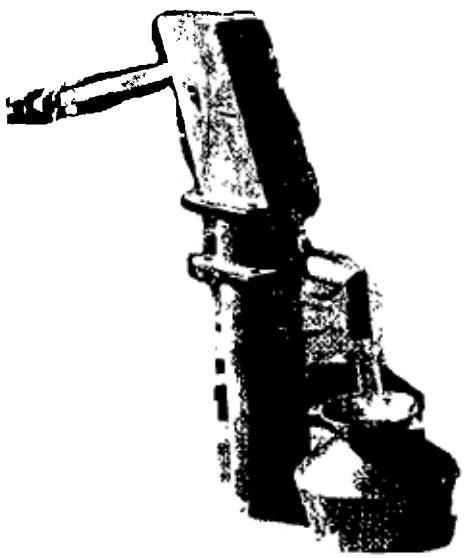
Draft Report

On

MONITORING AND EVALUATION STUDY IN RESPECT OF RURAL WATER SUPPLY AND SANITATION IN THE STATE OF ORISSA



Sponsored by

Rajiv Gandhi National Drinking Water Mission
Under Ministry of Rural Areas and Employment,
Government of India

Conducted by

Department of Sanitary Engineering
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The study was taken up by *All India Institute of Hygiene & Public Health*, Calcutta as per Govt. order no. Q-14019/42/97-TM (Stat) dated 18.3.98 of *Rajiv Gandhi National Drinking Water Mission* under *Ministry of Rural Areas & Employment, Govt. of India.* The survey team visited the villages of different blocks (as mentioned later) in the following 3 districts of Orissa during May 1998 :

- *Nuapada*
- *Mayurbhanj*
- *Khurda*

The list of the villages of three districts are enclosed in *Table No. IA, IB,IC & ID.*

Objectives of the study :

1. *To assess the present coverage status of rural water supply and sanitation with a special emphasis on the coverage of backward classes / areas.*

2. *To evaluate the safe water supply coverage in areas where quality of drinking water was a major problem.*

3. *To monitor and evaluate peoples' response and perceptions about the coverage of rural water supply and sanitation.*

4. *To evaluate the community involvement in the planning and implementation of water supply schemes.*

5. *To investigate the operation and maintenance status of water supply schemes.*

6. *To monitor and evaluate contribution by the users in capital and recurring cost on rural water supply schemes.*

7. *To monitor current knowledge, attitude,practice of villagers on water supply & sanitation.*

Methodology :

The questionnaire as prepared by *AIIH&PH* on the guidelines as framed by *Rajiv Gandhi National Drinking Water Mission* were used by the survey team during their field visit. One copy of such questionnaire is enclosed herewith (*Vide Annexure No. I*). The survey team interviewed the villagers direct to get their opinions & perceptions regarding the acceptability, quality or other problems etc. related to the water available to them. They also discussed with the community regarding water supply situation in the village and actually inspected the water sources used by the public. Their main focus of collecting the informations were as follows :

- Actual Status of Drinking water sources (Tubewells,Dugwells, Public Stand Post, Springs & Others) : accessibility of the source & distance of the sources of water.
- Availability of water - adequacy & dependability of water throughout the year.
- Water quality issues - people's views on the quality of water- potable or non-potable, sweet or saline, iron or other chemical quality problem.
- Testing of water - whether it is done at regular intervals or not.
- Operation & Maintenance of Rural Water Supply Schemes - cost recovery & prospects for additional cost recovery.
- Measures taken for the cleanliness of the handpump.

- Status of breakdown & repair of water sources - percentage working / not working , reasons for not working, down-time analysis.
- Extent of Community Participation - whether willing to contribute labour / contribute to the capital investment and share recurring cost of construction & maintenance of drinking water sources.
- Involvement of local bodies, need for training / empowerment.
- Willingness to pay (WTP), conditions conducive for higher WTP.
- Comments on the working of the concerned agency (***PHED, Water Board, Jal Nigam, Zilla Parishad, Panchayat*** etc.).
- Coverage by latrines - whether households are having latrine, whether all of them use it or not, what type of latrine they are using, their contribution for the construction of latrine; whether they like to have latrines in near future and whether they are agreeable to contribute for capital investment / labour for the construction of latrine; what type of latrine they would like to have; the reasons for not having latrine.
- Household treatment by the public - either by boiling or filter or addition of some chemicals like bleaching powder, potassium permanganate, alum or lime etc.
- Collection of water by men,women & children.
- Storage of drinking water inside the house & their practice to get water from the storage pot; type of material used for storage & collection of water.
- Hygiene of the family - how it is maintained by cutting nails regularly, by cleaning clothes, by washing hands with soap & water or otherwise, by regular bath, wearing shoes or chappals etc.

- Status of disposal of liquid waste by surface drain, soakage pit etc.
- Perception of the villagers about the health problem on drinking unprotected water sources e.g. pond, river etc.
- Health status of the family with respect to water borne / water related diseases.

Findings of the Study :

The population of the surveyed villages in the districts of Orissa as mentioned above is shown in ***Table No. 2A, 2B,2C & 2D***. In the said table, demography aspects of families i.e. *Scheduled Caste*, *Scheduled Tribe*, *Other Backward Classes* and *General Category* have been shown. Out of 294 families in ***Nuapada District*** (as surveyed), the total categories are as follows :

SC	Families	——	39
ST	Families	——	91
OBC	Families	——	116
General	Families	——	48
Total No. of families surveyed			294

The total distribution of population in *Nuapada district* surveyed is as follows :

Male	——	597
Female	——	575
Children	——	588
		1757

In ***Nuapada district***, two blocks i.e. ***Komna*** and ***Khurda*** have been surveyed.

In Khurda district, three blocks i.e. Bolgarh, Tangi and Chilka were surveyed Out of total 213 families surveyed in this district the total categories are as follows :

SC	Families	——	46
ST	Families	——	6
OBC	Families	——	45
General	Families	——	116
Total No of families surveyed			213

The distribution of population in ***Khurda district*** (as surveyed) is as follows :

Male	——	567
Female	——	477
Children	——	559
Total	——	1603

In Mayurbhanj district, three blocks i.e. Jashipur, Bisoi and Shyamakuntha were surveyed. Out of total 163 families surveyed in this district the total categories are as follows :-

SC	Families	——	32
ST	Families	——	88
OBC	Families	——	32
General	Families	——	11
Total No. of families surveyed			163

The distribution of population in *Mayurbhanj district* (as surveyed) are as follows :

Male	——	297
Female	——	293
Children	——	350
Total	——	940

Table No. 3 shows Occupational Status of the families surveyed in 3 districts of Orissa . On average the Occupational Status is as follows :

Farmers	————	24.1%
Daily Labourers (Including Agricultural Labourers)	————	46.5%
Govt. Service Holders	————	8.9%
Private Service Holders	————	6.5%
Businessmen	————	8.3%
Self Employed People	————	5.7%

The majority is daily labourers.

From Table No. 4, it is seen that in most families there is only one earning members, a few families are having two, three or four earning members.

From Table No. 5, it is seen that majority of the families have maximum monthly income as Rs. 2,500/-.

Table No. 6A, 6B & 6C represent the water usage pattern of the three districts of Orissa. Here we find in district Nuapada, that most of the people (95%) use water of handpump or public hydrants for drinking purpose. A few(5%) take dugwell water for drinking purposes. But in the district of Khurda, 58% of people use water from hand pump or piped water for drinking purposes. 38% use dugwell water and still about 4% people use pond water for drinking. In district Mayurbhanj, 88.4% use handpump water for drinking, a few (6.4%) use dugwell water. But interestingly, we find river water is used by (2.9%) for drinking in this district. Spring Water (2.3%) is also used for drinking.

