Water Quality Monitoring & Surveillance Project

2014-2015

BASELINE REPORT

SaciWATERs

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1. Background

The baseline survey report is prepared as part of the Water Quality Surveillance and Monitoring in Rural Telangana Project, a joint initiative of WaterAid India, and the State Government of Telangana, State Water and Sanitation Mission. WaterAid, India supports the project.

Field research was conducted in the month of February 2015, and aimed to establish the current situation with respect to water quality, sanitary, health and hygiene behavior and attitude, to assess the water quality issues, coverage in the project target area to support and evaluate the Water Quality Surveillance and Monitoring Project. This report presents the objective, methodology, and findings from the field as well as some preliminary analysis and recommendations.

1.1. Context

The Water Quality Surveillance and Monitoring Programme cover 25139 habitations, about 53 percent of the total habitations in Telangana. The Government data shows out of these, 8794 households had water quality issues. In specific, 3980 households were affected with fluoride contamination, 4147 iron and 1475 nitrate. These figures are growing at an alarming rate with the increasing amount of ground water extraction, changing pattern of precipitation and temperature.

Rural households have access to drinking water but lack knowledge and awareness about the water quality, they consume contaminated water causing severe health problems. The national drinking water guidelines mandate 100 percent water testing at village level, often communities lack skills to efficiently use the water-testing kits and the laboratories do not have the infrastructure to support regular water testing. The households are challenged with increasing groundwater contamination and the burden of water-borne infections.

After drinking water supply and sanitation projects are completed at village level, most VWSCs established are defunct, responsibility of operation and maintenance of the water supply and sanitation infrastructure have shifted to the Gram Panchayat. The contributing factor causing lack of safe drinking water across rural households has partly been due to lack of continued support to the decentralised institutions established under national drinking water schemes. The key challenges that lie ahead are how to ensure continued community participation and increase in skills and knowledge about water quality and better sanitary practices at the village level.

1.2. Water Quality Project

The Water Quality Surveillance and Monitoring in Rural Telangana Project purpose is to plug the gaps in the existing National Rural Drinking Water Quality Monitoring Programme (NRDWQMSP) in the state and activate the dormant existing systems and institutions at local level to make the programme active and sustainable.

The objectives of the project are:

- To assess the gaps in water quality monitoring programme implementation in the state,
- To assess the performance of division and sub division labs in the state,
- To enable Government institutions to develop pilots in three districts and influence state government to replicate the same models to streamline water quality monitoring in the state

The activities of the Project are undertaken in 16 villages from four Mandals of Nizamabad district in Telangana State (see map 1).

The Methodology of selecting the district, Mandal and the villages are listed below:

A. District Selection

District selection was based on the following factors:

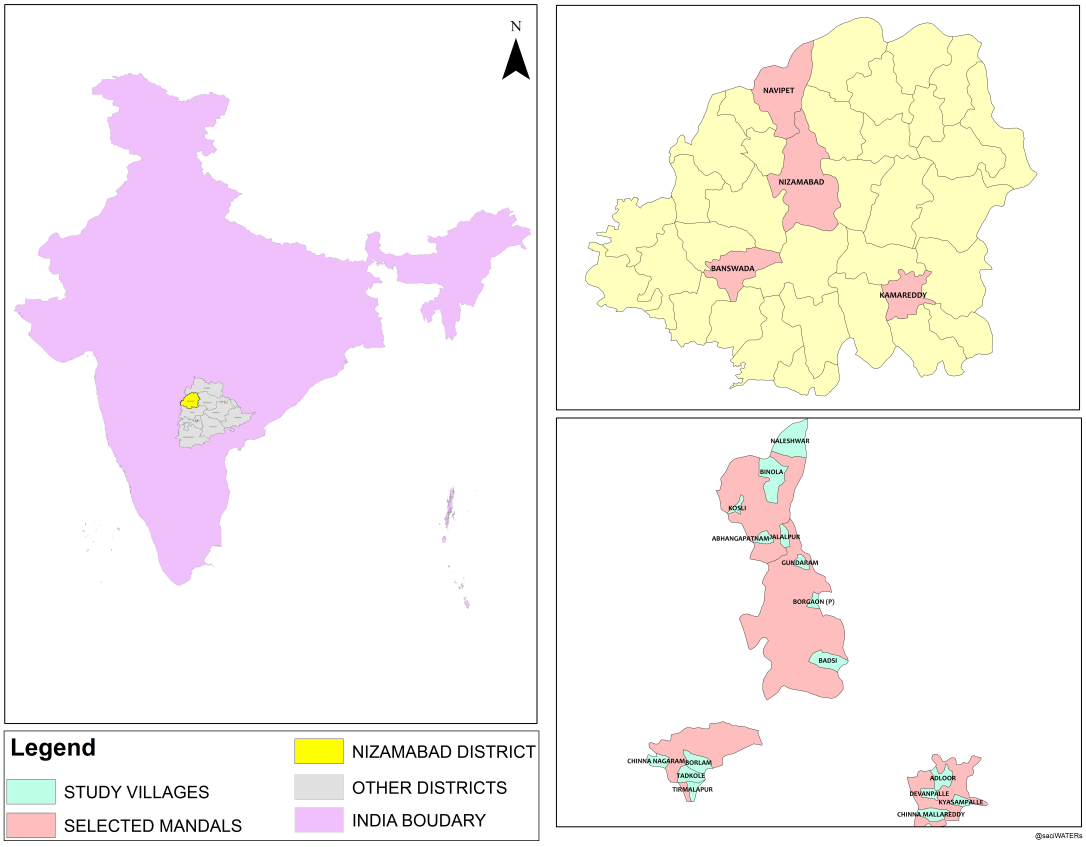
- **Rurality** (based on rural population figures): as our main aim was to assess the Water Quality Monitoring and Surveillance Component of the National Rural drinking water programme we focused on districts with a large rural population when compared with urban population,
- **Coverage:** the aim is to assess the Water Quality Monitoring and Surveillance Component of the National Rural drinking water programme, it is important to look at those districts with the maximum coverage of the programme so as to minimize confounding factors or any errors that may result from factors other than the working of the programme,
- **Water Quality:** After districts were listed based on coverage, the incidence of water quality issues reported on the IMIS was analyzed. Districts with higher water quality issues are preferred so that WQMS was assessed and validated,
- **Government receptiveness:** The project aims to develop a pilot to streamline the WQMSP once the gaps are identified, hence as the programme is a government programme, the support of the government is essential. Districts with high government receptiveness were preferred, to maximize support and effectiveness of the pilot,
- **Accessibility/ease of conducting fieldwork:** This was an optional criteria, districts which easily accessible from Hyderabad was preferred for regular visit to the field.

Table 1 Distribution of Water Quality across Telangana State

Telangana State									
Districts	Adilabad	Nizamabad	Karimnagar	Medak	RangaReddy	Mahbubnagar	Nalgonda	Warangal	Khammam
Population size in Lakhs (approx. From census 2011)	27	25	38	30	52	40	34	35	27
Rural Population size (from 2014-2015 NRDWP report)	22	21	33	26	20	38	33	31	26
Rurality	R	R	R	R	U/R	R	R	R	R
Coverage of rural Drinking water programme (as reported for 2013-2014)	48%	64%	28%	38%	39%	36%	52%	33%	60%
Coverage of rural Drinking water programme (as reported for 2014-2015)	56%	71%	36%	48%	50%	44%	61%	40%	65%
Water quality affected habitations	0.01%	11%	30%	13%	19%	17%	5%	30%	3%
Major contaminants (more than 10%)	F	F>Salinity	F	F>>No3	F>>>Salinity	F>Salinity	F>>Salinity	F>>No3	F=No3
Sanitation coverage Census + NBA + NonNBA reported on NBA website (Per HH as per census 2001 data)	78%	93%	88%	101%	103%	91%	69%	63%	133%
Government receptiveness	weak	strong	unknown	unknown	moderate	unknown	desensitized	strong	unknown
Accessibility from Hyderabad (Distance in km)	303.7	169.4	163.7	95	84.5	134.8	83.7	143.9	192.6
Funds released for the year 2013-2014 (Support+Programme+ WQMS) in crores	81.15	48	80.08	109	20.06	114.48	118	50	60.23
Funds released for the year 2013-2014 (WQMS) in crores	0.77	0.67	0.89	0.83	0.66	1.03	0.87	0.84	0.85

Therefore, Nizambad district was selected as it had over 70 percent coverage of the programme, it was primarily a rural district, 11 percent of its sources were contaminated, it was accessible from Hyderabad and local government receptiveness was high.

