Can WASH Services be improved by TAPping? Insights from WASHCost (India) Project[1]

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Abstract

WASHCost (India) Project researches on the unit costs providing the WASH service delivery in rural and peri urban areas. As part of the research, the survey was conducted in 20 villages to find out the Transparency and Accountability and Participatory (TAP) systems using the Qualitative and quantitative methods. The preliminary analysis of the data from 20 villages in Rural Andhra Pradesh clearly establishes that "if relevant transparency, accountability and Participatory (TAP) systems are in place there was higher level of WASH service delivery. Further there is a clear difference among the award winning and non award winning villages on WASH service delivery and across the different indicators of TAP".

1. INTRODUCTION – POLICY SETTING

In India, the WASH sector is largely supported by state/ central Governments. Each village would have a variety of infrastructure facilities that were provided over a long period of time, under a variety of local/ state/ central government schemes. These facilities range from hand pump/ open well to household level tap connections. Similarly, sanitation facilities also range from "open-defecation practices" to "common/ public toilets" to "house hold level toilets with tap connections". Several villages also have drainage and solid waste removal facilities for ensuring environmental sanitation in the village. However, the level of service delivery from these facilities is not uniform in all villages.

Government of Andhra Pradesh (Rural Water Supply and Sanitation Department in case of WASH sector in rural areas) broadly follows the policies and programs of Rajiv Gandhi National Drinking Water Mission (RGNDWM) of Government of India. Though GoI/ GoAP had several schemes/ projects (Eg: Sector Reforms projects and Swajal Dhara Schemes) that have an emphasis on participatory processes, several studies[2] and internal assessment by departments clearly indicated that there were several gaps in implementing these projects/ schemes. GoI/ GoAP are constantly engaged with the process of revising the policy framework or WASH sector in the country/ state. Lessons from Total Sanitation Campaign also contributed to the knowledge base of the GoI/GoAP in conceptualizing a new policy framework, which puts considerable emphasis on community led WASH service delivery. The recent guidelines clearly registered these missing links in the earlier programs/ schemes and made adequate provisions to address them. (Refer Box No 1). The Guidelines of RGNDWM (Apr 2010) clearly articulated the concerns such as source sustainability, community participation, services levels (indicated by quantity, quality, accessibility, affordability of communities, etc) and related processes/ institutional arrangements. Village Water & Sanitation Committees are expected to be established to take care of planning, coverage, maintenance and sustainable delivery of WASH services in rural areas. It is also expected that state Governments empower the local institutions by regularly assessing the WASH services from community's point of view (or support the community level self assessment processes) on the parameters such as access & usage; quantity, quality & reliability; responsiveness of service providers and user's satisfaction. It is expected that the performance of WASH services would improve significantly with the involvement or participation of communities/ local bodies in various processes related to WASH services delivery (Eg: planning, execution, operation and maintenance etc); and when institutions & functionaries are accountable for their actions, and when there is free flow of information (transparency). This paper is an attempt to understand the ground realities on the performance of WASH services and TAP related arrangements in selected habitations. The paper tries to find answers to the question – *"Can WASH Services be improved by TAPping? And is aimed at the following objectives*

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2 MV Rama Chandrudu, etc, Institutional Mapping and Analysis of WASH Services and Costs (Dec 2009), WASHCost-CESS Working Paper No 4.

Objectives:

The objectives of this paper are as follows;

- To capture/ study the perceptions of different communities/ local bodies on service levels of WASH facilities
- To assess the levels of transparency, accountability and participation (TAP) in WASH processes in the selected habitations
- To analyze the co-relation if any between the service levels of WASH facilities and TAP indicators.

The paper is organized into four sections, the first being the introduction, the second section deals with the methodology, while section three deals with the findings and analysis. The fourth section reveals the conclusions and limitations with the bibliography and annexes at the end.

> **Box 1**
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> Key Policy Provisions for TAP in WASH Sector in India – Guidelines of Rajiv Gandhi National Drinking Water Mission (Apr 2010)
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> *....To provide access to information through online reporting mechanism with information placed in public domain to bring in transparency, accountability and informed decision making; (Page No: 14)*
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> *....Community Based Monitoring should preferably fulfil the following objectives... It should provide regular and systematic information about community needs, which would guide related planning; It should provide feedback according to the locally developed yardsticks for monitoring as well as key indicators for measuring the consumer's satisfaction...*
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> *.....A social audit helps to narrow the gap between the perception of the line department's definition of services provided and the beneficiaries' level of satisfaction of the service provided. Social auditing also enhances the performance of the local self government, particularly for strengthening accountability and transparency in local bodies (Page 44)*
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> *Transparency: It is very critical that people are fully informed about the plan, schemes and investments proposed to be made in their areas. In fact, they should have a major role in deciding on the appropriate option. The village committee should display details of funds received and utilized at a prominent place in such a manner that people can see and understand it. This should be updated on a regular basis. (Page 67)*

2. METHODOLOGY

WASHCost (India) Project is being taken up with an active support from Rural Water Supply and Sanitation Department (RWSS), Government of Andhra Pradesh. Other members of learning alliance provide input to the research from time to time. As part of this research, cost details of various WASH facilities are being collected from different sources (mainly departments and Grama Panchayati, local governance institutions in rural Andhra Pradesh). Similarly, the perceptions of the local communities are being collected on service levels of each water point. The arrangements related to "Transparency, Accountability and Participation (TAP)" in the context of WASH sector are also assessed in each sample village.