In the said tables, it is also seen that most of the people (95%) use water of hand pump or public hydrant for cooking purpose in the district Nuapada. A few (4%) takes dugwell water for the same purpose. But in

the district Khurda, it is seen that many people use pond water (23%) and dugwell water (37%) for cooking purposes. The rest (40%) takes water of handpump and public hydrants for cooking purpose.

In district Mayurbhanj, handpump water is mainly (88%) used for cooking but dugwell, spring and river water is also used sparingly.

In the said tables it is seen that people use all sources for washing utensils and clothes, whichever is available nearby. Wherever ponds are abundant and located nearby they use this source for bathing also. So we find in Khurda district, pond water is extensively used for all purposes. But in Nuapada district, we find that handpump water is used equally in washing utensils & clothes, bathing and latrine purposes. In Mayurbhanj district, utensils are mainly washed by handpump, but some use pond water (17%) also; but for washing clothes pond water is mainly used though handpump and river water are also used in some places. For bathing people use all types of water.

Table No. 7 shows the details of warier sources (Public) in the surveyed villages of Orissa district, wherein we find the major source is handpump fitted tubewell. But in Khurda district, the public dugwell is also of appreciable quantity. (37%).

Table No. 8 shows the perception of the user about the adequacy of water for different purposes. Most of them informs they are getting adequate water for drinking, cooking and latrine(wherever they are existing) purposes. But in Nuapada district, they are not getting adequate water for washing clothes and utensils and for bathing.

Table No. 9 shows the depth of tubewell (both Public & Private) in 3 districts. The tubewells are mostly constructed at a depth range of 40 m - 80m.

Table No. 10 shows the depth of dugwell (both Public & Private) in 3 districts. Mostly they are within the depth range of 6 m - 12m; but dugwells of greater depth have been also observed.

Table No. 11A, 11B & 11C replicates the yearwise installation of water sources for each district. It is seen that no public dugwells were constructed after 1990 and the hand pump fitted tubewells were constructed in large numbers in last years. It is also interesting to note that some of the tubewells which were constructed before 1980 is still in service. Piped water supply system also started recently in some places.

The distance of the water sources (Public Handpump or Dugwell) from the houses in 3 districts have been tabulated in Table No. 12, wherein we find that about 50% of the houses were within 50 m distance; about 40% of the houses are within 51-200 m distance; 8% of the houses are within 201 -500 m distance and 2% of the houses are beyond 500 m distance. It has been also noted from the discussion with the villagers that they are not willing to fetch water when the distance is more than 500 m.

The villagers were interviewed to get their opinions about the problems in the sources which have been reflected in Table No. 13. While most of the people said that there is no problem a few responded that there are some problems e.g.

- *Pump is not working due to damage / wear of some parts*
- *Platform is not there or it is badly damaged causing stagnation of excess of water.*
- *Sometimes the sources (particularly Dugwell) get dry in Summer Seasons.*
- *Quality of water is also not acceptable in some cases.*

In Mayurbhanj & Khurda districts, many villagers opine that the sources are too far.

The villagers were interviewed to give their opinion about the nature of water they get, which has been reflected in Table No. 14. Most of them responded that the water is of good taste and potable, while a very few opined that there is Iron Problem or Saline Problem or Water is non potable.

Water Testing :

- *No water testing of the sources were reported to be carried out at Nuapada district.*
- *Water Testing was carried in 12 Water Sources at Mayurbhanj District (Analytical Report Enclosed)*
- *Water Testing was carried in 11 Water Sources at Khurda District (Analytical Report Enclosed)*

From the report it is seen that Iron Concentration varies from 0.2 mg/l to 0.8 mg/l in Mayurbhanj district,which is slightly above the acceptable limit. But in Khurda district, Iron concentration is on higher side. In Pichukuli village of Bolagarh block,the Iron concentration is found to be 7.60 mg/l, which is much above the acceptable limit.

The Fluoride concentration in Mayurbhanj District is within the acceptable limit. No test was carried for Fluoride in Khurda District. The Chloride concentration is within the acceptable limit in both districts. No other chemical, toxicological or bacteriological test was carried out in any of these districts.

The hygienic condition around the source was inspected by the surveyors to investigate whether the platform and drain are properly constructed and maintained and there is no stagnation of excess water around the source. Among the five categories of conditions the hygienic condition is satisfactory around the water sources in majority cases. A few are good and a very few are very good, bad or very bad. The figures are shown in Table No. 15.

Whenever the villagers were asked whether they take measures to clean the H. P. site, we get positive answers in about 70% cases and negative answer in about 30%cases. The detail figures are shown in Table No. 16.

The frequency of water supply in piped water supply has been evaluated and it has been observed that nearly 3-4 hrs. / day are supplied through public stand post in morning, afternoon and evening time. The details have been shown in Table No. 17.

To ascertain the present status of Handpump fitted tubewell or Public Hydrants connected with Piped Water Supply System the villagers were asked to give their opinions, whether it is functioning good or not functioning or erratic functioning; or it is difficult or ordinarily satisfactory. The surveyor also gets confirmed on site inspection. The present status is shown in Table No. 18. A quite good numbers are functioning good, while a very few are not functioning. The reason is either some parts of H. P. are damaged or worn out or temporarily the water level goes down in hot summer.

All public tubewells, dugwells and piped water supply system are maintained by Rural Development Department, Govt. of Orissa. This is

reflected in Table No. 19. No fees are charged to the villagers for the maintenance of water sources as shown in Table No. 20.

An enquiry was also made for the involvement of the beneficiaries in the existing rural water supply scheme by way of planning, site selection, contribution of capital investment, donation of land or labour etc. The result is tabulated in Table No. 21. In many cases (about 20%) the villagers were consulted for site selection for H. P. or dugwell. The labour was donated by about 12% of the villagers. A few villagers (about 5%) donated land, but nowhere capital investment was contributed by the villagers. But about 60% of the beneficiaries were not involved at all.

Again, the beneficiaries were asked whether they like to be involved in planning or site selection or whether they are agreeable to contribute capital investment, to donate land or labour in future rural water supply scheme. Interesting comments were available as shown in Table No. 22. About 40% of the villagers are willing to be involved in planning and site selection in future R. W. S. scheme. About 50% of the villagers are agreeable to offer free labour but none agreeable to donate land. About 30% of the villagers are ready to contribute capital investment if better rural water supply scheme is implemented in their villages. About 20% of the villagers are not willing to be involved in any future R. W. S. scheme. About 8% of the villagers do not give comment, they leave this matter to the local committee which will decide.

Suggestions were sought from the villagers regarding better operation and maintenance of rural water supply schemes. About 50% of the villagers opined that local village committe to be formed for better operation and maintenance. About 25% of the villagers think that some training of the villagers for this purpose will be useful. The same

percentage of the villagers think that without Govt.contribution/ involvement the programme would not be successful. About 20% of the villagers could not give suggestions. When asked whether they are agreeable to pay water tax, it is found that 80% of the people are agreeable to pay water tax varying from Rs. 1/- to Rs/ 15/- for operation and maintenance. The figures are tabulated in Table No. 23.

Regarding the status of latrine in the villagers it is a very poor picture. Only 7.6% of houses have latrine in the form of septic tank, borehole, pit or dugwell latrine. Table No. 24 represents the latrine status. 92.3% of the houses have no latrine. But most of the villagers (62.2%) are willing to have their own latrine. But some of them(18%) do not agree to contribute labour or capital for construction of latrine, others agreed to contribute labour or labour and capital both. This is represented in Table No. 25. About 65% of the willing villagers like to have pit latrine, 25% like to have septic tank and the rest for dugwell or other types. This is represented in Table No. 26.