Map 1. Nizamabad District and Mandal level Map



B. Mandal Selection

Mandal selection has been done based on levels of labs present and geographical representation. The four Mandals were selected:

- Navipet: Northern Mandal, no lab present
- Nizamabad: Central, District level lab present
- Banswada: Southwest, Division level lab present
- Kamareddy: Southeast, sub-division lab present.

C. Village Selection

Villages in Mandals were divided initially into four categories based on percentage of source contamination reported by the labs.

The categories were:

- 0 % contamination
- 0-25 % contamination
- 25- 50 % contamination and
- 50-75 % contamination

- 75 – 100 %

Map 2. Nizamabad district Mandal and Village level Map

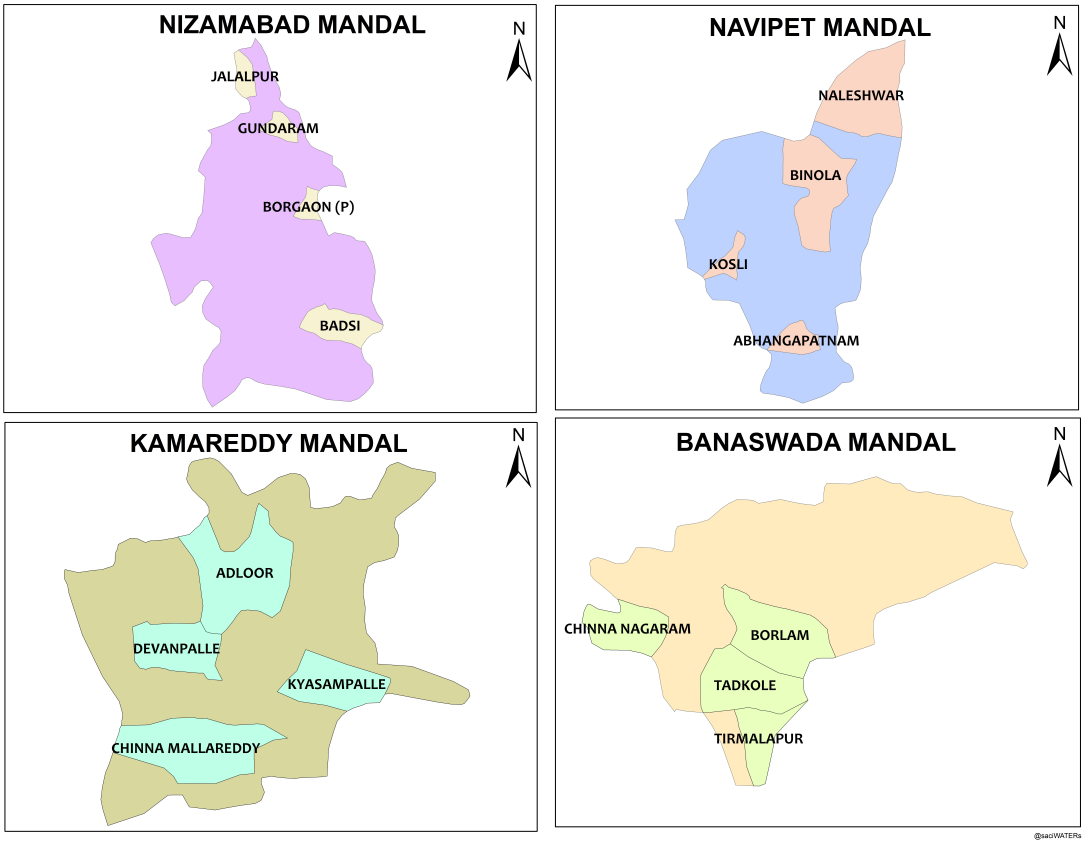


Table 2. Distribution of Villages as per Population and Water Source Contamination Proportion

Type of Lab	Block	Panchayat	Village	Contamination %	Population
No lab	Navipet	ABANGAPATNAM(22)	ABANGAPATNAM(028)	0%	3336
No lab	Navipet	BINOLA(03)	BINOLA(004)	0%	3260
No lab	Navipet	KOSLI(13)	KOSLI(019)	0%	3142
No Lab	Navipet	NALESHWAR(05)	NALESHWAR(006)	0%	3116
District Lab	Nizamabad	BORGAON P(15)	BORGAON P(019)	0%	9201
District Lab	Nizamabad	GUNDARAM(07)	GUNDARAM(007)	Upto 25%	6179
District Lab	Nizamabad	JALALPUR(02)	JALALPUR(002)	Upto 50%	1262
District Lab	Nizamabad	BADSI(28)	BADSI(032)	Upto 50%	2514
Division Lab	Banswada	KOLLUR(01)	CH.NAGARAM(015)	0%	723
Division Lab	Banswada	BORLAM(10)	BORLAM(013)	Upto 25%	5242
Division Lab	Banswada	TIRMALAPUR(14)	TIRMALAPUR(019)	Upto 50%	4571
Division Lab	Banswada	TADKOLE(12)	TADKOLE(017)	Upto 75%	7494
Sub- division lab	Kamareddy	KYASAMPALLY(09)	KYASAMPALLY(011)	0%	2709
Sub- division lab	Kamareddy	CHINNAMALLAREDDY (14)	CHINNAMALLAREDDY(018)	Upto 25%	5927
Sub- division lab	Kamareddy	ADLOOR(02)	ADLOOR(003)	Upto 50%	6879
Sub- division lab	Kamareddy	DEVANPALLY(12)	DEVANPALLY(016)	Upto 50%	6947

None of the Mandals were reported to have more than 75 percent of source contamination hence the 5th category of 75-100% was not considered. However, for the selected Mandals, not all showed villages falling into all categories, hence the 4 categories were further grouped into 2 such as - no contamination; 25 %

contamination and 25 % - 75 % contamination. Where possible, representation from the original 4 categories was ensured.

To narrow down the further selection of 4 villages per Mandal, population size was determined. Thus villages with higher populations were selected to obtain diversity of response patterns and gaps.

1.3. Baseline Study Objectives

The objective of the baseline study for the Water Quality Monitoring and Surveillance Programme were:

- To understand the situation of drinking water quality and sanitary practices at the household level,
- To identify the gaps that could be addressed by the Project through capacity building activities of the community members,

Given the high non-existence of decentralized water and sanitation committees across most villages, the third and fourth objective were:

- To understand the functioning of Village Water and Sanitation Committee (VWSC),
- To assess people's participation within the decentralized village institutions,

Overall, to achieve these objectives, data was also gathered at the village level on some of the key observations on sanitary practices and gender based work pattern such as:

- Current sanitation practices on maintenance of infrastructure at households, and,
- Gender decision-making process and allocation of work

2. Methodology

2. 1. Field Data Collection

The household survey questionnaire was developed to gather information from the field about household's demand for water, practices on storage and sanitation, health and hygiene conditions. The secondary purpose of this household survey questionnaire was to capture baseline water quality and sanitation data at households for randomly selected households within the target area.

Where possible, efforts were made to align questions in the survey with the National Rural Drinking Water Project to identify if any gaps existed with the programme. The household survey questionnaire in English and Telegu is included as Annexure 1 of this report.

The household survey questionnaire were pre-tested in the field and revised by the Project team. Enumerators were trained for field survey prior to field implementation. The field survey was completed in 12 days from 28 Jan to 10 Feb 2015. Data from the completed survey was entered in Statistical Package for Social Sciences (SPSS) database by the enumerators and further cleaned by SaciWATERs Data Analysis expert (Dr. Manoj Jatav).

2.2. Sample village and respondent selection

The villages for the household survey were selected as per the target area of the Project. At village level, steps were undertaken to select random households/respondents.

- A list of all households was compiled for the 16 villages of the target area. Of the 16890 households, 272 were selected for the survey based on Krejcie & Morgan sample determining technique (1970). This technique used 90 percent of confidence level, at 5 percent margin of error with 50 percent response distribution. The ready reckoner template is available at http://www.raosoft.com/samplesize.html
- A list of villages and the total sample size were calculated to determine the proportional sample in each village.
- At each village level, the households were further classified by reservations norms broadly as Schedule Castes (SCs), Schedule Tribes (STs), Other Backward Class (OBC) and the general caste groups.
- Households from each caste category at village level were selected on convenient basis for the survey questionnaire.

2.3. Data Analysis

Data from the villages were analyzed to establish baseline rates for water sources; practice of storage; observed changes in water taste, color, hygiene awareness, and practices in hand washing, and attitudes and behavioral change pattern. Some level of data was verified through general observation but not necessarily a systematic evaluation of household latrines for hygiene practice.

