09. Major works also get about 10 percent even in the non-plan allocations reemphasising the policy focus on major works and infrastructure.

Figure 15: Composition of Budget Allocations Towards Rural WASH Sector (Plan)



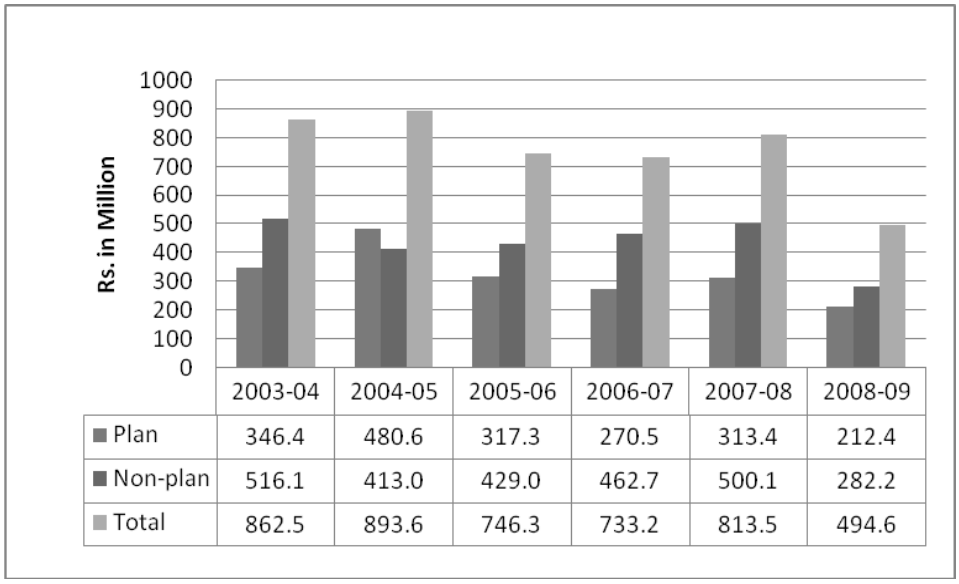
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Salaries	12.7	13.2	11.1	10	0	0
Major Works	83	83.1	86.3	87.8	99.5	99.9
Minor works	3.3	2.4	1.7	1.6	0.5	0
Other Expenses	1.1	1.4	0.8	0.5	0	0

Figure 16: Composition of Budget Allocations Towards Rural WASH Sector (Non-Plan)



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Salaries	17.6	14.8	21.5	22.1	60.4	51.6
Major Works	18.6	19.6	29.6	33.4	8.9	10.6
Minor works	63.4	65.2	43.5	44.1	27.7	36.2
Other Expenses	0.3	0.4	5.4	0.4	3	1.5

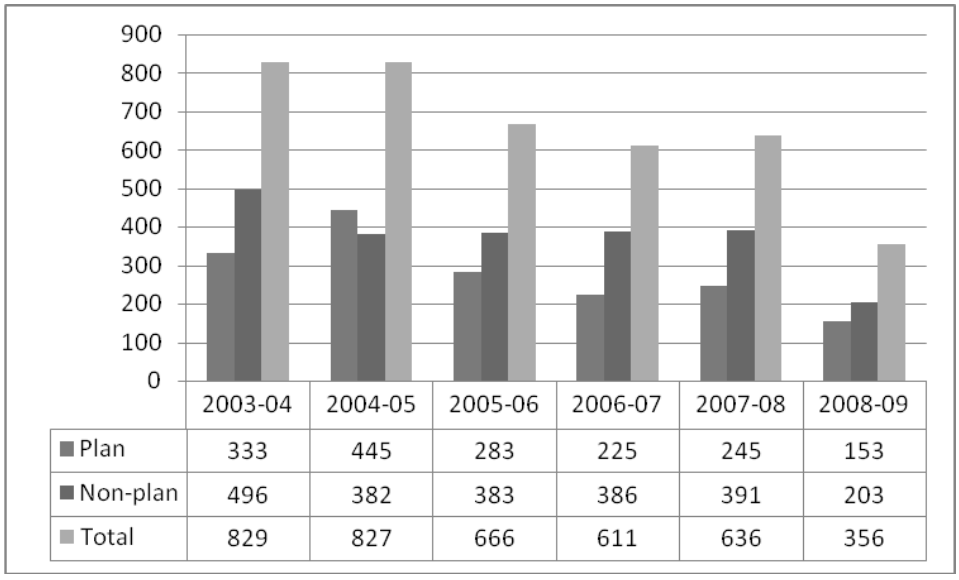
Figure 17: Trends in Budget Allocations to Urban WASH Sector in AP in Current Prices