When enquired about the reasons for not having latrine we find 36% of the villagers say they are too poor to construct. 62% of the villagers say they are habituated in the open air defecation and there is no problem for them as there is plenty of land and there is no need of latrine for them. Only 2% of the villagers say they cannot construct latrine as there is no suitable land. This is represented in Table No. 27.

List of Villages Surveyed in NUAPADA District of ORISSA

	Block Komna	Population	No. of Water Sources	Status
1.	Pendrawar	1500	9	FC
2.	Jadomunda	1760	11	FC
3.	Ghotteswar	640	4	FC
4	Nuagon	1050	22	FC
5.	Kumna	2548	39	FC
6.	Budhikomna	2426	10	FC
7.	Bagamunda	318	7	FC
8	Gulbha	560	4	FC
9	Larkine	328	4	FC
10.	Bhella	980	6	FC
11.	Bharua Munda	230	2	FC
12.	Khori bhadi	780	5	FC

Table No. **1A**

Index :

FC ——→ Fully Covered
PC ——→ Partially Covered
NC ——→ Not Covered

	Block Nuapada	Population	No. of Water Sources	Status
1	Silati	162	1	FC
2	Ainlajuba	1209	10	FC
3.	Junjula	260	2	FC
4	Dohejpoda	320	2	FC
5.	Tileijhar	597	6	FC
6.	Jumani	563	9	FC
7.	Anlagaba	260	2	FC
8.	Kisana	980	6	FC
9	Ichhapur	980	6	FC
10	Bagarapani	514	6	FC
11	Pagarpani	541	2	PC
12.	Sunarital	228	3	FC
13.	Kotenchua	510	10	FC

*Table No.*1B

Index :

FC ⟶ Fully Covered
PC ⟶ Partially Covered
NC ⟶ Not Covered

List of Villages Surveyed in KHURDA District of ORISSA

Block Bolgarh

	Name of the Village	Population	No. of Water Sources	Status
1	Bolagarh	2570	25	FC
2.	Tutiapada	1888	10	FC
3.	Kapasia	813	4	FC
4.	Pichukuli	1207	17	FC

Block Tangi

1.	Sonakusumi	664	6	FC
2.	Brahmundi	292	8	FC
3.	Ahihara	263	2	FC
4.	Pariorada	2004	18	FC

Block Chilka

1	Singheshwar	1019	7	FC
2.	Chandeshwar	2599	21	FC
3.	Injanpur	293	-	NC
4.	Nuagarh	1281	11	FC

Table No. **1C**

Index :

FC ⟶ Fully Covered
PC ⟶ Partially Covered
NC ⟶ Not Covered

List of Villages Surveyed in MAYURBHANJ District of ORISSA

Block Jashipur

	Name of the Village	Population	No. of Water Sources	Status
1	Kashipul	424	6	FC
2.	Suanpal	1058	7	FC
3.	Durdura	1046	8	FC
4	Dhalabani	865	4	FC

Block Bisoi

1	Luhakani	1600	5	FC
2.	Kundulia	600	4	FC
3.	Bisoi	1700	7	FC

Block Shyamakuntha

1.	Gourdihi	532	2	PC
2.	Mahulia	844	3	PC
3	Podastia	2664	12	FC

Table No. **1D**

Index :

FC ⟶ Fully Covered
PC ⟶ Partially Covered
NC ⟶ Not Covered

[illegible]

[illegible]	G.P.	Sl No.	Village	Chloride mg/l	Iron mg/l	Type of source
[illegible]	Sarua	1)	Sarua	20.0	0.50	Tubewell
	Baghamari	2)	Baghamari Bazar	50.0	0.10	Tubewell
	Begunia	3)	Kusapalla	10.0	[illegible].75	Production well for Rural Piped Water Supply Scheme
[illegible]	Pichukolli	4)	Pichukolli	110.0	7.60	Tubewell
	Polagarh	5)	Bolagarh	60.0	0.30	Production well for [illegible]
[illegible]	Badakul	6)	Nuagarh	110.0 120.0	4.40 [illegible].20	Tubewell Tubewell
	Nimikheta	7)	Enjampur	150.0	0.20	Tubewell
	Singheswar	8)	Singheswar	40.0	2.70	Tubewell
	Chandeswar	9)	Chandeswar	15.0	1.00	Production well for P.W.S.
[illegible]	Pariorada	10)	Pariorada	30.0	0.[illegible]	Tubewell
	Badapari	11)	Ahibara	50.0	1.20	Tubewell

Table No. 14C

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Villages Surveyed in Nuapada District

Block - Komna

Table No - **2A**

	Demography Aspects of Families					Distribution of Population			
Name of the Village	**SC**	**ST**	**General**	**OBC**	**Total No. of families surveyed**	**Male**	**Female**	**Children**	**Total No. of People in the surveyed families**
Pendrawar	6	8	3	15	32	71	54	70	195
Jadomunda	-	-	-	14	14	36	23	32	91
Ghotteswar	-	1	3	-	4	8	12	3	23
Nuagaon	-	1	-	2	3	10	10	5	25
Kumna	9	14	14	26	63	130	123	154	407
Budhikomna	-	-	1	14	15	14	39	32	85
Bagamunda	-	1	6	1	8	17	17	8	42
Gulbha	1	7	4	11	23	50	46	34	130
Larkine	-	2	4	-	6	23	14	10	47
Bhella	15	-	-	2	17	30	38	39	107
Bhatia Munda	-	2	-	-	2	10	9	11	30
Khori bhadi	-	1	1	1	3	7	7	7	21
Total	**31**	**37**	**36**	**86**	**190**	**406**	**392**	**405**	**1203**

Villages Surveyed in Nuapada District

Block - Nuapada

Table No - **2B**

Name of the Village	Demography Aspects of Families					Distribution of Population			
	SC	ST	General	OBC	Total No. of families surveyed	Male	Female	Children	Total No. of People in the surveyed families
Silati	-	6	1	1	8	11	13	13	37
Amlapuba	3	1	-	-	4	11	11	6	28
Jampula	1	3	-	-	4	4	3	2	9
Dohepoda	1	6	-	1	8	23	23	8	54
Jumani	2	3	4	5	14	36	30	25	91
Tikyhan	1	4	2	4	11	22	21	21	64
Anlagaba		4			1	6	4	9	19
Kusana		1		2	6	6	6	14	26
Ichhapur		2	1	2	5	11	11	7	29
Sunarital		6	3	9	18	23	24	31	78
Baganapani		3	-	-	3	4	4	5	13
Pagarpani	-	5	-	2	7	15	14	12	41
Kotenchua	-	7	1	4	12	19	19	27	65
Total	**8**	**54**	**12**	**30**	**104**	**191**	**183**	**180**	**554**

Villages Surveyed in Khurda District of State Orissa

(*As per Surveyed Houses*)

Table No. **2C**

		Demography Aspects of Families					Distribution of Population			
Name of Block	**Name of the Village**	**SC**	**ST**	**General**	**OBC**	**Total No. of families surveyed**	**Male**	**Female**	**Children**	**Total No. of People in the surveyed families**
Bolgarh	*Bolagarh*	3	-	10	9	22	65	52	54	171
Do	*Tutapada*	4	2	17	10	33	55	45	54	154
Do	*Kapasia*	1	-	9	10	20	70	65	69	204
Do	*Pichukuli*	-	2	8	8	18	48	36	52	136
Chilka	*Chandeshwar*	9	-	13	4	26	76	61	70	207
Do	*Singheshwar*	5	1	4	1	11	28	24	30	82
Do	*Injanpur*	-	-	10	-	10	16	21	13	50
Do	*Nuagarh*	8	-	11	-	19	46	39	44	129
Tangi	*Pariorada*	9	1	8	1	19	60	49	64	173
Do	*Sanakusumi*	2	-	13	-	15	51	43	20	114
Do	*Brahmundi*	2	-	7	1	10	31	25	70	126
Do	*Ahihara*	3	-	6	1	10	21	17	19	57
	Total	**46**	**6**	**116**	**45**	**213**	**567**	**477**	**559**	**1603**