Sample: WASHCost (India) is a five year action research project and intends to collect the data from 90 rural habitations across nine agro climatic regions of Andhra Pradesh. The sample habitations are selected using a systematic sampling strategy in order to represent the entire state of Andhra Pradesh**.** For the present paper the data from two agro climatic zones (i.e southern Telangana Zone and Central Telangana Zone) is used for analysis. The

data collected from 20 villages, of which ten are NGP[3] villages and the other ten are Non NGP villages (Please Refer Annexure 1 for the names of these villages). From these 20 villages around 288 water points (including hand pumps; Public Stand Posts and in the absence of PSP/HPs the different localities were considered to elicit the information) were assessed for their performance. Further household data is also collected to assess the WASH service delivery.

Tools for Data collection: Pre tested structured schedules are used for collecting the data from the communities at the water point level and household level. Quantified Participatory Assessment (QPA)was used to score the perceptions of the community on the TAP indicators as well as the WASH service delivery parameters. This method is used in several participatory research projects to understand the perceptions of communities on a given theme. The following text from AJ James (2008)[4] gives a brief insight on the relevance of this methodology.

"….The QPA is a flexible participatory methodology to capture people's perceptions in quantitative form. The basic purpose of the methodology is to rapidly assess people's perceptions on a range of qualitative issues using a variety of standardized scoring systems in order to generate comparable results across a large sample of stakeholders (including rural communities, district project offices and municipalities), and to use this information for adaptive management. One advantage of using numbers to capture people's perceptions is that information from a large number of stakeholders can be represented on a single computer spreadsheet, and the data can also be subject to simple yet powerful statistical analysis to pick out problems in project implementation. Scoring is an essential part of this assessment and it can be done in two ways such as self-scoring and peer group scoring depending on the time available and the nature of the respondents. In the present study peer group scoring was followed by self scoring of the field teams with the reasons for giving that particular score. The score ranges from 0 to 100 with the options for each score range. The options are pretested and revised several times before final formats were designed…."

"…The score can be 25, 50, 75, 100 or it can be 65 also where the community feels that they have crossed 50 by getting some household level issues sorted but have not completely influenced community level decision yet. Hence the reason for the score becomes very essential to justify the score given for that particular parameter. The field teams were well trained in this methodology before sent to the field. For assessing the service levels of WASH Facilities water point surveys conducted using QPA by assembling the users of the water points be it is HPs or PSPs. The TAP indicators are assessed by conducting QPA with four different groups i.e Members of Grama Panchayat, Women Groups, Youth Groups, Groups consisting of deprived communities…."

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[3] Nirmal Grama Purashkar Awards are given to those villages, which demonstrated "zero open defication" status. This award is given by Government of India.
[4] Quoted from AJ James (2008)

3.   FINDINGS AND ANALYSIS

This section has three parts which deals with conceptualizing the indicators and assessing of WASH service levels, then conceptualizing the indicators and assessment of levels of Tap indicators and finally the analysis on the correlation if any between the service level and TAP indicators.

3.1.   Understanding Performance Indicators of WASH Services:

The performance of WASH services (particularly water supply) is assessed both at household level and at the water point level. At each water point, the following performance indicators were assessed. A brief description of each of these performance indicators is given in Box 4a.

Box 4a
Indicators for Assessing WASH Service levels

- *Quantity/Adequacy*
- *Predictability*
- *Quality*
- *Cleanliness around the water point*
- *Social barriers to access*
- *Response of Grama Panchayati to breakdowns*

Quantity/Adequacy: In India, the standard norm of providing safe drinking water in the rural areas is 40 liters per capita per day (lpcd) in hot and cost desert eco-systems. Further, one drinking water source for every 250 persons in a habitation is provided, as a norm. Adequacy is also indicated by a*ccess to drinking water in the rural areas is determined in terms of distance – a source should exist within 1.6 Kms of the habitation in plans or 100 meters elevation in hilly areas.*

Predictability: This indicator is defined in terms of how reliable or predictable the water availability in the water point at any given point in time. If the users are not sure of when the water is available, it will affect their work and time allocation pattern especially in the rural areas as people leave for agriculture work early in the morning and come back home late in the evening.

Quality: Water supply for drinking and cooking should maintain quality as per the prescribed as per BIS standards and for other household and animal needs; the water should be of acceptable standard.

Cleanliness (Environmental Sanitation): If the water points are not well connected with the drainage system, the waste water might get accumulated and results in stagnation of pools facilitating mosquito breeding and then to spread the diseases. The QIS information was elicited on cleanliness around the water points in terms of safe disposal of waste water, physical condition of platform of water points; pollution etc.

Social Barriers: Social barriers could impose restrictions on access to water and hence impact on level of WASH services by individuals/ families that belong to poorer/ disadvantaged communities.