Data from the household surveys were analyzed to understand the current situation of water sources, practices of storage and methods to ensure safe drinking water, perceptions about latrines, gender based decision-making and participation at community decision-making forums. Data were used to compare economic conditions and behavior patterns and similarly gender and behavior pattern.

The statistics are presented as percentages and simple averages are provided in the tables and figures of this report. Statistical significance of results is not calculated. This report presents a preliminary analysis, and the project team plans to conduct further analysis for paper writing.

Table 3. Distribution of Sampled Household and Population

Mandal/ Block	Village	Number Sampled of Households			Number of Sampled Population		
		Male Headed	Female Headed	All	Male	Famale	Person
Navipet	**Abangapatnam**	9	4	**13**	18	23	41
	Binola	12	1	**13**	28	30	58
	Kosli	9	2	**11**	23	23	46
	Naleshwar	7	6	**13**	24	24	48
	Total	37	13	**50**	93	100	193
Nizamabad	**Borgaon P**	23	10	**33**	60	66	126
	Gundaram	17	6	**23**	46	54	100
	Jalalpur	5	0	**5**	14	11	25
	Badsi	8	1	**9**	17	23	40
	Total	53	17	**70**	137	154	291
Banswada	**Ch. Nagaram/ Kollur**	2	1	**3**	6	6	12
	Borlam	18	2	**20**	40	33	73
	Tirmalapur	12	5	**17**	31	28	59
	Tadkole	15	11	**26**	44	56	100
	Total	47	19	**66**	121	123	244
Kamareddy	**Kyasampally**	10	1	**11**	27	20	47
	Chinnamallareddy	21	2	**23**	46	47	93
	Adloor	24	1	**25**	66	59	125
	Devanpaally	25	2	**27**	58	62	120
	Total	80	6	**86**	197	188	385
All		**217**	**55**	**272**	**548**	**565**	**1113**

3. Results: Household Profile

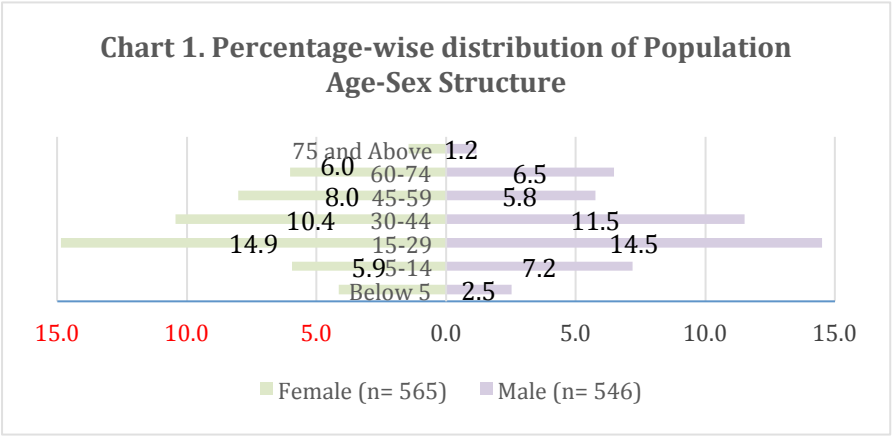
The target population includes 16 villages with approximately 16890 households and from the sample of 16 villages, 272 respondents are included from 4 Mandals – Banswada, Kamareddy, Nizamabad and Navipet. The results below are presented at Mandal level.

3.1. Age Composition

Table 4. Age Wise Percentage Distribution of Population in the Study Area					
Age Group	**Navipet**	**Nizamabad**	**Banswada**	**Kamareddy**	**All Sampled Blocks**
0-4	10.7 (8)	25.3 (19)	24.0 (18)	40.0 (30)	**100 (75)**
5-14	21.8 (32)	23.1 (34)	23.8 (35)	31.3 (46)	**100 (147)**
15-29	17.2 (56)	25.8 (84)	21.5 (70)	35.6 (116)	**100 (326)**
30-44	16.4 (40)	27.9 (68)	20.5 (50)	35.2 (86)	**100 (244)**
45-59	18.3 (28)	26.8 (41)	22.9 (35)	32.0 (49)	**100 (153)**
60-74	18.7 (26)	23.7 (33)	23.0 (32)	34.5 (48)	**100 (139)**
70+	10.3 (3)	41.4 (12)	13.8 (4)	34.5 (10)	**100 (29)**
All Ages	17.3 (193)	26.1 (291)	21.9 (244)	34.6 (385)	**100 (1113)**
Total Sampled population are in parantheses.					

Table 4 Percentage wise distribution of age group across 16 villages indicates a high proportion of the population are within the age group of 15-29 years. Kamareddy Mandal has the highest (35.6 percent) of 15 - 29 age population. This indicates youth group are the major population across all Mandals. Youth groups can be mobilised in Phase II of the Project for awareness generation and reviving the VWSC at the village level.

The Chart determining the age-sex distribution of the total population indicates that there is higher percentage of female (14.9 percent) as compared to Male (14.5 percent) category.



The youths in the village who are more educated compared to other population group can be part of the Phase II of Water Quality Project. Youth groups had shown significant interest during the WASH awareness activities promoted through Kalajathas. They can be

motivated to spread messages on construction of toilets and Swatchha Bharat Mission (SBM) across rural households.

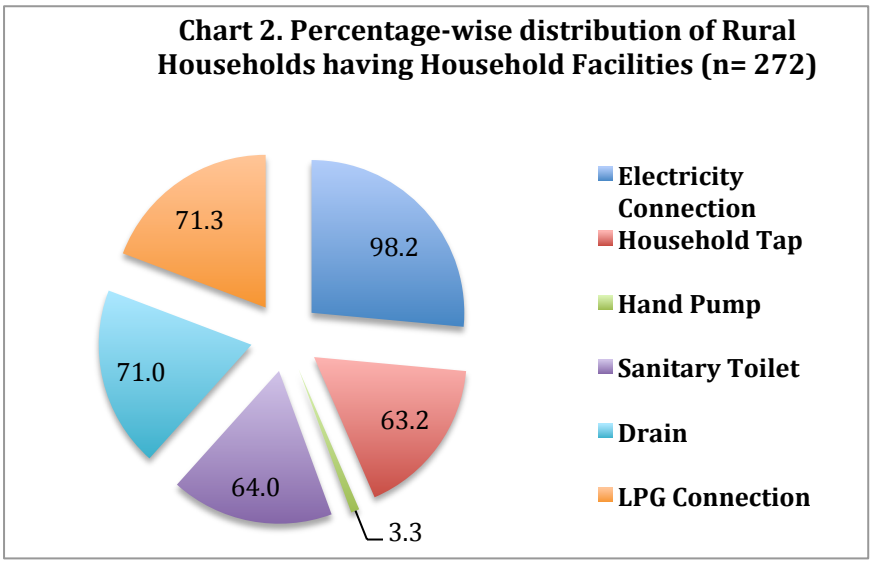
3.2. Economic Conditions

3.2.1. Household Facilities

The chart 2 highlights an overwhelming majority (98.2 percent) of rural households have electricity connection. The total about 67 percent of households have access to drinking water – (63.2 percent with Household Tap connection and 3.3 percent with Hand pump). More than one-third of the total households have no access to drinking water.

Similarly about 64 percent of total households have access to toilets facilities.

The baseline survey data clearly indicates from household facilities **a larger section of the households across the four Mandals do not have access either to pipeline drinking water sources or Hand pumps for drinking water and individual toilets facilities.**



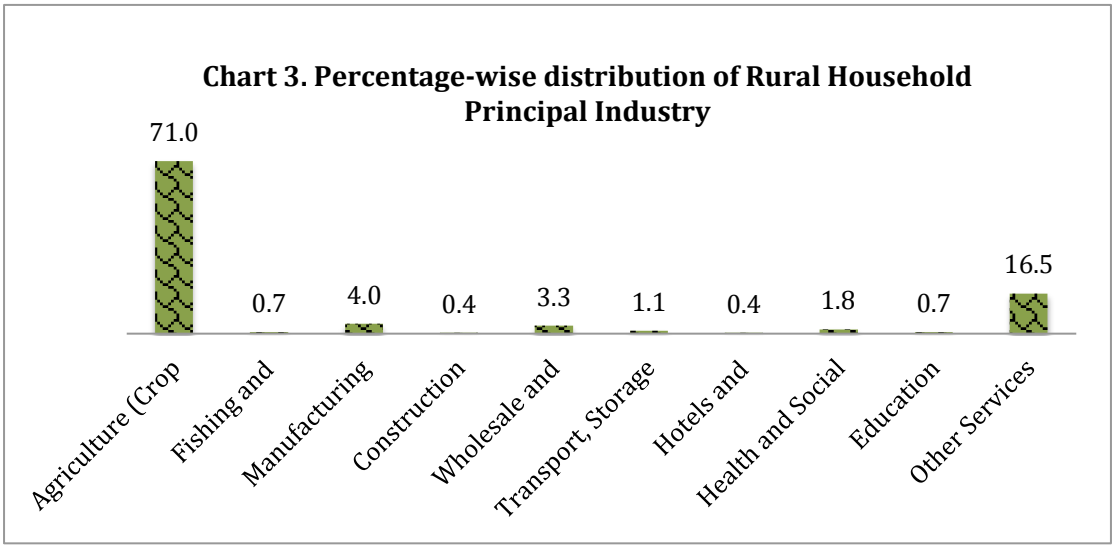
It is important to note, **awareness generation and developing linkages by the community mobilisers with rural households for access to drinking water and toilets facilities should be key priority in the following year of the Project. The Community Mobilisers should develop effective strategy for advocacy to link households with the Rural Water Supply and Sanitation (RWSS) Department at District and Mandal level. The Community Mobilisers should network with key authorities handling SBM program at District and Mandal level. This should include within the reporting and monitoring of Community Mobilisers**.