Villages Surveyed in Mayurbhanj District of State Orissa
(*As per Surveyed Houses*)

Table No **2D**

		Demography Aspects of Families					Distribution of Population			
Name of Block	Name of the Village	SC	ST	General	OBC	Total No. of families surveyed	Male	Female	Children	Total No. of People in the surveyed families
Jashipur	*Kashipal*	-	7	-	-	7	16	20	25	61
Do	*Suanpal*	2	18	-	-	20	30	38	46	114
Do	*Durdura*	1	15	-	3	19	29	25	46	100
Do	*Dhalabani*	-	14	-	1	15	35	26	42	103
Bisoi	*Luhakani*	-	3	7	10	20	41	37	36	114
Do	*Kundulia*	9	4	-	-	13	20	25	22	67
Do	*Bisoi*	5	10	-	5	20	40	35	32	107
Shyamakuntha	*Gourdidhi*	5	5	-	10	20	25	30	42	97
Do	*Mahulia*	3	6	-	-	9	21	19	27	67
Do	*Podastia*	7	6	4	3	20	40	38	32	110
	Total	**32**	**88**	**11**	**32**	**163**	**297**	**293**	**350**	**940**

Occupational Status of the families surveyed in three (3) Orissa Districts

Table No - 3

Districts	Occupation											
	Farmers		Daily Labourers including Agricultural Labourers		Govt. Service Holders		Private Service Holders		Businessmen		Self Employed people	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Nuapada	108	33%	128	39.5	41	12.7%	18	5.5%	30	9.3%	NIL	NIL
Mayurbhanj	35	20 4	82	47.7	15	8.7	-	-	15	8.7	25	14.5
Khurda	69	18.3	197	52.1	22	5 8	37	9.8	28	7 4	25	. 6 6

No. of Earning Members (family wise) surveyed in three Districts of Orissa

Table No - **4**

	One per family		Two per family		Three per family		Four per family		Five per family		Six per family	
District	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos**	**%**	**Nos**	**%**
Nuapada	172	72%	50	21%	13	5%	3	2%	-	-	-	-
Mayurbhanj	73	44.8	54	33.1	14	8.6	14	8.6	7	4.3	1	0 6
Khurda	128	58.2	53	24 1	27	12 3	12	5 4	-	-	-	-

Total Income per month per family surveyed in three Districts of Orissa (in Rupees)

Table No - **5**

	< 500		501 -750		751-1000		1001-1500		1501-2000		2001-2500		2501-3000		3001-3500		3501-4000		4001-5000		> 5000	
District	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%
Nuapada	49	16 6	70	23 8	96		37	12 6	33	11 2	4	1 3	3	1	2	0 6	-	-	-	-	-	-
Mayurbhanj	38	23 3	10	6 1	16	9 8	36	22 0	26	16 0	6	3 7	11	6 7	7	4 3	3	1 9	5	3 1	5	3 1
Khurda	18	8 4	10	4 7	50	23 5	48	22 5	34	16 0	30	14 2	3	1 4	5	2 3	5	2 3	3	1 4	7	3 3

Water Usage pattern in Nuapada District (Familywise)

Table No - **6A**

Sources / Purposes	Handpump		Piped Water		Pond		Dugwell		River		Canal	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos	%
Drinking	253	86 1	26	8.8	-	-	15	5 1	-		-	-
Cooking	254	86 5	26	8 8	1	0 3	13	4.4	-	-	-	-
Washing Utensils	119	40.5	19	6.5	66	22.4	30	10 2	60	20.4	-	-
Washing Clothes	96	32.7	15	5	122	41 5	12	4.1	49	16.7	-	-
Bathing	90	30 2	34	11.6	106	36 1	16	5 5	36	12 2	12	4.2
Latrine	140	47.6	5	1.7	71	24 2	14	4 8	64	21.7	-	-

Water Usage Pattern in Mayurbhanj District of Orissa

Table No **6B**

	Drinking		Cooking		Washing Utensils		Washing Clothes		Bathing		Latrine	
Source	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Dugwell	11	6.4	14	8 0	9	5.3	7	4.1	6	7 0	5	5 0
Hand pump	152	88 4	153	87.5	120	71.9	49	28.4	25	29 1	21	21 0
River	5	2.9	6	3 4	10	6 0	27	15.7	29	33 7	18	18
Canal	-	-	-	-	-	-	6	3.5	18	20.9	16	16
Pond	-	-	-	-	28	16.8	83	48.1	6	7 0	39	39 0
Piped / Tap Water	-	-	-	-	-	-	-	-	-	-	-	-
Spring	4	2 3	2	1.1	-	-	1	0.1	2	2 3	1	1 0

Water usage pattern in Khurda District of Orissa

Table No **6C**

Source	**Drnking**		**Cooking**		**Washing Utensils**		**Washing Clothes**		**Bathing**		**Latrine**	
	Nos.	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**
Dugwell	82	38 5	82	36 8	34	15.2	30	13.8	21	9 8	3	100
Hand pump	88	41 3	62	27.8	27	12.2	15	6 9	14	6 6	-	-
River	-	-	-	-	13	5.8	5	2.3	5	2.4	-	-
Canal	-	-	-	-	-	-	-	-	-	-	-	-
Pond	8	3.7	52	23 3	149	66.8	167	77.0	173	81.2	-	-
Piped / Tap Water	35	16 5	27	12 1	-	-	-	-	-	-	-	-

Details of Water Sources in the Surveyed Villages of Orissa district

Table No **7**

Sources	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
Hand pump fitted tubewell	155	88.1	98	100	80	53 0
Piped Water Supply System (with Public Stand Post)	13	7.4	-	-	15	10
Dugwell	8	4.5	-	-	56	37
Total	**176**	-	**98**	-	**151**	-

Only Public Water Sources are noted here.

Adequacy of Water (Perception of the user)

Table No **8**

Nuapada					Mayurbhanj					Khurda				
Purpose	**Adequacy**		**Inadequacy**		**Purpose**	**Adequacy**		**Inadequacy**		**Purpose**	**Adequacy**		**Inadequacy**	
	Nos.	%	Nos.	%		Nos.	%	Nos.	%		Nos.	%	Nos.	%
Drinking	220	74.83	74	25.17	*Drinking*	146	89.6	17	10 4	*Drinking*	206	96 7	7	3 3
Cooking	196	66 66	98	33 34	*Cooking*	158	96.9	5	3.1	*Cooking*	192	90.1	21	9.9
Washing Clothes & Utensils	111	37.75	183	62.25	*Washing Clothes & Utensils*	149	91.4	14	8.6	*Washing Clothes & Utensils*	186	86 4	29	13 6
Bathing	102	34.69	192	65.31	*Bathing*	149	91.4	14	8 6	*Bathing*	169	79 3	44	20.7
Latrine	18	78.3	5	21.7	*Latrine*	25	100	-	-	*Latrine*	3	100	-	-

Depth of Tubewell (Public & Private) in three Districts of Orissa

Table No 9

Depth Range	Districts					
	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
Below 20 m	-	-	-		-	-
20 m- 40 m	-		-	-	-	-
40 m- 60 m	121	78 1	74	61 7	51	38 9
60 m - 80 m	34	21 9	46	38 3	80	61 1
Total	155	-	120	-	131	-