Response of Grama Panchayati/ Breakdowns: *Response of Grama Panchayati towards any complaints in case of WASH services and breakdown of systems is an indicator of WASH sector performance in any given habitation. If a local institution responds quickly, there is a possibility of higher level of performance of WASH services in that locality.*

3.1.1 Assessing WASH Service Levels

In majority of the performance indicators, the Nirmal Grama Purashkar Recipient villages (NGP Villages) performed better. The summary statement of this assessment for each of the performance indicator is presented in the <mark>Annexure No 2</mark>. It is indicated by higher % of water points that scored higher scores for majority of the performance indicators. This is evident from the table in Box No 2. This table is a summary statement of all data tables in Annexure No 1 and 2 and is self explanatory. There is a higher level of performance of institutions in NGP villages. NGP villages also have higher share of water points with high level of performance for other indicators such as cleanliness around water points; predictability of water availability; and quality of water in both the seasons.

Household survey indicates that there is minimal difference between NGP and Non NGP villages in terms of quantity of water received per person (Lt/Person/Day). (Please refer Tables in Annexure No 2). From the household surveys (Please Refer Box No 3), it is also evident that higher percentage of households has individual tap connections in NGP villages. More than 75% of households have tap connections at home in case of NGP villages (Except in case of Jagannadhapuram in which 41% of Households have individual tap connections).

Box 2	% of Water Points in High Performance score Range (76 to 100 Points)			
	Summer		Non Summer	
Performance Indicator	Non NGP	NGP	Non NGP	NGP
Adequacy of Water	16%	16%	26%	18%
Predictability of Water	12%	27%	14%	27%
Quality of Water	3%	9%	5%	9%
Cleanliness	13%	17%	12%	17%
Social Barriers	95%	93%	92%	93%
Response to Breakdowns	62%	74%	56%	71%
Panchayati Response	2%	22%	2%	22%

However, in case of Non NGP villages, the percentage of households that has tap connections at home range from 0 to 98. In 3 villages, this percentage is less than 50% of total households (including no individual tap connections at all). This is also could be because three of the villages are served thorugh the Multi village Schemes. Variety of technical options are used for providing water to rural communities in these villages (Eg: Direct pumping; Mini piped water supply scheme; Piped water supply scheme; Comprehensive piped water supply scheme; Hand Pumps, etc).

About 81% of households also pay water tariff to the Grama Panchayati in case of NGP villages (except in case of Jaganathapuram, which is 25%). In case of Gangadevulapally, the tariff is collected one time and there is no monthly payment. However, in case of Non NGP villages, the performance is on the extremes. In 50% of villages, households do not pay/

nominally pay water tariff, while in remaining 50% of villages, tariff collection is from about 70% to 90% of families. On an average, 39% of households pay water tariff in Non NGP Villages.

Sanitation Facilities and their use also have variations in the sample villages. In case of NGP villages, more than 75% of households have individual sanitary latrines (ISLs) (except in case of two villages' i.e Kistaram and Gopalpuram which are

Box 3

Indicators of WASH Facilities – Coverage	% of of House Holds			
	NGP -		Non NGP	
	Yes	No	Yes	No
Tap Connections	77%	23%	50%	50%
HH with Toilet	76%	24%	29%	71%
HH Using Toilets	90%	10%	39%	61%
HH Paying Water Tariff	81%	19%	35%	65%
HH Participated in IEC Activities	42%	58%	22%	78%
HH Having Environmental Sanitation Support	71%	29%	33%	67%

Source: House Hold Survey in Sample Villages

actually wrongly identified under NGP and it is very evident that they don't fit into the category of NGP at all). The use of the sanitary latrines is also relatively high in NGP villages i.e more than 90% of households having toilets (It should have been 100% but for the two villages which are affecting the averages) , while it is only 29 % in Non NGP villages. In case of Non NGP villages, the ownership of ISLs is relatively low (Ranging from 9% to 76%). In fact, only one village has more than 50% of households with ISLs, while the remaining villages have less than 50% households with ISLs.

In case of environmental sanitation/ solid waste disposal, there is a clear difference between NGP and Non NGP villages. In only one village, Grama Panchayati made arrangements for solid waste disposal under this category. In remaining 90% of Non NGP villages, Grama Panchayati does not make any serious arrangements for solid waste disposal. However, in case of 71% of NGP villages, Grama Panchayati made serious efforts to collect and dispose solid waste. (About 50% to 80% households benefited from these services in these villages). In remaining 29% villages, the efforts of Grama Panchayati could cover about 20% to 40% of households. In 20% of NGP villages, the Grama Panchayati did not make any efforts to collect solid waste. In consistent to this, more number families of Non NGP villages reported foul smell in the village and less number/ none reporting this phenomenon in NGP villages.

Participation of communities in Information/ Education/ Communication campaigns is also relatively high in case of NGP villages. About 42% of households participated in IEC campaigns in 40% of sample villages in NGP category. In 50% of sample villages, about 20% to 40% of households participated in IEC campaigns in NGP villages. In case of 80% of Non NGP villages, less than 40% of households participated in IEC campaigns. (0% to 39% in 8 villages in this category).

From the above analysis, it is clear that there is a perceivable difference in performance of WASH facilities/services between NGP and Non NGP villages.

3.1.2 Understanding TAP indicators

Since huge investments[5] are being made on WASH sector each year, the Guidelines also emphases on arrangements for improving TAP at various levels., The WASHCost (India) Project conceptualized the "Parameters and Indicators" for assessing TAP Related Systems in WASH Sector in Andhra Pradesh[6]. (Please Refer Box No 4) b. There are 6 parameter and 19 indicators that are useful in explaining the level of participation, accountability and transparency in the WASH services. These are related to various project management components and institutional provisions that are articulated in the Guidelines/ policy documents of GoI/GoAP.