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Plan	346.4	480.6	317.3	270.5	313.4	212.4
Non-plan	516.1	413.0	429.0	462.7	500.1	282.2
Total	862.5	893.6	746.3	733.2	813.5	494.6

Allocations towards urban WASH are no different from that rural. Both plan and non-plan allocations have been halved over the period of six years in current as well as constant prices (Fig. 17 and 18). Plan allocations account for 60 percent indicating

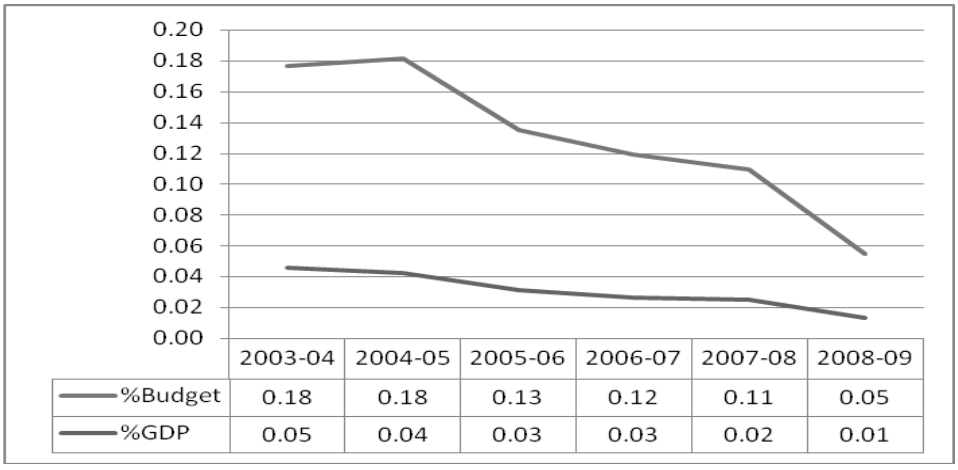
Figure 18: Plan and non-Plan Budget Allocations towards Urban Drinking Water in Constant Prices in AP



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Plan	333	445	283	225	245	153
Non-plan	496	382	383	386	391	203
Total	829	827	666	611	636	356

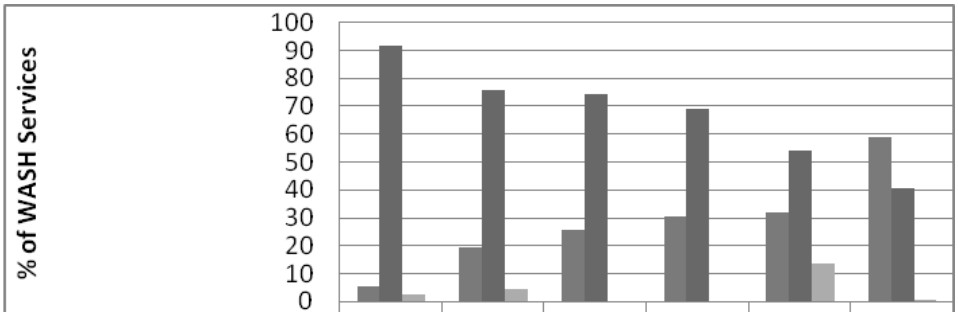
more emphasis on coverage (new infrastructure) than on maintenance of the systems. Allocations towards urban WASH sector accounts for only 0.05 percent of the total budget (fig. 19). Sub-head wise break up of allocations indicate that almost 60 percent of the budget expenditure is being spent on salaries leaving 40 percent of the allocations for real works (fig. 20). It may be noted that the salary component has gone up substantially and the works component has come down over the years. While the salary component mainly comes from non-plan budget works component comes from the plan allocations (figs. 21 and 22).

Figure 19: Share of Urban Drinking Water in the Annual GDP and Budget allocations in AP