Depth of Dugwell (Public & Private) in three Districts of Orissa

Table No. 10

Depth Range	Districts					
	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
6-8 m	2	25	5	15 7	-	-
8-10 m	6	75	6	18.2	58	70.7
10-12 m	-	-	14	42.4	24	29 3
12-15 m	-	-	6	18.2	-	-
above 15 m	-	-	2	6.1	-	-
Total	**8**	-	**33**	-	**82**	-

Year wise Installation of Water Sources in 3 Districts of Orissa

District : Khurda

Table No. - **11A**

Year	Hand Pump	Dugwell	PWS
Upto 1980	13	33	-
1981-85	8	10	-
1986-90	18	13	-
1991-95	9	-	-
After 1995	32	-	15
Total	**80**	**56**	**15**

District : Mayurbhanj

Table No -**11B**

Year	Hand Pump	Dugwell	PWS
Upto 1980	-	-	-
1981-85	23	-	-
1986-90	17	-	-
1991-95	33	-	-
After 1995	25	-	-
Total	**98**	**-**	**-**

District : Nuapada

Table No - **11C**

Year	Hand Pump	Dugwell	PWS
Upto 1980	*27*	*8*	-
1981-85	*10*	-	-
1986-90	*32*	-	-
1991-95	*23*	-	-
After 1995	*63*	-	*13*
Total	**155**	**8**	**13**

Distance of Water Sources (Public) from the houses in three districts of Orissa (Perception of the user)

Table No **12**

Distance	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
Less than 50 m	128	43.5	45	27.6	122	57.3
51 m - 100 m	95	32.3	43	26.4	40	18.8
101 m - 200 m	47	16	31	19.0	51	23.9
201 m - 500 m	24	8.2	29	13.8	-	-
501 - 1000 m	-	-	15	9.2	-	-
Total	**294**	-	**163**	-	**213**	-

As the public dugwells are within 50 m distance from the houses

Problems involved in the Sources in three Districts of Orissa (Perception of the user)

Table No **13**

Type	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
Too far	8	2.7	63	38.7	106	49.8
Used to get dry	2	0.7	-	-	13	6.1
Poor quality	35	11.9	13	8.0	66	31.0
Other Problems	-	-	13	8.0	-	-
No Problem	249	84.7	74	45.3	28	13.1
Total	**294**	-	**163**	-	**213**	-

Other Problems include :

- *Sometimes they find pump is not working due to damage / wear of some parts*
- *Platform is not there or it is badly damaged, causing stagnation of excess water*

Nature of Water surveyed in three Districts of Orissa

Table No **14**

	Sweet		Good Taste		Potable Normal		Saline		Iron Problem		Non Potable	
District	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**
Nuapada	33	11.2	213	72.4	246	83.7	-	-	32	10.9	16	5.4
Mayurbhanj	146	90	147	90	138	85	2	1.2	1	0.6	-	-
Khurda	10	4.7	130	61.1	61	28.6	-	-	12	5.6	-	-

Water Testing :

No water testing of the sources were reported to be carried out at Nuapada district
Water Testing was carried in 12 Water Sources at Mayurbhanj District (Analytical Report Enclosed)
Water Testing was carried in 11 Water Sources at Khurda District (Analytical Report Enclosed)

Hygienic Condition around the Water Sources

Table No. **15**

District	Very Good		Good		Satisfactory		Bad		Very Bad	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Nuapada	106	36.2	44	14.9	126	42.8	18	6.1	-	-
Mayurbhanj	29	17 7	41	25.1	81	49 6	10	6.1	2	1.2
Khurda	12	5.6	84	39.4	73	34 4	12	5 6	32	15

Measures taken by the villagers for cleanliness of H. P. Site

Table No. **16**

District	Yes		No	
	Nos.	%	Nos.	%
Nuapada	176	59.8	118	40 2
Mayurbhanj	81	49 6	82	50.4
Khurda	176	82 6	37	17.4

Frequency of Water Supply in case of PWS

Table No. 17

District : Nuapada

Morning (7-8.30 AM)	**Afternoon (12-13 hrs.)**	**Evening (17-18.30 PM.)**	**Total**
1.5 hrs.	1 hr	1.5 hrs.	4 hrs. / Day

District : Khurda

Morning (6-7 AM.)	**Afternoon (12-13 hrs.)**	**Evening (5-6 PM)**	**Total**
1 hr	1 hr	1 hrs.	3 hrs. / Day

District : Mayurbhanj

No PWS in the surveyed villages

Present Status of HP / PWS / Borewell Water etc. (Perception of the Villagers)

Table No **18**

Status	Districts					
	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
Good	36	12.2	58	35.6	12	5.6
Satisfactory	226	76.9	100	61 3	183	85 9
Difficulty	32	10 9	4	2 5	15	7 0
Erratic functioning	-	-	1	0 6	-	
Not functioning	-	-	-	-	3	1 5
Total	**294**	**-**	**163**	**-**	**213**	**-**

Responsibility for the Maintenance & Repair of Water Sources

Table No **19**

	Districts		
Sources	Nuapada	Mayurbhanj	Khurda
Tube Well	155	98	80
Dug Well	8	-	56
PWS	13	-	-

NB. All Tubewells, Dugwells & PWS in the three districts of Orissa are maintained by ***Rural Development Department(RDD)***

Any Fee charged for the Maintenance of Water Sources

Table No **20**

District	Amount
Nuapada	NIL (Responded by all villagers)
Mayurbhanj	NIL (Responded by all villagers)
Khurda	NIL (Responded by all villagers)

Involvement of the beneficiaries in the existing Rural Water Supply Scheme

Table No **21**

District	Yes								No		No Remarks
	By Site Selection		Contribution of Capital Investment		Donation of Land		Donation of Labour				
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	
Nuapada	57	19.4	-	-	25	8.5	35	11.9	159	54	-
Mayurbhanj	12	4.1	-	-	1	0.6	17	10.4	102	62 6	-
Khurda	65	30.5	-	-	-	-	28	13.1	148	69 5	18

Willingness of the beneficiaries in the future Rural Water Supply Scheme

Table No. **22**

District	Yes								No		No Remarks *(To be decided by local committee)*	
	By Site Selection		Contribution of Capital Investment		Donation of Land		Donation of Labour					
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Nuapada	110	37.4	20	6 8	-	-	70	23.8	95	32 3	19	6.4
Mayurbhanj	75	46	74	45.4	-	-	105	64 4	37	22 7	15	9.2
Khurda	71	33.3	63	29.6	-	-	143	67.1	13	6 1	20	9 4

Note : Percentage calculated on the basis of total no. of houses surveyed.