It may be noted that any one of these indicators could indicate any of the three core concerns – Transparency, Accountability and Participation. However, for simplifying the understanding, these indicators are classified into transparency & accountability (TA) related and Participation related. (Box 4b). Some of the key TAP indicators are briefly explained here to give better insights.

- Transparency and Accountability Related: Delivery WASH services requires establishing proper systems (such as maintenance of records; collection of tariffs, etc) and following them rigorously. These systems also help in developing transparency and accountability at various levels, including citizens. It is important that several aspects of WASH service are shared "openly" with all citizens in the village on voluntary basis and also on demand. The arrangement for proactive disclosure of information by responsible institutions/ individuals not only improves the transparency and also makes them accountable to their actions. Efforts to

> **Box 4 b**
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> **Indicators for Assessing TAP Related Systems in WASH Sector in Andhra Pradesh**
>
> **Transparency and Accountability Related:**
> - Operation and Maintenance: Piped Water Supply
> - Operation and Maintenance: Hand Pumps
> - Water Quality at Community Water Points (PSP and HP)
> - Solid Waste Situation in the village
> - Waste Water Situation in the village.
> - Hygiene and Sanitation
> - Water supply and sanitation records
> - Tariff or water user fee collection
> - Proactive disclosure (Transparency and Accountability)
> - Effectiveness of Training
> - Effectiveness of IEC
>
> **Participation Related:**
> - Functioning of Village Water and Sanitation Committee (VWSC)
> - Participation by women in community-level decision-making on water supply
> - Participation by SC/ST in community-level decision-making on water supply
> - Functioning of the Gram Sabha on WASH Issues
> - Participation in the Feasibility Survey
> - Participation in the Technical Survey
> - Knowledge about Integrating with existing systems
> - Knowledge of Extension of Systems

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[5] More than $ 27,625 million in the last 60 years – V Ratna Reddy, Charles Batchelor – Cost of Providing Sustainable Water, Sanitation and Hygiene (WASH) Services: An Initial Assessment of LCCA in Andhra Pradesh, WASHCost (India) Working Paper No 7 (May 2010)

[6] MV Rama Chandrudu, etc (2009) – Accountability and Transparency in WASH Services in Godumakunta Village, RR District, AP (Draft)

build capacities of citizens/ institutions on these mechanisms (through training and effective communication campaigns) help in strengthening systems for transparency and accountability in WASH delivery. The quality of WASH services is highly dependent on the regular operation and maintenance of WASH services in the village (hand pumps; piped water supply systems, solid & liquid waste management, promotion of hygiene, etc) on day to day basis. It is important that all sections of the village are aware of these systems and perform their obligations as desired. This category of indicators could be largely called accountability related indicators.

- Participation Related Indicators**:**
  There are mainly two sub sections of this category of indicators.

- Functioning of Village Water & Sanitation Committee**:** This is a local institution that is being established for ensuring better WASH services in the village. Effective functioning of this institution is expected to ensure better/ higher coverage of families in the village under WASH services. This committee is expected to participate in a variety of processes of WASH service delivery (planning; implementation; operation & maintenance of WASH facilities, etc) and take necessary decisions at local level.

- Planning, Implementation/ Decision making: Planning is an important step in improving WASH services in any village. The technical surveys for new and extension of existing systems, feasibility surveys, location of WASH facilities, etc are part of this process. The involvement of local committees/ institutions in this process helps in improving the quality of these plans and also develops higher level of transparency in establishing WASH systems. Knowledge about investments, rationale for choice of technologies/ locations, etc would be a common knowledge in any village, when there is participation of communities in planning processes This indicator has several sub indicators (participation of women; disadvantaged groups and general assembly of village – Grama Sabha) that give a clear picture of participation of various categories of villagers in improving WASH services. The platforms such as committees and general assembly help in creating spaces for participation of various stakeholders in WASH services delivery.

3.2. Assessing Level of TAP in sample villages:

The field work of WASHCost (India) Project concentrated on understanding the current systems/ practices related to TAP in the sample villages by conducting Focused Group Discussions with each of the target groups i.e Members of Grama Panchayati ,Women Groups, Youth Groups, Groups consisting of deprived communities. The responses of each group were carefully documented on a score range from 0 to 100, for each category of respondents. '0' indicates low level of involvement and '100' indicates highest level of involvement. For any indicator, the total score is 400 points (100 points from each category of respondents). The total of these scores is used as a basis for assessing the level of TAP indicators in each village.

The total scores of each indicator under Transparency & Accountability and Participation are presented in Box No. 5. Though each indicator could represent all three concerns (related to TAP), a division of these indicators is made to facilitate clarity of thinking.