3.2.2. Occupation

The Table 5 indicates households involved in agriculture (36 percent), followed by agriculture labor (33 percent) and non-agriculture (16 percent).

Table 5. Distribution of Household Occupation		
Type of Occupation	**Number of Households**	**Percentage**
Self-employed in Non-Agriculture	43	15.8
Self-employed in Agriculture	98	36.0
Agricultural Labour	90	33.1
Other Labour	18	6.6
Others	23	8.5
Total	**272**	**100.0**

Amongst the principal industry, the Chart 3 highlights a majority of the rural



households (71.10 percent) are involved in agriculture, followed by other services (16.5 percent).

Although there is a wide choice of occupations available to villagers, agriculture is the major occupation of all economic sections at villages. **Activities should be implemented during free hours particularly – evenings, when farmers are freed from their productive roles. This will ensure maximum participation of villagers in the project activities.**

3.2.3. Housing

Table 6. Housing Characteristics		
Percentage Distribution of Household by Status of Ownership (n= 272)	**Own House**	90.8
	On Rental Basis	8.1
	Owned by Others but No Rent Payable	1.1
	Total	100.0
Percentage Distribution of Households by Type of Housing Structure (n= 272)	**Pucca: Concrete Wall and Concrete Roof**	28.7
	Semi-Pacca: Stones and Mud/ Brick and Mud Wall Roof, Tin Sheets, Clay Tiles, Thatched Grass Roof	69.5
	Kutch: Stone Mud/ Brick Mud Walls Roofs Grass, Foliages and Shrubs	1.5
	Hut: Grass, Foliages and Shrubs	0.4
	Total	100.0
Average Number of Rooms in the House		2.8
Percentage of Households Having Separate Kitchen in the House		40.8

Most houses (90 percent) across the 16 villages are privately owned and are Semi-pacca (70 percent). Majority of households do not have rooms as separate kitchen.

It is important to note, during awareness generation regarding to Water Sanitation Health and Hygiene (WASH) promotion of cleanliness at houses and reduced smoke from fossil fuel are integral messages.

3.2.4. Expenditure

The expenditure details as per social groups across 16 villages from the Table 7 represents a very interesting finding. Amongst all caste groups, rural population has highest expenditure (30.2 percent) in meeting their health needs followed by expenses to purchase Cereals (7 percent).

The SC and ST households across villages spend more on purchase of food – cereals than compared to the Forward Caste groups and OBC social caste groups. These two groups who control most of the resources spend more on education.

In the Social Group hierarchy, the lower caste communities (OBC, SC and ST) spend more on local conveyance while upper caste (elite communities) own motorcycles or other transport facilities such as Cars or Bicycles.

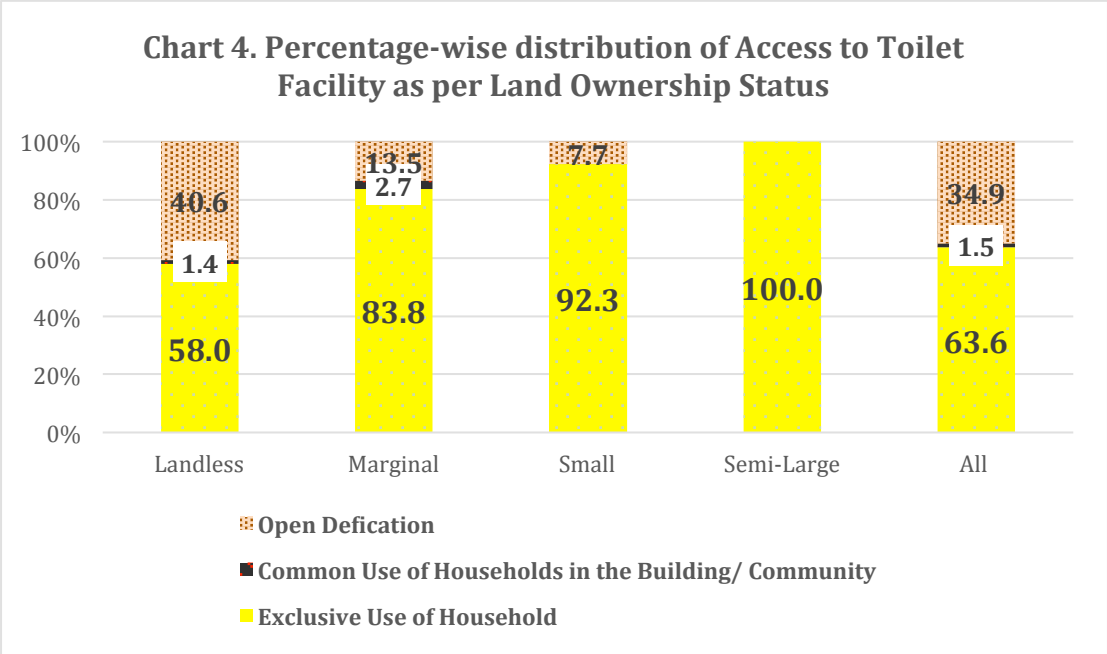
The SC and ST are supposedly the economically backward households across all the 16 villages and are unlikely to gain benefits from the existing drinking water supply schemes or construction of toilets. Ways and means therefore need to be designed firstly to procure the participation of this section and secondly to benefit them through the ongoing SBM subsidiary schemes. They should be given priority in awareness and advocacy activities, training and orientation related to WASH services at the village level. Inclusion of SC and ST at VWSC membership should be strategized.

Table 7. Percentage-wise distribution of Monthly per Capita Expenditure of the Rural Households by Various Food and Non-Food Items					
Item	**Social Group**				
	Others (Forward Castes)	**OBC**	**SC**	**ST**	**All**
Food: Cereals	6.1	8.9	7.8	9.9	7.0
Food: Pulses	2.2	4.0	3.2	3.9	2.7
Milk and Products	2.5	3.0	2.1	3.6	2.5
Eggs and Meat	2.1	4.2	3.6	3.9	2.8
Edible Oils and Vanaspati	1.8	2.8	2.5	3.1	2.1
Vegetables and Fruits	2.9	4.6	3.6	5.3	3.4
Other Food Items like Tea/ Coffee/ Biscuits/ Pickles etc.	1.3	2.1	1.3	1.2	1.5
Pan/ Tobacco/ Alcohol	1.1	2.7	2.5	2.0	1.6
Fuel/ LPG Cylinder	1.3	2.1	1.5	1.6	1.5
Personal Grooming Articles Such as Soap/ Toothpaste/ Razors/ Hair Oil	1.5	2.5	2.3	2.1	1.9
Consumable Household Articles such as Light Bulbs/ Washing Soap/ Match Sticks/ Candles etc.	0.9	1.3	5.8	1.2	1.8
Consumer Taxes and Cesses such as Water Charges, Electricity Charges etc.	2.2	2.4	2.4	2.9	2.3
Public Medical Expenses	37.9	15.1	22.5	15.1	30.2
Private Medical Expenses	2.5	4.4	4.5	5.1	3.2
Conveyance Charges	3.8	7.1	5.7	7.9	4.9
Entertainment such as Cable TV Charges, Cinema Charges etc.	1.5	1.3	2.0	0.8	1.5
Social Occassions such as Marriages, Birth or Death Ceremonies	5.4	6.1	5.4	12.1	5.7
Religious Expenditure Including Festivals	4.7	6.2	5.5	4.6	5.1
Education	6.4	9.6	3.0	3.3	6.4
Clothing and Bedding	4.5	5.2	4.5	4.9	4.7
Furniture and Fixtures	0.2	0.2	0.5	0.4	0.2
Personal Transport Equipment such as Cars, Two Wheelers, Bicycles etc.	3.6	2.1	2.9	0.3	3.1
Other Transport Equipments such as Tractors, Tempo, Truck, Bus etc.	1.1	0.8	1.0	2.9	1.0
Jewellery and Ornaments	1.2	0.2	1.9	0.0	1.1
Goods for Recreation Including TV, Ratio, Musical Instruments	0.1	0.1	0.2	0.0	0.1
Repair and Maintenance of Fixtures and Property	1.3	1.0	1.7	2.0	1.3
MPCE	100 (6320)	100 (3476)	100 (4085)	100 (2555)	100 (4909)
Total MPCE has been given in parantheses.					