Operation & Maintenance of Rural Water Supply Schemes

Table No. **23**

	Suggestion / Measures to be taken				Agreement to pay Water Tax			
					Yes		No	
District	Local Village Committee to be formed	Training needed	Govt. Contribution / involvement	No Suggestions	Nos.	%	Nos.	%
					(Rs. 1 - Rs. 5/- p.m.)			
Nuapada	190	120	65	39	190	64.6	104	35.4
					(Rs. 2 - Rs. 20/- p.m.)			
Mayurbhanj	37	15	36	2	14	85.9	23	14.1
					(Rs. 1 - Rs. 15/- p.m.)			
Khurda	123	13	40	29	173	81.2	40	18.8

Status of Latrine in the surveyed Districts of Orissa

Table No. **24**

		Nuapada		Mayurbhanj		Khurda	
		Nos.	%	Nos.	%	Nos.	%
Houses having latrine	*Septic Tank*	13	56.5	6	24	1	33.3
	Bore Hole	10	43.5	-	-	-	-
	Pit Latrine	-	-	16	64	1	33.3
	Dug Well	-	-	3	12	1	33.3
	Total	23	7.8	25	15.3	3	1.4
Houses not having latrine		271	92.2	138	84.7	210	98.6
Houses willing to have own latrine		178	65.7	65	47.1	142	67.6
Houses not willing to have own latrine		93	34.3	40	29	68	32.4
No Comment			-	33	23.9	-	-
Water used for Anal Cleaning		23	100	25	100	3	100

Status of Houses willing to have own latrine

Table No **25**

District	Agreement to Contribute				Not agreed to contribute anything	
	Labour Only		Both Labour & Capital			
	Nos.	%	Nos.	%	Nos.	%
Nuapada	45	25 2	32	18 0	101	56 8
Mayurbhanj	37	56.9	18	27.7	10	15 4
Khurda	87	61.3	55	38 7	-	-

Table No **26**

Type of Latrine Desired	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
Septic Tank	40	22.5	27	41.6	28	19 7
Pit Latrine	138	77.5	27	41 6	96	67 6
Dug Well	-	-	-	-	18	12 7
Other	-	-	11	16.8	-	-
Total	**178**	**-**	**65**	**-**	**142**	**-**

Table No. **27**

Reasons for not having latrine	Nuapada		Mayurbhanj		Khurda	
	Nos.	%	Nos.	%	Nos.	%
No fund available	49	52.7	6	15	18	26 5
Plenty of land available so no problem / habituated	42	45.2	28	70	38	55 9
Suitable land is not available for construction	2	2.1	1	2.5	-	-
No need	-	-	5	12 5	12	17 6
Total	**93**	**-**	**40**	**-**	**68**	**-**

Analytical Report

Block - Bisoi

Table No - **14A**

Sl. No.	Name of the G. P.	Name of the village	Location	TW No.	Iron mg/l	Fluoride mg/l	Chloride mg/l	Remarks
1	*Bisoi*	*Bisoi*	*Near UP school*	T-26/17/98	0.40	0.21	48.0	-
2	*Do*	*Kundalia*	*Do*	T-25/18/98	0.30	0.46	12.0	-
3.	*Luhakani*	*Luhakani*	*House of Parameswar Behara*	T-26/20/98	0.40	0.40	148 0	-
4	*Do*	*Banki*	*House of Satruhgan Patra*	T-26/21/98	0.20	0.48	24.0	-

Block - Samakhunta

Table No - **14B**

Sl. No.	Name of the G.P.	Name of the Village	TW No.	Lab Ref.No.	Iron mg/l	Chloride mg/l	Fluoride mg/l	Temp (^{0}C)	Colour	Alkalinity mg/l as $CaCO_3$	Hardness as mg/l as $CaCO_3$
1	*Baunsabilla*	*Podastia*	115	T-5/9/98	0.60	96 0	0 65	35 0	Clear	304 0	200 0
2.	*Do*	*Do*	332	T-5/10/98	0.70	80.0	0.72	35.0	Do	124.0	180 0
3.	*Do*	*Do*	333	T-5/11/98	0.50	20.0	0.79	35.0	Do	220.0	256 0
4	*Mahulia*	*Gaurdiha*	315	T-5/12/98	0 80	52.0	0.58	35 0	Do	224.0	236.0
5	*Do*	*Do*	143	T-5/12/98	0.50	80.0	0.81	35.0	Do	156 0	152 0
6	*Do*	*Do*	124	T-5/14/98	0.70	64.0	0 63	35.0	Do	216 0	200 0
7.	*Do*	*Do*	125	T-5/15/98	0.40	108.0	0.77	35.0	Do	148 0	156 0
8.	*Do*	*Do*	126	T-5/16/98	0.50	36.0	0.82	35.0	Do	136 0	184 0

Conclusions

From the study, the coverage status of rural water supply in each village has been assessed . Out of total 47 villages in the 3 districts of Orissa, we find 3 villages (6.4%) are partially covered (PC) and one village(2%) is non-covered (NC). The rest villages (91.6%) are fully covered(FC). The major source in the villages is handpump fitted tubewell. But there are also some public hydrants connected with piped water system and dugwells. In our study, out of total 670 families surveyed in 3 districts, SC, ST and OBC families constitute 495 nos.(74%). So a huge amount of backward classes / areas have been covered in the study. As the quality of drinking water in the existing sources is not a major problem in the areas surveyed, the water as available from the handpump sources and other protected sources is considered to be safe. But, the testing of all water sources is not done regularly in chemical, bacteriological and toxicological aspects. These points should be given much emphasis.

The response of the people and their perception about the coverage of water supply & sanitation have been obtained through various questions and enquiries as shown in the questionnaire of the format (Annexure - I). Generally, we find most of the people (about 85%) use water of handpump or public hydrants for drinking. About 12% of the population take dugwell water for drinking. 1% use spring water & 2% use pond water for drinking. For cooking purposes, 80% of the people use handpump water or water from public hydrants. 12% of the people use dugwell water for this purpose and the rest people use water from pond, river etc. For washing utensils and clothes nearby river or pond water is used. For bathing purposes also they use mainly river and pond water. A few persons also use handpump or dugwell water for bathing, washing clothes and utensils.For the purpose of latrine (wherever they are available) private dugwell water or nearby pond water is mainly used.

Villagers have regular access to all such public water sources and they inform that they are getting adequate water for drinking & cooking . But in some places they are not getting adequate water for washing clothes and utensils.

We find about 50% of the houses are within 50 m distance from the water sources ; about 40% of the houses are within 51-200 m distance ; 8% of the houses are within 201 - 500 m distance and 2% of the houses are beyond 500 m distance. It is found that this 2% are always saying that the water sources are too far. Actually, they are not willing to fetch water when the distance is more than 500 m and in that case they prefer to use nearby pond or river water even for drinking.

Most of the villagers (about 90%) responded that there are no problems in the public water sources. But a few responded that there are some problems. As for example :

- *Pump is not working due to damage / wear of some parts*
- *Platform is not there or it is badly damaged causing stagnation of excess of water.*
- *Sometimes the sources (particularly Dugwell) get dry in Summer Seasons.*
- *Quality of water is also not acceptable in some cases.*

Most of the villagers responded that the water is of good taste and potable while a very few opined that there is iron problem or saline problem or water is non-potable.

In the existing rural water supply schemes, we find only a very few villagers(20%) were consulted for site selection for construction of handpump or dugwell or installation of street standposts. The labour was donated by about 12% of the villagers. A few villagers (about 5%) donated land, but nowhere capital investment was contributed by the villagers. But about 60% of the beneficiaries were not involved at all.

In future rural water supply schemes we find about 40% of the villagers are willing to be involved in planning and site selection. About 50% of the villagers are agreeable to offer free labour but none agreeable to donate land. About 30% of the villagers are ready to contribute capital investment if better rural water supply scheme is implemented in their villages. About 20% of the villagers are not willing to be involved in any future R. W. S. scheme. About 8% of the villagers do not give comment, they leave this matter to the local committee which will decide.

While all time water is available from the handpump fitted tubewell, the water is available only for 3-4 hrs. through public hydrants connected to piped water supply system. While most of the handpumps or public hydrants (more than 95%) are functioning good, only a few are not functioning properly. The reason is either some parts of H. P. are damaged or worn out or temporarily the water level goes down in hot summer in case of handpump or dugwell.

All public tubewells, dugwells and piped water supply systems are maintained by Rural Development Department, Govt. of Orissa. No fees are charged to the villagers for the maintenance of water sources.