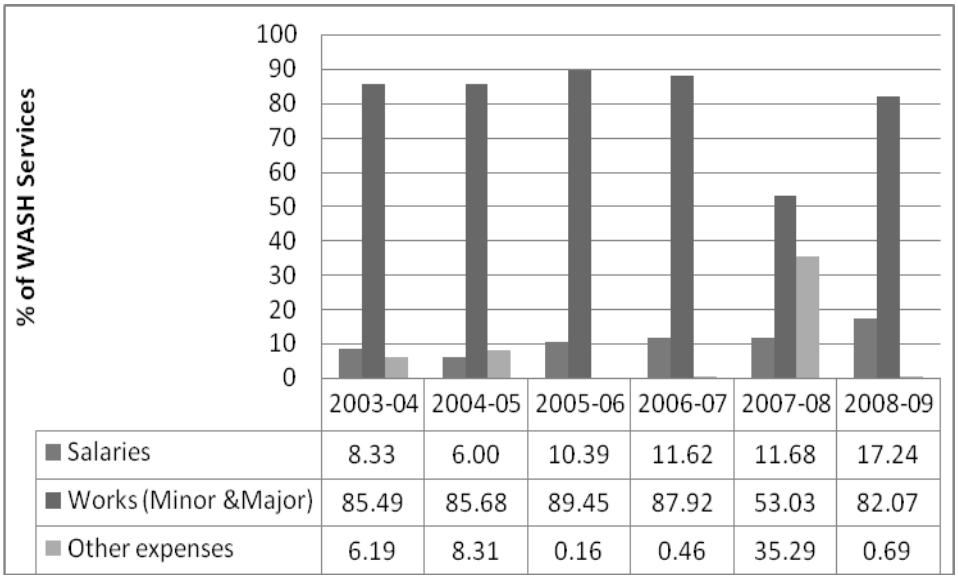
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
%Budget	0.18	0.18	0.13	0.12	0.11	0.05
%GDP	0.05	0.04	0.03	0.03	0.02	0.01

Figure 20: Composition of Budget Allocations (Total)



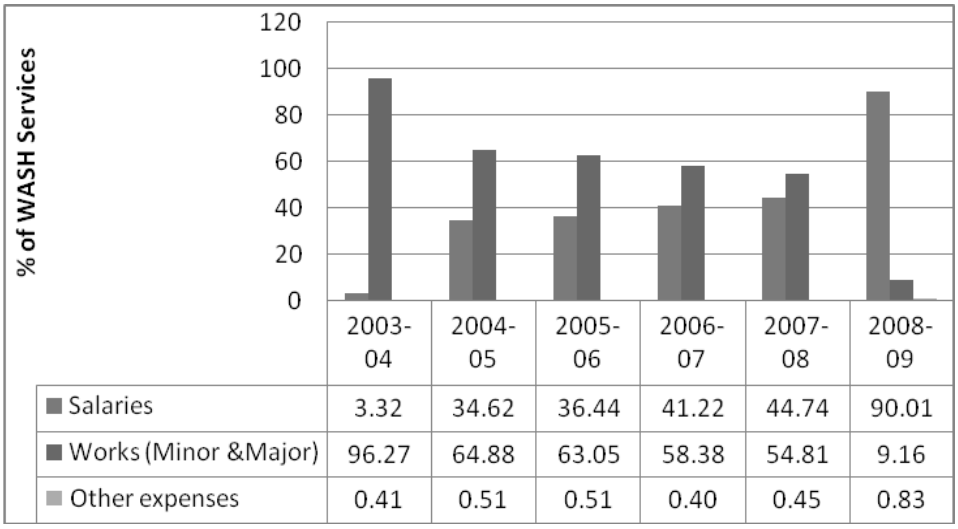
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Salaries	5.33	19.23	25.37	30.30	32.00	58.77
Works (Minor &Major)	91.94	76.07	74.27	69.28	54.12	40.46
Other expenses	2.73	4.71	0.36	0.42	13.87	0.77

Figure 21: Composition of Budget Allocations (Plan)



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Salaries	8.33	6.00	10.39	11.62	11.68	17.24
Works (Minor &Major)	85.49	85.68	89.45	87.92	53.03	82.07
Other expenses	6.19	8.31	0.16	0.46	35.29	0.69

Figure 22: Composition of Budget Allocations (Non-Plan)



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Salaries	3.32	34.62	36.44	41.22	44.74	90.01
Works (Minor &Major)	96.27	64.88	63.05	58.38	54.81	9.16
Other expenses	0.41	0.51	0.51	0.40	0.45	0.83

As in the case of all India, the allocations at the state (AP) level are also much below the requirements, especially when the norms of the new guidelines that emphasise source sustainability, water security, decentralised water governance, , implementing water safety, etc., are taken in to account. The present allocations are only a quarter of the actual requirement even at the lowest unit costs provided by the WHO / UNICEF study are used (Tables 1 and 2). In comparison with the actual costs assessed by WASHCost and the normative estimates as per new guidelines the allocations are less than a tenth of the requirement. Such low allocations make an obvious reason for the poor service levels in the WASH sector. This calls for enhanced allocations to the sector. Besides, there is a need for a paradigm shift in costing WASH sector investments in a more realistic manner in order to ensure water security. It is argued that life-cycle cost approach could help addressing the sustainability and governance issues more effectively (Reddy and Batchelor, 2009).