Box 5 Summary Scores of TAP Indicators		
Total Scores of Transparency and Accountability related Indicators	NGP	Non NGP
Records Keeping	1892	900
O&M of PSP	185	1
O&M of HPs	265	264
Water Quality Monitoring	1659	1185
Tariff Collection	1912	1031
Proactive Disclosure of Information	1378	647
Solid Waste Management	1962	1355
Waste Water Management	1626	1344
Hygiene Practices	2161	1293
Total	**13040**	**8020**
Total Score of Participation Related Indicators	NGP	NON NGP
Participation in Feasibility Survey	1939	2031
Participation in Technical Survey	2066	1834
Participation in System Integration	1807	1462
Participation in System Extension	2162	1487
Contribution of Women In Decision Making	2133	1341
Contribution of SC/ST members in Decision Making	2302	1921
Functioning of Grama Sabha	1791	1010
Effectiveness of Training	1389	330
Effectiveness of IEC	2273	1848
Total Scores	**17862**	**13264**

It may be seen that the scores obtained by Nirmal Grama Purashkar villages is higher than those scores obtained for Non-NGP villages, for all most all Transparency & Accountability related indicators. The responses of four different categories of communities (Grama Panchayati; women, youth and members from Sc/ST communities) in NGP villages indicate that there are better processes and involvement of communities in WASH service delivery. However, there is high level of inconsistency in responses in case of NGP villages. This indicates that involvement of communities in process of WASH services is not adequate to establish that fact that there is high level of transparency in the processes in different groups/ communities. This is indicated by high number of indicators that got high values of standard deviation in case NGP villages. (About 52% of TAP Indicators got low values of Standard Deviation and fall into high consistency category). This clearly brings to the

limelight that the NGP villages are able to involve communities in WASH processes, but there is a "knowledge gap" between these different groups. It is observed that most of these processes are leader centric/ Grama Panchayati centric and others have participated in these processes. However, there is still gap in knowledge at different levels. (For details on the values of Standard Deviations of TAP scores, please refer Annexure No 1). About 60% of TA related indicators got high scores (about 200 points) in case of NGP Villages, indicating high level of engagement on TA related issues. Similarly, about 87% of Participation related indicators got high scores (more than 200 points).

The scores obtained by Non NGP villages are relatively low in almost TAP indicators. This clearly indicates that the communities/ leaders are not engaged adequately in WASH service provision. However, it may be noted that there is high level of consistency in responses across different categories of respondents. This is indicated by higher % of TAP indicators that got low values of standard deviation & high level of consistency of responses. (About 65% of TAP indicators in Non NGP villages fall into low standard deviation & high consistency category). This consistency is mainly because of the "gap in action". When there is gap/ absence of action, everyone knows that "there is no action". As a result of this common understanding, the responses of all categories of respondents are consistent with each other. It may be noted that 63% of TA related indicators got low scores (less than 200 points) in case of Non NGP villages. Similarly, 30% of Participation related indicators got low scores (Less than 200 points), in this category of villages.

It may be noted that the establishing Village Water Sanitation Committee is not complete in many villages or it is just completed on paper. Effective functioning of this institution is not visible in most of the sample villages, including NGP villages. In some of the role model villages (Eg: Gangadevulapally, the Village Water Committee is more functional and one of the most active institution in water management in the village. However, the sanitation related agenda is relatively weak with this institution. People in the village generally identify this institution as "water committee, rather than a "water and sanitation" committee). The data related to this indicator (Performance of VWSC) is not included in the analysis, as it is common in all categories of villages and largely this institution is non-functional.

From the above analysis, it is clear that the involvement of local communities is higher in case of NGP habitations in WASH service related affairs, while the involvement of local communities is relatively low in case of Non NGP villages.

3.3 Exploring the Co-relationships between TAP Indicators for WASH Service levels:

In the third step, an attempt is made to develop a co-relationship between WASH services and TAP indicators. For enabling this process, a matrix that gives a set of "common indicators" for both TAP and Performance is developed, for each performance indicator. This matrix is presented in Annexure No 3. This matrix is used to correlate performance indicators with specific TAP indicators (most directly related TAP indicators). The co-relationship is developed to test the following five hypothesis, each hypothesis relating to five performance indicators.

A regression analysis is conducted for each of the performance indicators using *"most relevant"* TAP indicators, to test the hypothesis. The TAP indicators are considered as "independent" variables, while the percentage of water points in the "highest level of performance" category (for each of WASH Performance Indicator) is considered as dependent variable. Using this multiple regression analysis, the following co-relationship is developed between TAP indicators and performance of water points (hand pumps and public stand post/ localities). Apart from this, simple co-relationship between WASH Performance Indicators and TAP Indicators is also developed (Refer Box.6)

TAP Indicators that influence Adequacy[7]:
The "adequacy" of WASH services (WASH Performance Indicator 1) is dependent on a variety of TAP indicators. Based on the matrix of common indicators for TAP and Performance, the following hypothesis is proposed.

Adequacy of WASH services (Eg: adequate quantity of water supplied) is high when

- All parts of the village are included in the village plan (including in expansion plans);
- Grama Panchayati/ VWSC/ Villagers are part of planning process (familiar with details of costs, budgets and plans of establishing WASH services in the village);

Box 5 Co-Relationship Between WASH Performance Indicators and TAP Indicators (TAP Indicators that got more than 0.4 as coefficient of co-relation) (TAP Indicator in Yellow Color are for NGP Villages)	
TAP Indicators	**Adequacy**
Proactive Disclosure	0.44
O&M HPs	0.45
O&M PSP	0.47
Grama Sabha	0.55
Hygiene Practices	0.63
	Predictability
Solid Waste Management	0.41
Hygiene Practices	0.42
Total Score (Transparency and Accountability	0.57
SC/ST in Decision Making	0.57
Total Score (Participation)	0.60
System Extension	0.60
Proactive Disclosure	0.63
Effectiveness of IEC	0.67
Women In Decision Making	0.73
Grama Sabha	0.78
Tariff Collection	0.81
	Quality
Effectiveness of Training	0.43
O&M HPs	0.48

- When Grama Panchayati/ VWSC takes up a resolution that all parts of the village get equal WASH services and these resolutions are displayed in public places;
- Grama Panchayati/ VWSC ensures that adequate water is made available to all uses of defined users and also additional users
- RWSS staff integrated the existing WASH systems within the proposed new plans
- Grama Panchayati/ VWSC established a system of complaint redressal for maintenance

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[7] It may be noted that the analysis in paper is largely focused on TAP indicators and did not consider other important factors such as resource position, technology, costs, etc.