Regarding operation and maintenance of rural water supply schemes, about 50% of the villagers opined that local village committee may be formed for better operation and maintenance. About 25% of the villagers think that some training of the villagers for this purpose will be useful. The same percentage of the villagers think that without Govt. contribution / involvement the programme would not be successful. About 20% of the villagers could not give suggestions. It is also found that the 80% of the people are agreeable to pay water tax varying Rs. 1/- to Rs. 15/- per month for operation and maintenance.

Regarding the status of latrine in the villages it is a very poor picture. Only 7.6% of houses have latrine in the form of septic tank, borehole, pit or dugwell latrine. 92.3% of the houses have no latrine. But most of the villagers (62.2%) are willing to have their own latrine. But some of them(18%) do not agree to contribute labour or capital for construction of latrine, others agreed to contribute labour or labour and capital both. About 65% of the willing villagers like to have pit latrine, 25% like to have septic tank and the rest for dugwell or other types.

As the economic status are very low, it is difficult for most of them to construct latrine. 62% of the villagers say they are habituated in the open air defecation and there is no problem for them as there is plenty of land and there is no need of latrine for them. Only 2% of the villagers say they cannot construct latrine as there is no suitable land.

The Knowledge, attitude and practice of the villagers in respect of water supply and sanitation have been also analysed and the result is shown in Annexure - II. It has been observed that only 5% of the houses are treating water at home, mostly by boiling. They add bleaching powder time to time in their private wells. The water from the hand pump or dugwell or Public Hydrants is mainly collected by women. After collection they keep the water in the collection container in 56.8% cases; or transfer to another container in 43.2% cases. They get the drinking water from the storage vessel directly by pouring or by the container with / without handle. About 19% of people are in unhygienic habit in this respect. Mostly (61%) they use metallic container for collection and storage of water though plastic or earthen materials are also used for this purpose. They are hygienic by covering the storage container (in 98% cases).

The personal hygiene is to some extent good. They take bath and cut their nails in almost regular way. They wash their hands before eating at least with

water. They wash their hands after defecation with water only in 55% cases. Only a few (6%) use soap for washing. The practice of wearing chappals or shoes are only in 24% cases.

There is no proper disposal system for liquid waste. The waste water is stagnated in 39% houses, though surface drains (mostly kutcha in nature) are existing in 41% cases.

There is no community bin for refuse collection. It is thrown indiscriminately in 52% cases. Some houses (44%) have manure pits and a very few(4.2%) have household bins.

Generally, we find the cloth and skin of the respondent is clean. But most of the villagers have no idea about health problems in drinking pond or river water.

Suggestions

- The definition of fully covered (FC) village is required to be changed.

  - *At least one public source upto 100 persons to avoid overcrowding.*
  - *Maximum distance of any source is to be limited to 500m for easy collection of water.*
  - *The quality of drinking water should follow the norms of BIS or CPHEEO.*

- Whenever the ground water shows salinity, iron or fluoride problems or any the chemical problems it will be necessary to choose surface water with proper treatment or ground water to be suitably treated to remove the undesired chemicals.

- Wherever possible piped water supply system should be installed, particularly where the users are interested to have house service connections. In that case water tax can be levied without any problem. All piped water supply system should be disinfected regularly.

- All the existing piped water supply system should be redesigned or renovated to supply adequate quantity of water and at desired residual pressure.

- The platform and leadway drain must be ensured in all sources-handpump, public hydrants or well. The broken platform and drain should be reconstructed.

- As Indian Mark - II handpump is functioning well this type can be installed as isolated source in sparsely populated areas where there is no problem of chemical quality.

- The public wells should be protected and maintained in a sanitary manner. Use of individual rope and bucket should be discarded. Wherever possible a handpump should be installed with proper cover over the dugwell. There should be no stagnation of excess water around any source.

- Water testing of all water sources, particularly used for drinking is to done regularly in chemical, bacteriological and toxicological aspects. The result is to be published in local newspapers. If any result shows that the water is unfit for human consumption the

matter should be brought to the notice of the public immediately. In case of emergency, the villagers will use bleaching powder or halogen tablets to be supplied by the Govt. departments ; they can boil water for drinking purposes.

- The Government should come forward for the installation of low cost latrines of appropriate designs for each house. It is understood that the if Govt. contributes to some extent, most of the villagers would agree to construct latrines. It also proposed that if 50% of the cost of sanitary latrines is deposited by the villagers in some approved banks, the RDD can construct the latrine as per approved designs with the balance amount.

- The villagers should be more involved in the future planning and implementation of rural water supply schemes. There should be arrangement for group discussion with the villagers for any new water supply projects. In that case, he villagers would be able to contribute some amount of capital investment and donate labour or cooperate in any manner in the implementation of the project.

- For operation and maintenance of rural water supply projects, the young men of the village should be trained by the Engineers of RDD, Govt. of Orissa. In future they will be the caretaker of rural water supply projects in their area. There should be total control over their work by Govt. machinery particularly in respect of use of spare parts and other fittings of RWS. The young men should be paid remuneration by the village committee while the spare parts and other fittings of standard quality will be supplied by the Govt. departments.

- There should be Awareness Camp for the villagers at least once a month to discuss.

I. Healthy habits to be followed in regular bath, nail cutting, cleaning clothes etc.

II. To use water properly without wastage and to keep the water container always covered while carrying it or storing at house. They should take the water from the storage pot either directly pouring from the vessel or by container with handle.

III. To use safe water only for drinking, cooking and final washing of utensils. The villagers should not use pond / river / canal water or any unprotected water for drinking and cooking.

IV. To keep all public water sources clean.

V. Habit of washing hands before taking food, particularly with much care for the children. If possible some training can be imparted to the children at school level for clean habit, use of safe water and latrine.

VI. To keep the latrines always clean for better use by every member of the family.

VII. To wash the hands with a little soap powder after defecation.

VIII. Disposal of liquid waste in the village houses so that there is no stagnated water in and around their houses , either by constructing suitable surface drain or soak pit.

IX. Refuse collection and disposal so that it is not thrown indiscriminately around their houses. Preferably, manure pit is to be constructed or household bin with proper cover should be available in their houses.

X. The health problems due to consumption of water from river, pond or any unprotected source, not wearing chappals or shoes whenever they go out of their houses or non-provision of sanitary latrines in their houses.

Some of the awareness camps should be specially organised for women and children in the villages. Health workers and N.G.O. should be involved in more numbers.

ANNEXURE I

Surveyed by All India Institute of Hygiene and Public Health

Monitoring and Evaluation Study in respect of Rural Water Supply Scheme

(Project of Rajiv Gandhi National Drinking Water Mission)

1. State :
2. District :
3. Block :
4. Village :
5. Location / Ward No., etc. :
6. Name of the Respondent (villager) :
7. Date of Visit :
8. Household Identification :

   a) Total number of members in the family

      i. Male .....nos.
      ii.. Female . . ..nos
      iii. Children ....nos.
      iv. Total ..... .nos.

   b) Main occupation
   c) No. of earning members
   d) Total income
   e) Whether belong to Schedule Cast / Tribe

9. Details of Water Sources

   a) Water Usage Pattern : (Tick [✓] the appropriate)

Source	Drinking	Cooking	Washing Utensils	Washing Clothes	Bathing	Latrine
Dugwell						
Handpump						
River						
Canal						
Pond						
Piped / Tap Water						

b) Do you have access to Dugwell / Tubewell

Yes / No

If yes, Private / Public

c) Depth of the Dugwell / Tubewell (in metre)

d) Distance of the source (in meter)

i. <50
ii. 51-100
iii. 101-200
iv. 201.500
v. 501-1000
vi. 1001-1500

e) Problems involved in the sources (specify)

i. too far
ii. Used to get dry
iii. Poor quality
iv. Health problem
v. Others

f) Do you have adequate water for

I.	Drinking	Yes / No
ii.	Cooking	Yes / No
iii.	Washing Clothes & Utensils	Yes / No
iv.	Bathing	Yes / No
v.	Latrine	Yes / No.