3.2.5. Landholding and access to toilet

Table 8. Distribution of Rural Households by Land Ownership		
Type of Land Ownership	**Number of Households**	**Percent of Households**
Landless	219	80.5
Marginal	37	13.6
Small	13	4.8
Semi-Large	3	1.1
All	272	100.0
Landless= Below 1 Hectare, Marginal= 1-2 Hectares, Small= 2-4 Hectares, Semi-Large= 4-10 Hectares, and Large= 10 and Above Hectare. No Samples for Large Farmers.		

A large majority (80.5 percent) of the rural households across the villages are landless and about 14 percent are marginal landowners that own about 1-2 hectares of land. The average land owned within the social groups is 0.82 hectares by the Forward Caste groups, followed by OBC (0.28 ha), SC (0.24 ha) and the ST (0.10 ha).



Although majority of households have access to toilets, about 41 percent of landless do not have access to toilet. The chart clearly depicts marginal and landless households across the villages are the most who have no access to toilet.

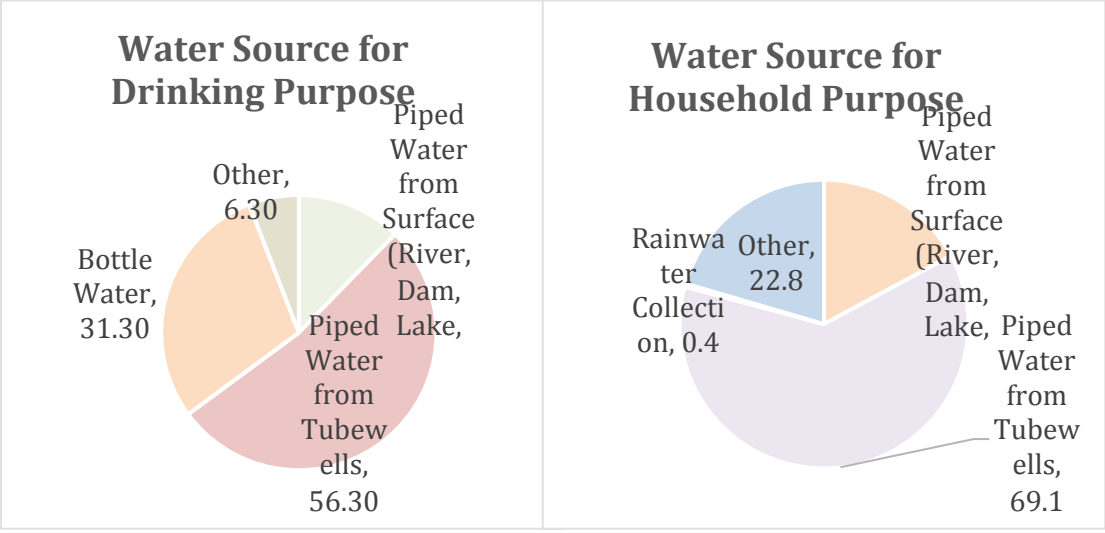
As stated procuring participation of the economically weak households is vital for successful project intervention, it is important to further enumerate household data to understand 100 percent access to toilet across these villages.

4. Results: Rural Drinking Water Quality

4.1. Situation of Drinking and Household Water

Table 9. Distribution of Rural Households by Source of Drinking Water					
Source of Water for Household Purpose	**Number of Households (*n= 272*)**	**Importance of the Source (Number of Households)**		**Number of Households Not having the Source within Premises**	**Average Time Spent in Fetching Water by the Households (in Minutes)**
		Rank 1	**Rank 2**		
Piped Water from Surface (River, Dam, Lake, Pond, Stream, Canal, Irrigation Channels)	36 (13.20)	33	3	2	5
Piped Water from Tubewells	153 (56.30)	138	15	53	7
Rainwater Collection	0	-	-	-	-
Bottle Water	85 (31.30)	80	5	64	19
Cart with Small Tank/ Drum	0	-	-	-	-
Tanker- Truck	0	-	-	-	-
Other*	17 (6.30)	18	24	25	13
*Fetching from Water Tank, Hand Pump, Well and Nalah are the other types of drinking water sources. Percentages given in parantheses.					

Chart 5. Percentage-wise distribution of Water Sources for Drinking and Household Purposes



Tube wells are the common source of drinking water across most villages. Communities rely on the groundwater source for drinking purpose. Often these sources are contaminated with Fluorosis, Nitrate and Iron. The chemical

contamination data was obtained from the lab assessment results. In case of source contamination, some households (31.30 percent) purchase bottled water (Rs 10-20 for 20 litres/bottled water). While those who cannot afford to purchase water, depend on pipeline water supply (13.20 percent).

Lack of pipelined water supply is due to poor maintenance of the water supply infrastructures and lack of new ongoing government schemes in these villages.

Almost half of households in the surveyed villages (52.94 percent) do not have access to safe drinking water. They rely on contaminated sources or share hand pumps, purchase water from regulated water tankers. The average time spent in fetching about is about 10 to 15 minutes.

If water is utilized for household purposes, a large majority (69 percent) of households depend on Tube wells followed by other sources (22.8 percent) from Water Tank, Hand pump and *Nalahs*. Households do not always own tube wells, they share water to meet the domestic needs. These well are often chemically contaminated which makes it unfit for human consumption, therefore there is high reliance on the private suppliers across most of these villages. This is particularly visible among villages that are close to district place (Nizamabad), while the rest continue to use contaminated water even after hand pumps or tube wells are marked as unfit by the Government Water Quality Testing Labs.

Data shows an overwhelming dependence on private source of water, not belonging to oneself. The makes the villagers extremely vulnerable, as their water security might be threatened at the slightest whim of the owner/private players of the water source. Therefore, the villagers should be encouraged and guided towards developing surface water pipeline supply system, create joint water committees, provide capacity building trainings to establish linkage with RWSS.

4.2. Water Collection

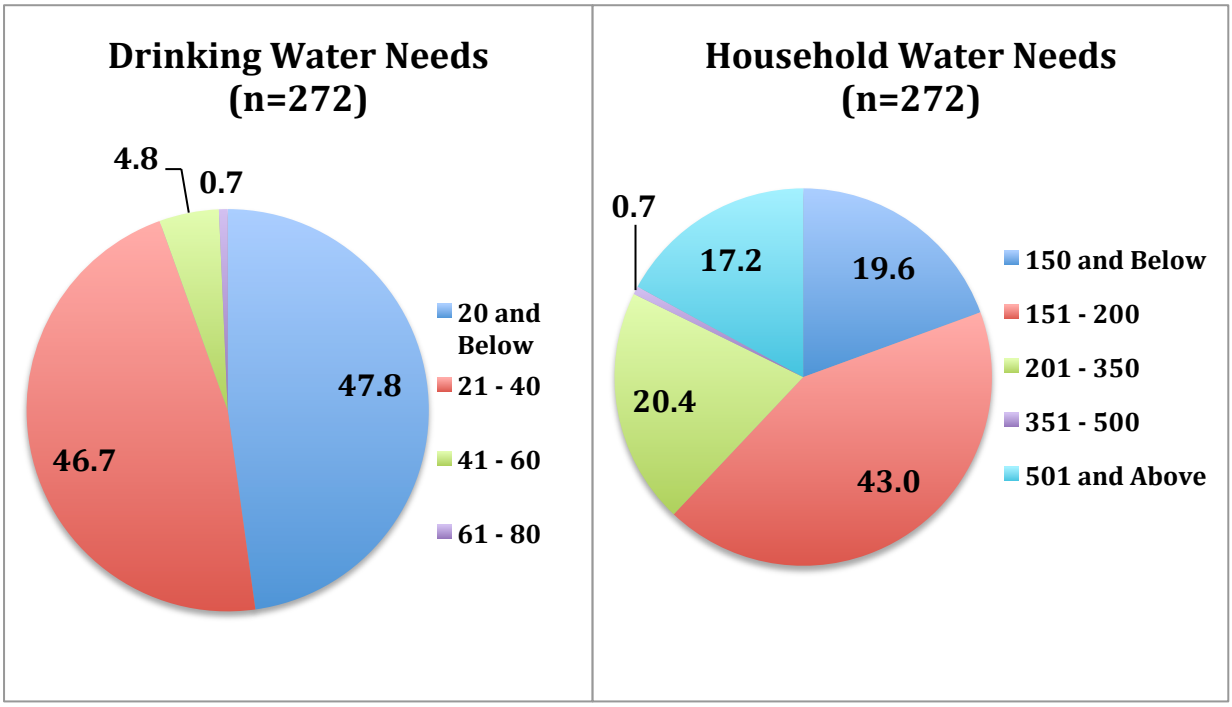
Table 10. Distribution of Rural Households by Usual Person Who Fetches Water