A simple co-relationship analysis indicates that adequacy is influenced by function of Grama Sabha, in NGP villages. (Box No 5)

TAP Indicators that influence Predictability:

This hypothesis is related to predictability of WASH services. In this analysis, "predictability" of WASH services (availability of WASH services, timings, etc) is considered as "dependent" variable and related TAP indicators are considered as independent variables (mentioned below). Based on the Matrix of Common Indicators for TAP & Performance, the following hypothesis is developed.

Predictability of WASH services is high when

- All users know about the schedule of water supply
- Breakdown policy of Grama Panchayati is clearly displayed and everyone knows about it
- Grama Panchayati/ VWSC develops and operationalises break down policy for maintenance of water supply schemes

Simple co-relation analysis indicates that several TAP indicators have a bearing on the predictability of WASH services, in NGP villages. Functioning of Grama Sabha and involvement of women in decision making processes are some of the TAP indicators that have strong and positive co-relationship with predictability of WASH services. Indicators that have a strong focus on transparency have a strong bearing on predictability of WASH services. It is interesting to note that such relationship is not visible in Non NGP villages.

Box 5
Co-Relationship Between WASH Performance Indicators and TAP Indicators
(TAP Indicators that got more than 0.4 as coefficient of co-relation)
(TAP Indicator in Yellow Color are for NGP Villages)

	Cleanliness
Records	0.41
Effectiveness of Training	0.46
Hygiene Practices	0.47
O&M HPs	0.47
Total Score (Transparency and Accountability)	0.49
Proactive Disclosure	0.50
System Extension	0.53
Solid Waste Management	0.56
SC/ST in Decision Making	0.56
Grama Sabha	0.61
Total Score (Participation)	0.63
Total Score (Participation)	0.67
System Extension	0.69
Tariff Collection	0.70
Waste Water Management	0.73
Tariff Collection	0.74
Effectiveness of IEC	0.75
Records	0.75
Proactive Disclosure	0.75
Women In Decision Making	0.76
Total Score (Transparency and Accountability	0.76
Women In Decision Making	0.76
Effectiveness of IEC	0.77
O&M PSP	0.78
Hygiene Practices	0.79
Grama Sabha	0.86

TAP Indicators that Influence Quality:

This hypothesis is related to quality of WASH services. In this analysis, "quality" of WASH services (Eg: quality of water) is considered as "dependent" variable and related TAP indicators are considered as independent variables (mentioned below). Based on the Matrix of Common Indicators for TAP & Performance, the following hypothesis is developed.

Quality of WASH services is high when (Performance of Institutions related indicators)

- Trained person is available with Grama Panchayati/ VWSC for maintaining WASH services in the village
- RWSS provides adequate capacity building inputs to staff of VWSC/ Grama Panchayati members who are responsible for WASH services
- RWSS organized several IEC campaigns to motivate and educate villagers on WASH governance
- Individual families conserve rain water at household level for improving quality and sustainability of sources

Box 5	
Co-Relationship Between WASH Performance Indicators and TAP Indicators (TAP Indicators that got more than 0.4 as coefficient of co-relation) (TAP Indicator in Yellow Color are for NGP Villages)	
TAP Indicators	Social Barriers
Tariff Collection	0.44
O&M HPs	0.45
Tariff Collection	0.57
TAP Indicators	Breakdowns
Women In Decision Making	0.40
Total Score (Transparency and Accountability	0.47
Effectiveness of Training	0.47
Records	0.53
Tariff Collection	0.63
Waste Water Management	0.65
Tariff Collection	0.66
Effectiveness of IEC	0.67
O&M HPs	0.68
Grama Sabha	0.80

(Transparency related instruments)

- Grama Panchayati/ VWSC maintains records related to WASH services
- The policy of maintenance is displayed in the village and everyone knows about it
- The records of WASH sector are available for public scrutiny
- Grama Panchayati/ VWSC displays water quality reports in public places
- Grama Sabha is regularly organized to share the developments/ details of WASH services in the village
- VWSC/ Grama Panchayati regularly monitors the water quality
- Villagers are aware of water quality of different water points

Co-relationship analysis indicates that there is no strong co-relationship between TAP indicators and this indicator of WASH performance.

TAP Indicators that influence Environmental Sanitation (Cleanliness):

This hypothesis is related to environmental sanitation in the village. In this analysis, "environmental sanitation (Cleanliness around water points)" is considered as "dependent" variable and related TAP indicators are considered as independent variables (mentioned below). Based on the Matrix of Common Indicators for TAP & Performance, the following hypothesis is developed. Environmental Sanitation (particularly around water points) is high when

- Dependent families take care of cleanliness around water points
- Grama Panchayati/ VWSC deploy staff and systems for maintenance of cleanliness around watershed development project

Co-relation analysis indicates that there are a large number of TAP indicators (both in case of NGP and Non NGP villages) that influence cleanliness indicator. Waste water management, tariff collection, influence of IEC activities, women in decision making processes, functioning of grama sabha are these TAP indicators.