10. Details of water sources under ARWSP

a) Source under ARWSP

i. HP
ii. HWS
iii. PWS
iv. Others

b) When the source was installed

Year ..... Month .....

c) Whether all community people have access to source

i Regular access
ii. Occasional access
iii No access
iv. N A

d) If no, the main reason

e) Nature of water

i. Sweet
ii. Good Test
iii. Potable - Normal
iv Saline
v Iron Problem
vi Non-Potable
vii. Others

f) Whether water testing is done at regular intervals

Yes / No Result (if any)

g) Frequency of water in case of PWS / MWS

i. Morning - No. of hours
- during scarcity month
- during non-scarcity period

ii. Afternoon - No. of hours
- during scarcity month
- during non-scarcity period

iii. Evening - No. of hours
- during scarcity month
- during non-scarcity period

11. Present Status of HP / PWS / Borewell Water etc.

a) **Present functional status**

i. Good
ii. Satisfactory
iii. **Difficulty**
iv. **Erratic function**
v. **Not functioning**

b) If not functioning, since how long

i < a week
ii < a fortnight
iii. < a month

c) What is the main reason for the source going out of order ?

i Improver use
ii. Damage due to natural calamities
iii Damage by micreants
iv. Theft of parts
v. Others

d) Who is mainly responsible for the maintenance and rapair of the source ?

i. PHE / RDD
ii. Village panchayat
iii. NGO
iv. Special committee formed

e) Any fee charged for the maintenance

f) Hygienic condition around the source

I Very good
ii. Good
iii. Satisfactory
iv. Bad
v. Very bad

g) Do you take any measure for the cleaniless of Hand Pump Site

12. Are you involved in the planning and implementation of rural water supply scheme ? Give details

13. Have you contributed for the capital investment for public water supply system ? If so, how much

14. Would you like to be involved in the planning and implementation of rural water supply schemes ?

    Yes / No.

    If yes, give details

15a. Would you agree to contribute for capital investment, if new sources are installed ? If so, how much ?

b. Would you agree to contribute labour for a new source to be installed ?

16. What Measures are suggested for the maintenance and operation of the system ?

17. Would you pay, if any rate is fixed, for the maintenance and operation of the source ? If so, how much ?

18. Remarks, if any
    (Status of FC habitation)

Signature

Date :

Name of the surveyor

HP : Handpump
HWS : House Water Supply
PWS : Public Water Supply
MWS : Municipal Water Supply
FC : Fully Covered
NA : Not Applicable

ADDITIONAL ITEMS.

(a). Do you have latrine ? Yes/No

(a). If yes

(i). What type of latrine

(ii). Water used for anal cleaning. Yes/No.

If no, what material is used.

(iii). Whether all members use it. Yes/No

If no,how many members use it ?

(iv).Have you constructed your latrine with your own fund ? Yes/No

If no,who have contributed ?

How you have contributed ?

(b). If no

(i). Do you like to have your own latrine ? Yes/No

If yes,

Would you agree to contribute for capital investment or labour or both ?

What type of latrine you like to have ?

If no, give reasons.

KNOWLEDGE ATTITUDE & PRACTICE.

Q.1. Do you carry out any treatment of water before drinking ? Yes/No

If yes, what of the following treatments.

(a). Boiling
(b). Filter
(c). Boil & Filter
(d). Filter with Chemical
  (i). Addition of bleaching powder
  (ii). Potassium permanganate
  (iii). Alum
  (iv). Lime
  (v). Any other(Specify)

Q.2. Storage of drinking water:
(a). Stored in Collection container Yes/No
(b). Transferred to another container. Yes/No

Q.3. Use of drinking water from storage pot.
(a). Container with handle
(b). Container without handle
(c). Poured from the vessol.

Q.4. Type of material of storage and collection container.
(a). Plastic
(b). Metal
(c). Earthen
(d). Other(Specify)

Q.5. Whether storage container is covered ? Yes/No

Q.6. Do you cut your nails regularly (Weekly) ? Yes/No

Q.7. Do you wash your hands after defecation ? Yes/No

If yes,
(a). With Soap
(b). Without Soap
(c). Mud
(d). Only water
(e). Other

Q.8. Do you wash your hands before eating? Yes/No

If yes,
(a). With Soap
(b). Without Soap
(c). Occasionally with soap.
(d). With water only.

Q.9. Do you bathe regularly ? Yes/ No

(Contd..p.2)

Q.10. Disposal of liquid waste

(a). Underground sewerage
(b). Surface drain
(c). Soak Pit
(d). Nearby pond/River/Canal.
(e). No drainage

Q.11. Refuse collection & Disposal.

(a). House hold bin	Present/Absent
(b). Manure Pit	Present/Absent
(c). Thrown indiscriminately.	Yes/No
(d). Community bin	Yes/No
(e). Any other(Specify)	

Q.12. Do you wear chappal/shoes when you go out from house ? Yes/No

Q.13. Do you think drinking pond/River water causes any health probelms ? Yes/No/Do not know

Q.14. Personal hygiene of family member ? Good/Bad/Moderate.

Q.15. General Observation of the respondent.

Cloth	Clean/Not clean
Nail	Cut & Clean/ Not cut & clean.
Skin	Clean/Dirty.

SIGNATURE OF THE ENUMERATOR.

ANNEXURE - II

Knowledge, Attitude & Practice in Orissa

1. Home Treatment of Water 5%

Type of treatment

- ❑ Boiling 80%
- ❑ *Addition of bleaching powder in well* 18%
- ❑ *Filter* 2%

2. Collection of Water mainly

Men	-
Women	100%
Children	-

3. Stored in collection container 56 8%

4. Transferred to another container 43.2%

5. Use of drinking water from storage pot

❑ *Container with handle*	37.6%
❑ *Container without handle*	19.2%
❑ *Poured from the vessel*	43.2%

6. Type of material for storage and collection container

❑ *Plastic*	21%
❑ *Metal*	61%
❑ *Earthen*	18%
❑ *Other (Specify)*	-

7. Storage container

❑ *Covered*	98%
❑ *Uncovered*	2%

8.a) Personal Hygiene

❑ *Regular cutting of nails*	82%
❑ *Regular Bath*	82%

b) Washing hands after defecation

- *With soap & water* 6 1%
- *Without soap* 55 4%
- *With mud* & Water 38.5%

c) Washing hands before eating

- *With water* 70 4%
- *Occasionally with soap* 29.6%

d) Practice of wearing chappals / shoes 24.4 %

9. Disposal of Liquid Waste

- *Underground Sewerage* NIL
- *Surface Drain* 41%
- *Soak Pit* 3%
- *To Nearby Pond / River / Canal* 17%
- *Stagnated (No Dramage)* 39%

10. Refuse Collection & Disposal

❑ *Household Bin*	4.2%
❑ *Manure Pit*	44.1%
❑ *Community Bin*	NIL
❑ *Thrown indiscriminately*	51.7%

11. Awareness of public about health problems on drinking pond / river water

❑ *Yes*	13.6%
❑ *No*	13.1%
❑ *Do not know*	73.2%

12. General observation of the respondent

Cloth	*Clean*	87%
	Unclean	13%
Skin	*Clean*	88.3%
	Dirty	11.7%