Person Who Fetches Water	Number of Households with Response 'Yes'	Distribution of Households by Rank of Persons Fetching Water (in Numbers)					
		Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6
Women Aged 60 and Above	15 (5.5)	10	4	-	-	-	258
Men Aged 60 and Above	20 (7.4)	7	17	-	-	-	248
Womne Aged 15 to 59	226 (83.1)	203	25	-	-	-	44
Men Aged 15 to 59	134 (49.3)	53	83	1	-	-	135
Female Child Under Age 15	4 (1.5)	-	9	1	-	-	262
Male Child Under Age 15	3 (1.1)	-	3	-	-	-	269
Percentages given in parantheses							

Fetching water for household and drinking purpose are primarily the role of women across the villages. Men however tend to support water collection only if women are occupied with other domestic roles.

Therefore, with increasing female population within the age groups of 15 to 29 years, women are to be encouraged for participation within the VWSC meetings and awareness programs. In gender sensitive trainings at grassroots, men's participation and sensitization towards women's roles and burden of work should be an integral component.

Chart 6. Percentage-wise distribution of Water Storage Quantity for Household and Drinking Purposes (in liters)



4.3. Water Storage

Water for drinking purposes are stored below 20 liters (47.8 percent) as households regularly buy bottled water. Increasing family members, larger storage utensils and supply of drinking water are some of the key determinants on the household's capacity to store water for drinking purposes.

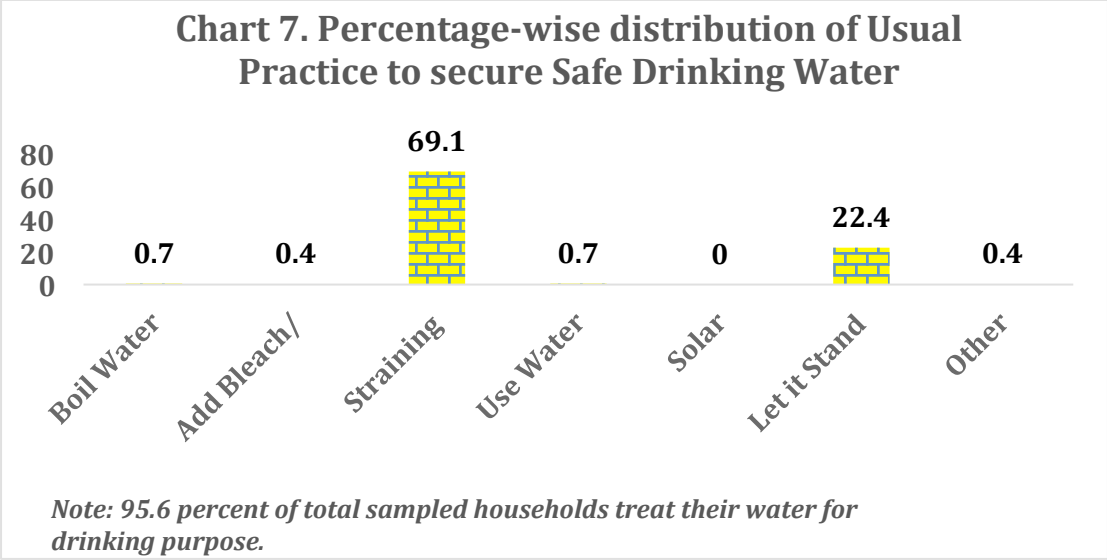
Household water is mostly stored between 351 to 500 liters per day. The household water consumption pattern and storage also depends on the number of livestock, and other water based activities carried out by household members.

The storage pattern is more when there is irregular water supply, lack of power supply and inadequate water distribution. Such conditions are more prevalent during summers - March to June every year.

Therefore, it is important during these months awareness program are encouraged to focus on issues of hygiene – water storage, hand washing, covering the storage container/tank, disinfection and cleanliness of storage area.

4.4. Practice of Securing Clean Water

Before storage, water for drinking and household purpose is treated. The usual practice of treating the water is through straining with cloth (69.1 percent). This is primarily for removal of any solid particles. The other common method households' follow is to let water stand still and settle before consumption (22.4 percent).



Note: 95.6 percent of total sampled households treat their water for drinking purpose.

Community does not boil or chlorinate the drinking water. This is an expensive cost for households. There are an increasing proportion of water-borne diseases across villages. Nevertheless, most households particularly from the low social groups (SC and ST) have an increasing expenditure in meeting the health needs.

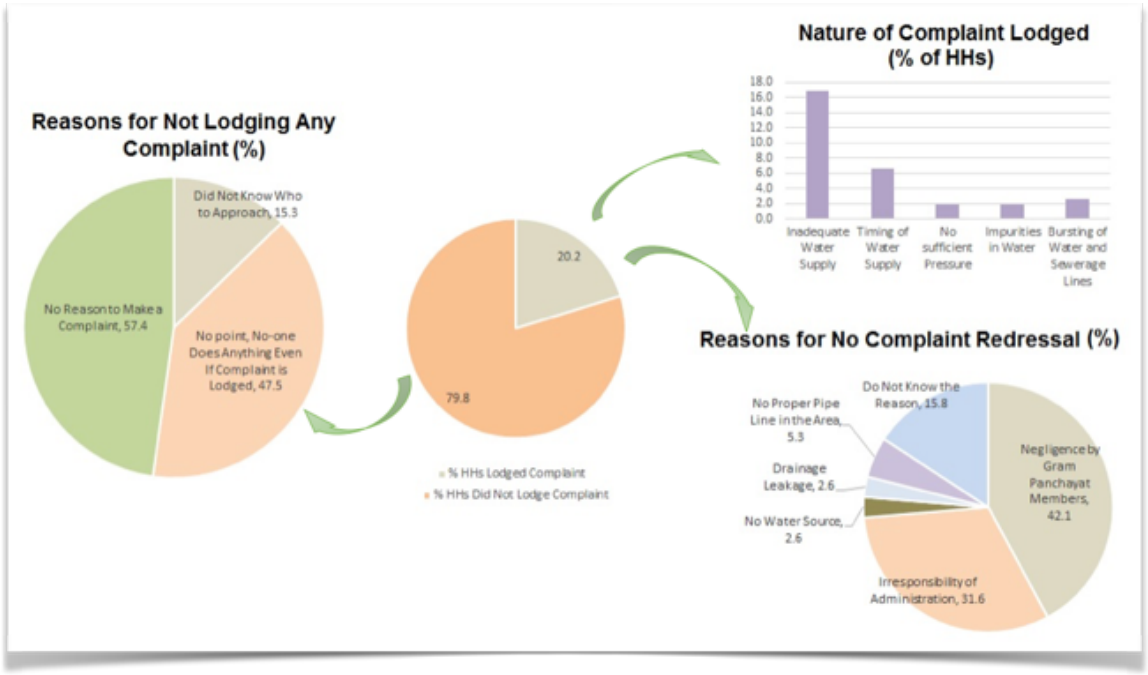
The awareness programs at households are encouraged to focus on water treatment process. This can be done with the support of the Government Water Quality Testing Laboratory officials when they visit the villages for sample collection. Such activities can also be carried out at School level. Sharing the baseline findings with the School authorities, Aaganwadi Workers will encourage promotion of safe drinking water and hygiene maintenance.

4.5. Complain Redress

Majority of households do not lodge complain on water issues (79.8 percent) to the Gram Panchayat. The general complains are on issues of water supply (55 percent), and specific complains are on issues about inadequate water supply (16.9 percent), timing of water supply (6.6 percent) and lack of maintenance of pipeline services (2.6).

The reasons for no complain is because the Gram Panchayat (42.1 percent) or the district authorities (31.6 percent) do not take any action. There is complete negligence on their part. Therefore, households are not motivate to make any complains.