TAP Indicators that influence Access:

This hypothesis is related to accessibility of WASH services in the village. In this analysis, "access" to WASH services is considered as "dependent" variable and related TAP

	Box 5 Co-Relationship Between WASH Performance Indicators and TAP Indicators (TAP Indicators that got more than 0.4 as coefficient of co-relation) (TAP Indicator in Yellow Color are for NGP Villages)
TAP Indicators	Grama Panchayati's Response
Total Score (Participation)	0.40
Water Quality Monitoring	0.47
Proactive Disclosure	0.47
O&M HPs	0.48
System Integration	0.48
Effectiveness of IEC	0.55
Grama Sabha	0.58
Hygiene Practices	0.61
O&M PSP	0.62
Women In Decision Making	0.67
Total Score (Participation)	0.68
Records	0.68
Grama Sabha	0.68
System Extension	0.69
Waste Water Management	0.69
Effectiveness of IEC	0.72
Solid Waste Management	0.75
Total Score (Transparency and Accountability	0.76
Tariff Collection	0.78

indicators are considered as "independent" indicators (mentioned below). Based on the Matrix of Common Indicators for TAP & Performance, the following hypothesis is developed.

WASH services are accessed by different social groups when (social barriers to access WASH services)

- All categories of families are allowed to use water from any particular water point
- Women are able to participate in decision making processes related to WASH services
- SC/ST communities are able to participate in decision making processes related to WASH services

Co-relationship analysis indicates that social barriers/ breakdown responses are influenced by tariff collection, effective functioning/ maintenance of hand pumps and functioning of grama Sabha. These TAP indicators are observed both in NGP and Non NGP villages. Similarly, the function of Grama Panchayati in WASH sector is influenced by several of TAP indicators such as functioning of grama Sabha; effective IEC inputs; extension of existing systems; solid waste management/ environmental sanitation and total TAP scores.

While the co-relationship between individual TAP indicators and WASH performance indicators have strong co-relationship (which is indicated by higher values of coefficient of co-relationship), the multiple regression analysis has projected a different picture of influence of TAP indicators on WASH Performance Indicators.

The regression analysis indicated that the co-relationship between the dependent and independent variables is different in case of NGP and Non NGP habitations. The R and R Square values are clearly higher in case of NGO villages in all parameters, which indicated that the hypothesis are proved positive and strong in case of NGP villages and the same relationship is weaker in case of Non NGP villages. (Please Refer Box No 6). The performance of WASH sector indicators is better as the TAP are better in NGP villages and vice versa. For each performance indicator, the relationship with independent variables is either positive or negative. The nature of these relationships is given in the Box No 7. Though these observations are broadly following the predicted behavior, there are few indicators that demonstrated that the nature of relationship is not as expected. As an illustration, the feasibility survey related indicator did not demonstrate positive co-relationship with the performance indicators. Similarly, the functioning of Grama Sabha also did not demonstrate high/ positive co-relationship with the performance indicators. The same independent variable has positive and negative co-relationship in case of NGP and Non-NGP villages, indicating that the nature of influence of the TAP indicators on performance indicator.

SI. No.	Parameter	Type of facility	Season (Summer)				Season (Non Summer)			
			NGP		Non NGP		NGP		Non NGP	
			R	R sq	R	R sq	R	R sq	R	R sq
1.	Adequacy	HP	0.971	0.942	0.894	0.800	0.786	0.617	0.998	0.997
		A&PSP	0.914	0.835	0.974	0.949	0.900	0.809	0.801	0.641
2.	Predictability	HP	0.739	0.546	0.383	0.147	0.694	0.482	0.291	0.085
		A&PSP	0.917	0.841	0.440	0.194	0.838	0.702	0.443	0.196
3.	Quality	HP	0.666	0.444	0.495	0.245	0.672	0.452	0.495	0.245
		A&PSP	0.774	0.599	0.666	0.443	0.774	0.599	0.659	0.435
4.	Cleanliness	HP	0.773	0.597	0.582	0.338	0.623	0.389	0.582	0.338
		A&PSP	0.376	0.141	0.787	0.620	0.660	0.435	0.771	0.594
5.	Social Barriers	HP	0.698	0.487	0.534	0.286	0.787	0.619	0.696	0.484
		A&PSP	0.870	0.758	0.672	0.451	0.859	0.739	0.628	0.395

Box 6

Values of R and R Square – Summary Statements of Regression Analysis – NGP and Non NGP Villages

4. CONCLUSIONS

- There is a clear difference between NGP and Non NGP villages in WASH Performance Indicators and TAP Indicators. The levels of scores in both the categories of indicators (WASH Performance and TAP) are higher in case of NGP villages.

- The field work and analysis of data bring forth the following gaps in WASH sector and reinforce some of the earlier observations.

  ### Performance Gap:
  Though WASH Performance Indicators and TAP Indicators clearly establish superiority of NGP villages, there seems to be a "performance gap". This gap is between the desirable levels of performance and actual performance. Since NGP villages are expected to demonstrate certain practices on a sustained basis, this gap (between desirable levels (of performance) and actual levels) is a cause of concern. This could be also interpreted as an indication of slippage of NGP status also.