VI Conclusions

The analysis of requirements and allocations towards rural and urban WASH sector in India and AP brings out the following issues that need attention at the policy level.

1) Budgetary allocations towards rural WASH sector are not only inadequate to meet the requirements but also declining in relative terms. Actual requirements are higher by 4 to 10 times. There is a need to reassess the real cost of providing sustainable WASH services in the lines suggested in the new guidelines, which would require a multi fold increase in allocations. Adapting to the life-cycle cost approach in tune with the new guidelines, which is comprehensive incorporating resource protection, rehabilitation, support costs, etc., along with the infrastructure costs, would help in estimating the costs realistically and ensuring sustainability.

2) ***Sanitation sub-sector gets ridiculously low allocations and the actual expenditure is much lower.*** There is a need for wider recognition of the importance of sanitation at the policy level. The abysmally poor sanitation conditions do not augur well in a country, which takes pride in the fact that India is among the fastest growing economies. Unless there is a substantial shift in the policy towards sanitation in terms of allocations and planning, sanitation would continue to be a nagging problem resulting in huge economic losses through adverse health impacts. In this context, mainstreaming sanitation rather than treating it as a by-product of drinking water with appropriate policy and institutional initiatives would go a long way in addressing the problem.

3) Even the limited allocations towards WASH sector are heavily biased in favour of infrastructure (plan expenditure). In the absence of a balance between supply side

and demand side approaches, the effectiveness of the investment in infrastructure would be limited. Though governance issues like decentralisation involving PRIs in the management of drinking water, etc., are emphasised at the policy level very little is being done at the implementation level in terms of fund allocations. Such anomalies or imbalances need to be corrected in order to ensure water security at the household level.

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Appendix

Budget sub-heads

The following budget sub-heads are used to group the major expenditure items i.e., salaries, major and minor works, others, etc. These are available for drinking water only. Budget codes are given in brackets.

I Salaries (010)

1. Pay of officers (011); 2) Pay of allowances (012); 3) Dearness allowances (013); 4) Interim Relief (015); 5) House rent allowances (016); 6) Medical reimbursement (017); 7) Encashment of earned leave (018); 8) Leave travel concession.

II Wages (020)

III Rents, Rates, Taxes (140)

IV Travel expenses (110)

1) Travelling allowance (111); 2) Fixed travelling allowance

V Motor Vehicles (510).

VI Petrol, Oil and Lubricants (240).

VII Minor Works (270)

1) Maintenance (272); 2) Work charged Establishment (273)

VIII Major works (530)

1) Other expenditure (531)

IX Grants in aid (310)

1) Other grants in aid (312)

X Office Expenses (130)

1) Service Postage, Telegram and Telephone Charges (131); 2) Other office expenses (132); 3) Water and Electricity Charges (133); 4) Hiring of Private vehicles (134).

XI Professional Services (280)

1) Pleaders fees (281); 2) Other payments (284).

XII Other Expenses (500)

1) Other expenditure , like advertisement, etc (503).

Table A1: Unit Costs and Total Cost of Provision by Various Estimates (For 2010 population Estimates at All India)

(Rs. In Millions)

		Rural	Urban	Total
Total Population 2010 (millions)		830	320	1150
Population to be covered (Drinking water)		249	96	345
Cost of Provision / Capita (Drinking water)	WHO/Unecif	850	850	1700
	WB	222	0	222
	WASHCost	745	8212	8957
	Guidelines	1984	0	1984
Total Cost of Provision (Rs. Millions)	WHO/Unecif	211650	81600	293250
	WB	55278	0	55278
	WASHCost	185505	788352	973857
	Guidelines	494016	0	494016
Population to be covered (Sanitation without UG)		415	64	479
Cost Per Capita (Sanitation without UG)	WHO/Unecif	510	510	1020
	WB	102	0	102
	WASHCost	225	316	541
Total Cost of Provision (Sanitation without UG)	WHO/Unecif	211650	32640	244290
	WB	42330	0	42330
	WASHCost	93375	20224	113599
Population to be covered (Sanitation with UG)		747	224	971
Cost Per Capita (Sanitation with UG)	WHO/Unecif	1015	1015	2030
	WASHCost	730	765	1495
Total Cost of Provision (Sanitation with UG) in Rs. million	WHO/Unecif	758205	227360	985565
	WASHCost	545310	171360	716670
Total Cost of WASH (without UG)	WHO/Unecif	423300	114240	537540
	WASHCost	278880	808576	1087456
Total Cost of WASH (with UG)	WHO/Unecif	969855	308960	1278815
	WASHCost	730815	959712	1690527

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