Chart 8. Percentage-wise distribution of complain nature and reasons for lack of complain on water issues



There is a need for awareness generation to motivate communities/households to report problems within drinking and household water supply. The Gram Panchayat and the defunct VWSC/newly established VWSCs across these villages are to be trained for reporting such issues to the RWSS at the district level. It is important the VWSCs are functional and water problems are reported on regular basis. Steps need to be taken to bring the VWSCs in touch with government schemes like the National Rural Drinking Water Programme (NRWDP), SBM, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) Schemes and the Telangana State Level Schemes.

5. Results: Sanitation, Hygiene and Health

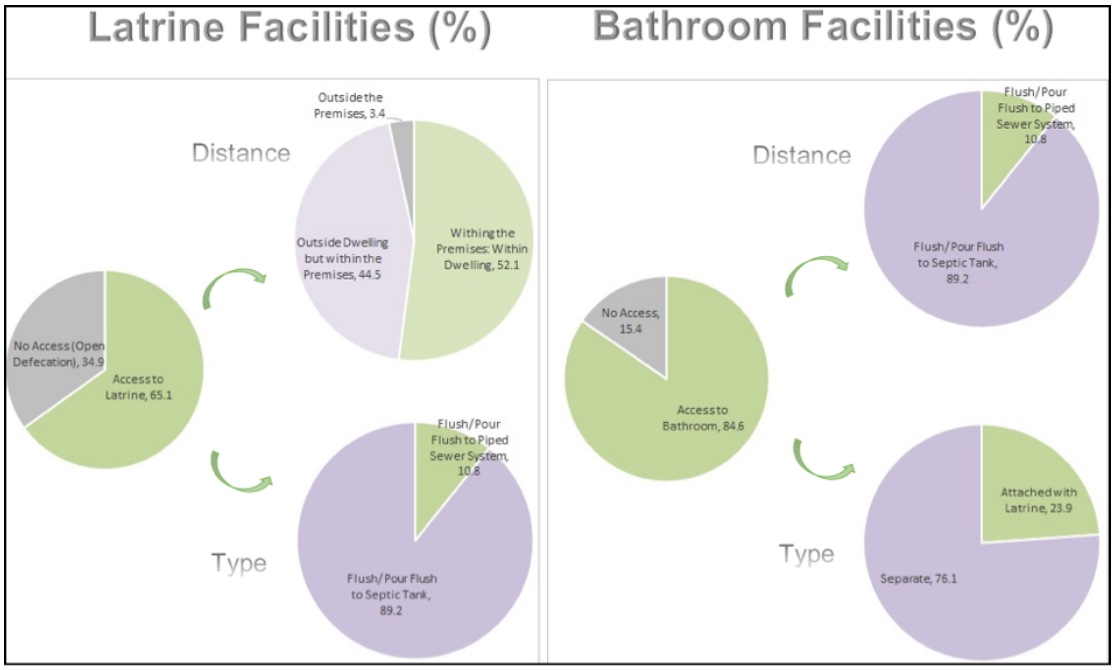
5.1. Sanitation

Across villages only about 65 percent of the households have access to toilets, a large proportion about ¾ of the households have no toilet facility.

Table 11. Distribution of Access to Latrine and Bathroom Facility among Rural Households by Type of Facility		
Type of Facility	**Percentage of Rural Households (*n*= *272*)**	
	Latrine	**Bathroom**
Exclusive Use of Household	63.6	83.5
Common Use of Households in the Building/ Community	1.5	0.7
Public/ Community Facility Without Payment	0.0	0.4
No Facility	34.9	15.4
Total	100.0	100.0

Although no toilets, households have constructed bathrooms to ensure privacy and security.

Chart 9. Percentage-wise distributions of Latrine and Bathroom Facilities, type and its distance

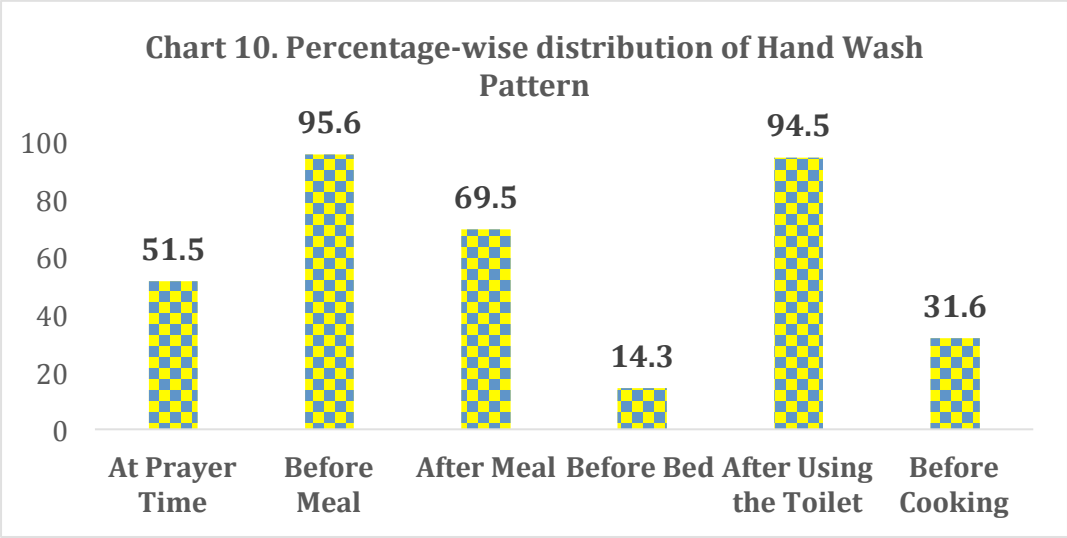


Amongst those households that have toilet facility, a majority (52.1 percent) of toilets are located within the premises of the dwelling, while still a large section about 45 percent of households have toilets but located outside the dwelling. The common type of latrines across households is Flush/Pour Flush with Septic Tank (89.2 percent).

From the cross-sectional table with landholding and access to toilet, it was found SC and ST households were the ones who had one access to toilet. They were also the ones spending more on meeting the health care needs. **While it is important to convince the villagers to construct toilet, it become necessary to make them aware about the ongoing government schemes for toilet construction. Only once the villagers perceive the need for toilet construction, they will demand for the services. The higher record of expenses on medical bills can be used as a tool for bringing behavioral change in sanitary practices. It is the responsibility of the project team in Phase II to build awareness in this regard and bring the villagers together to demand for SBM schemes.**

It is also important to note cash incentives through such schemes will attract households to construct individual latrines. Through the field observation it was found that delayed payment from such schemes have disappointed some family who constructed without subsidy. This can delay the process to achieve any behavioral change interventions. Phase II of the project should intervene to receive subsidy for the families that constructed toilets. This involves working in close coordination with the Mandal and District level RWSS officials.

5.2. Hygiene Behavior and Practices



Proper hygiene is important to prevent water-borne diseases. Households across the villages wash their hand prior eating (95.6 percent) and after defecating (94.5 percent). Practices to hand wash prior cooking is minimally observed (31.6 percent).

Men and women (86.4 percent) and children (6.6 percent) are the most that promote hygienic practices at household level. It is important to note, health and hygiene message promoted through schools are accepted and acknowledged by parents.

The Project can strategize working with school children – organize fun games, conduct training with children and teachers to promote WASH education and knowledge.

5.3. Solid Waste Management

Table 12. Percentage-wsie distribution of Collection of Garbage from the Rural Households	
Garbage Collected by	**Percentage of Rural Households (*n=272*)**
Panchayat/ Municipality/ Corporation	4.8
No Arrangements	95.2
Total	100.0

The table 12 clearly shows there is no arrangement for collection of garbage.

Households have their own private dumping spot for disposal of waste – kitchen and animal husbandry. Community dumping spots were generally found where cluster-house was observed. There is no practice of garbage segregation across households in all the villages. Often organic waste are composed but with no segregation methods.

Villages in study site had no proper drainage system. Those who had drainage it was located in the main village, entire villagers could not utilize the facilities.

There was lack of maintenance of the open drainage system. Often water logging and stagnant pool created problem and foul smell at the neighborhood. This had reduced functioning of the drainage system.