  It is also important to note that leaders are able to take up the responsibility of providing higher level of WASH service delivery and are replacing institutional processes. As a result, the WASH performance indicators are high in these villages and TAP indicators are relatively low OR not as per the expected levels.

  ### Knowledge Gap:
  Though there is a reasonably high level of general awareness/ knowledge in the villages on WASH issues in these villages, there is also considerable "knowledge gap" between different groups in the village. Leaders seem to have more and higher knowledge and other groups have relatively low levels of knowledge on WASH issues. There is a need for bridging this gap (basically improving TAP related systems) in order to sustain the NGP status and move from leader centric processes to community centric processes.

  ### Action Gap:
  In case of Non NGP villages, there is an "action gap" in improving the WASH sector performance. This is clearly indicated by lower values (scores) of TAP indicators and WASH Performance Indicators. On certain TAP indicators, there is very limited/ no effort made by local institutions (Eg: Operation and Maintenance of Public Stand posts) leading to low level of WASH performance indicators. While these villages are able to supply water (adequately) to rural households, there are other aspects of WASH services that are grossly neglected in these villages.

- The institutional arrangement for WASH services (Village Water & Sanitation Committee) is not formally functioning. But the Grama Sabha/ Grama Panchayati are able to provide inputs and take responsibility of providing water. This obligation is

largely performed by President/ head of Grama Panchayati. This function of Grama Panchayati/ President is recognized in a variety of TAP indicators.

- However, it is interesting to note that there is a consistency in knowledge levels of different groups in Non NGP villages (in comparison to NGP villages). The statistical analysis of TAP indicators indicates that higher number of TAP indicators have lower values of standard deviation, in case of Non NGP villages.

- The R value and R sq uare values are relatively high for NGP villages which indicate that the dependent variables (percentage of water points in higher level performance) and selected independent variables (TAP Indicators) are strongly co-related in NGP villages. Though the relationship between the dependent variable (performance of water points in higher levels) and selected independent variables is established, in the case of Non NGP villages, the relationship is relatively weak.

- While the framework of analysis is reasonably established and found useful, the following limitations are found with the same.

  o The data base is too small to make meaningful conclusions on the influence of TAP indicators on WASH performance. However, with large and robust data bases, the above model for analysis could be relevant for delineating the influence of various TAP indicators on WASH performance.

  o This model could be further improved by incorporating the "cost" related indicators and other indicators (as dependent variable) and verify the common influence of TAP and Cost/ other indicators on WASH Performance indicators. There is also a hint from this paper and another from WASHCost (India) Project (By Ratna Reddy 2010, etc) that performance of WASH indicators is *jointly/ commonly* influenced by both cost indicators and TAP indicators. It may be unwise to assess the influence of each of these variables on WASH sector performance separately.

  - The preliminary analysis helps to understand the relevance of statistical analysis of data bases and proves that the hypothesis that "***"Higher percentage of WASH facilities would be delivering higher level of WASH services, when relevant transparency, accountability and participatory (TAP) systems are in place. But the analysis would be robust and complete when the data base is large and includes other important & independent variables such as cost indicators"***

REFERENCES

1. Aj James, etc (2008)
2. Impact Assessment of Nirmal Gram Purashkar Awarded Panchayati (2008) by TARU
3. Movement towards Ensuring People's Drinking Water Security in Rural India, Framework of Implementation, Rajiv Gandhi National Drinking Water Mission (Apr 2010)
4. MV Rama Chandrudu, etc (Dec 2009), Institutional Mapping and Analysis of WASH Services and Costs, WASHCost-CESS Working Paper No 4
5. Results Framework Document, Department of Drinking Water Supply Ministry of Rural Development, GoI (2010-2011)
6. V Ratna Reddy, etc (Dec 2009), Costs of Providing Sustainable Water, Sanitation and Hygiene Services in Rural and Peri Urban India, WASHCost-CESS Working Paper No 1
7. V Ratna Reddy, Etc (May 2010), Cost of Providing Sustainable Water, Sanitation and Hygiene (WASH) Services: An initial assessment of LCCA in Andhra Pradesh, WASHCost (India) Working Paper No 7
8. Web Site of Arghyam – India Water Portal
9. Web Site of the department of drinking water department, GoI: http://ddws.nic.in/mis_prog.htm

Abbreviations	
BIS	Bureau of Indian standards
CO	Community Organization
FGD	Focused Group Discussion
GoAP	Government of Andhra Pradesh
GoI	Government of India
HP	Hand Pump
IEC	Information, Education and Communication
ISLs	Individual Sanitary Latrines
Lpcd	Liters Per capita Per Day
NGP	Nirmal Gram Purashkar
O and M	Operation and Maintenance
PRIs	Panchayati Raj Institutions
PSP	Public Stand Post
QIS	Quantitative Information Systems
QPA	Quantified Participatory Assessment
RGNDWM	Rajiv Gandhi National Drinking Water Mission
SC / ST	Scheduled Caste/ Scheduled Tribes
TAP	Transparency, Accountability and Participation
UG	User Groups
VWSC	Village Water and Sanitation Committee
WASH	WAter, Sanitation and Hygiene
WPs	Water Points i.e., Hand Pumps and Public Stand Posts