Chart 11. Percentage-wise disposal of Garbage

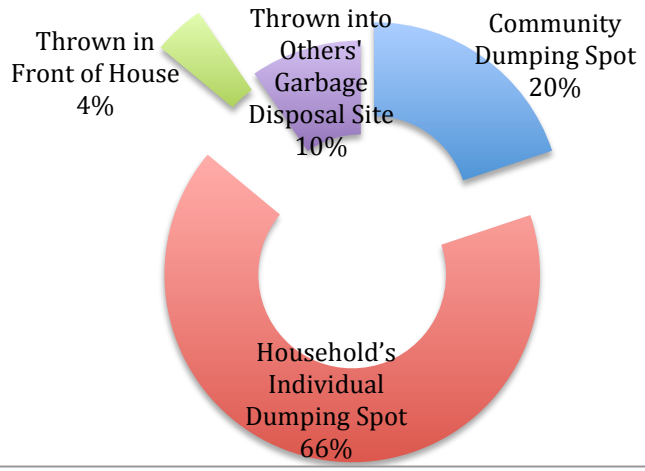


Table 13. Percentage-wise distribution of Sanitation Condition across Villages	
Description	**Percentage of Hosueholds (*n=272*)**
Households Practicing Garbage Segregation	0.0
Households Said that Organic Waste is being Composited in the Village	7.0
Presence of Designated Method of Garbage Collection	4.0
Households Reported Dirty Water-Stagnant Pools	36.4
Households Reported Waste Water Running Through the Street around the House/ Neighbourhood	46.7
Households Reported Waste Water Drains in the Village	88.2
Households Reported Waste Water Drains are Not Well Designed	53.3
Households Reported Waste Water Drains are Not Being Cleaned Regularly	62.9
Households Reported Waste Water Drains are Not Working Properly	67.3

Proper segregation of garbage, regular cleaning of drainage system, appropriate disposal of waste should be encouraged. Project team should focus awareness and conduct training program that develops villager's skills on segregation of garbage, maintenance of sewage infrastructure. The VWSC revived should closely monitor the functioning of waste management. The Gram Panchayat authorities should be capacitated with operation and maintenance skills.

Household wastewater can be used to water the plants and the seeds can be obtained from the vegetable consumed at home. This is an affordable way of assuring nutritious food for the family and way to encourage appropriate utilization of wastewater for the kitchen garden.

6. Community Initiatives for improved WASH conditions

6.1. Institutional Activities on WASH

Table 14. Percentage-wise distribution of Key Activities Carried out by the Institutions towards Improved WASH Conditions				
Institutions	**Awareness Programmes on WASH**	**Capacity Building**	**Health Camps**	**Water Quality Testing**
Gram Panchayat	13.6	1.5	8.1	9.9
Village WATSAN Committee	1.1	0.0	1.5	9.2
Anganwadi	27.9	10.3	87.5	9.6
PHC/ ASHA Worker	16.2	2.6	80.5	6.6
Village Development Committee	5.5	0.7	3.3	2.9

For improved WASH conditions across villages Anganwadi workers have a key role in awareness programmes on WASH, followed by the PHC/ASHA workers. Capacity building activities and organizing Health Camps are most carried out by Aaganwadi workers.

The Gram Panchayat (GP) members test drinking water sources through Field Testing Kits (FTKs). This is because each GP is provided with the FTK facilities. Interestingly during the FGDs it was observed most of the GPs had not even opened their FTKs.

Capacity building on methods of utilizing FTK with the support of the Water Quality Test Lab officials is essential. Local demonstration of water quality is important factor for people to demand safe drinking water quality. The Project Team should focus to bridge this gap between the Lab officials and the community members.

6.2. Institutional Memberships

The survey data reveals only about 4 percent of the household members are members of village level institutions. This includes GP, Village WATSAN committee, Village Development Committee, Aaganwadi workers, PHC/ASHA workers. There is an increasing interest amongst community members to be associated with village institutions. Almost 40 percent of the household members are looking forward to be part of the institution.

Table 15. Percentage-wise distribution of Social Exclusion at Village Institutions	
Description	**% of HHs (*n= 272)***
Equal Participation of Men and Women	0.0
Men's Participation	100.0
Equal Participation of All Caste Groups	0.0

At present Table 15 clearly indicates there is no social inclusion of the SC, ST communities within these institutions. Men are the most who participate in the village meetings. Women's participation is minimally observed.

Efforts should be made for equal representation of gender, social groups at village level institutions. Women groups should be mobilized for active participation during village meetings.

During the process of reviving VWSCs, the Project Team along with the RWSS officials should ensure equal representation of SC, ST and the OBC social groups. The social groups should at least represent 1/3rd of total membership. There should be a minimum of 50 percent women's participation. VWSC meetings should be conducted regularly and the minutes of the meeting should be coopted by Gram Panchayat.

Clear-cut and well-understood norms and rules can make the revival of VWSC beneficial to villagers including the GP body. In case of some informal agreement already exists, then the new structure should be based on the norms already followed by community instead of introducing new concepts.

The Project implementation team in Phase II has to think and devise innovative ways and methods to bring this section into decentralized governance processes. Care has to be taken about proxy representation of women, involving women's group as part of Self Help Groups (SHGs) and assist them through several capacity building activities that are not only WASH focused but also provide ways to sustain their livelihood.

7. Summary and Conclusion

The baseline survey report was prepared as part of the Water Quality Surveillance and Monitoring in Rural Telangana Project, a joint initiative of WaterAid India, and the State Government of Telangana, State Water and Sanitation Mission. The purpose of the survey was to establish the current situation with respect to water quality, sanitary and hygiene practices, to understand issues in water quality and sanitation, its coverage in target villages to design the Phase II implementation of Water Quality Project.

As per Krejcie & Morgan (1970) sampling design technique, 272 sample size was determined from the total 16890 households in 16 villages of Nizamabad district. Households were further classified by reservations norms broadly as Schedule Castes (SCs), Schedule Tribes (STs), Other Backward Class (OBC) and the general caste groups to select the sample at village level.

Findings from the baseline suggest the youth group (15-29 years) is the major population across all Mandals. There is an increasing percentage of women's population within youth group. A higher percentage of landless farmers belong to SC, ST social caste groups. Most of the households are involved in agriculture – as agriculture labourers or cultivators. Housing conditions across the villages are semi-pucca (69.5 percent) and on average there are 2.8 rooms. Majority of the sample households do not have separate room for Kitchen. The lower social caste groups are the most that spend on meeting their health care needs.

From the total sample approximately 3/4th households (66.5 percent) have access to drinking water and about 64 percent have access to toilets. For meeting the drinking water and household needs, households rely on groundwater sources. The common water sources are tube wells for drinking and household needs. Often these groundwater sources are chemically contaminated. Community members have little choices in securing safe drinking water, as pipeline surface water supply infrastructure is not maintained. People living close to urban center (such as Nizamabad) prefer bottled water at a cost of Rs. 10-20 for 20 liters on a daily basis.

Water storage is a common practice across all villages due to inadequate supply and lack of power. The villagers usually do not complain on such issues because complains are neglected by the Gram Panchayat.

Women take on the role to secure water for household and drinking purposes, while the men occasionally support them only if women are involved in other domestic chores. The burden of securing water for both purposes is harsh during the summers – March to June. The practice to secure safe water is usually done through straining with cloth at the water collection sources. Households do not chlorinate the drinking water.

Not all households have access to toilet. The marginalized caste groups or the landless are the ones who do not have toilets, they defecate openly. Construction of toilets under government schemes has been demotivating, as many households that constructed under the cash schemes are not compensated. This delayed process has lacked interest amongst those who have no toilets.

In regard to hygiene and sanitary practices, household members wash hand before the meal and after use of toilet. Household wastes are dumped in open private space. There is no practice of segregating the waste. Stagnant wastewater and clogging of drainage is a common observation across villages. Not all villages/wards have drainage facility.

The Aaganwadi and PHD/ASHA workers mostly lead community awareness programs on WASH practices. The Gram Panchayat is involved in testing the water quality and not all Panchayats have used their FTKs.

At village level institutions, there is minimal participation of women and the marginalized caste groups. The men from the upper caste groups are the predominant participants and the decision-makers for village development.

It is important that youths who are more educated compared to other population groups across villagers should be mobilized to create awareness on WASH programs and policies that are available under different government schemes such as the National Rural Drinking Water Programme (NRWDP), SBM, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and the Telangana State Level Schemes.

Project team need strategic framework for awareness generation and developing linkages (especially the cash incentive for toilet construction) with the RWSS Department at Mandal and District level. This includes ways and means to procure participation of the women's groups and the marginalized social caste groups within the local level institutions. Unless core issues of governance are not prominently addressed as part of the decentralized governance – reviving VWSCs, the poor and the marginalized will be more vulnerable, as their water security might be threatened with the increasing private sector providing bottled waters across rural Telangana. Therefore moving away from the standalone approach, building capacities for good governance and sustainable livelihoods options are important to bring about change in the WASH sector.