

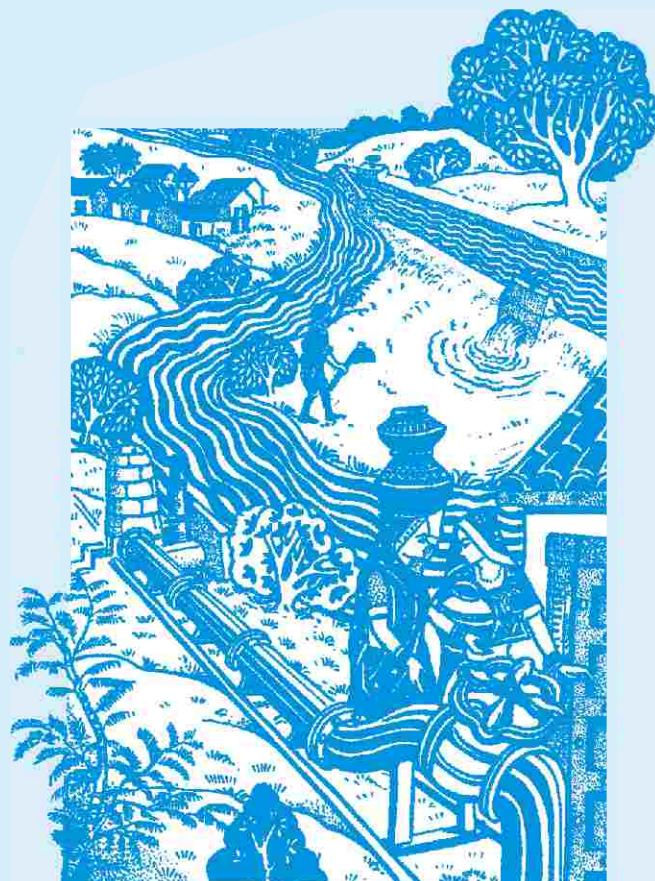
Water Policy Research

# Highlight

**Performance of  
Narmada-based Drinking  
Water Supply in Gujarat:  
Second Round Results from  
ITP-PRAVAH-CFDA Citizens'  
Monitoring System**

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The Narmada Pipeline Project (NPP) promises to deliver adequate and safe drinking water to roughly 20 million people in more than 8,000 villages in 16 districts of Gujarat. At a cost of nearly Rs. 7,500 crore, the project is the largest drinking water project of its kind in the world.

ITP, PRAVAH and CFDA collaborated on a Citizens' Monitoring System to provide up-to-date information about the progress in the implementation of NPP, in the public domain. This Highlight discusses the results of the second-round of the surveys which found that while majority of the identified beneficiary groups seem to access water from the scheme, there is still a lot to be done with respect to ensure equity in water distribution, organize communities for local management, volumetric pricing, and water quality testing.

# PERFORMANCE OF NARMADA-BASED DRINKING WATER SUPPLY IN GUJARAT: SECOND ROUND RESULTS FROM ITP-PRAVAH-CFDA CITIZENS' MONITORING SYSTEM<sup>1</sup>

## RESEARCH HIGHLIGHT BASED ON A PAPER WITH THE SAME TITLE

The Narmada canal based drinking water pipeline project (NPP) is one of the biggest drinking water projects in the world. Apart from irrigation and hydropower benefits, maximum social value of Sardar Sarovar Project may come from this drinking water project. When completed, the project will cover 8,215 villages and 135 towns of Gujarat by carrying Narmada canal water through 2,700 km long pipelines. The project will cover villages and towns in Saurashtra and Kachchh as well as parts of north Gujarat (in Ahmedabad, Mehsana, Banaskantha, and Sabarkantha districts) and the Panchmahals. The capital cost of the project is estimated to be Rs. 7,470 crore (at 2001 prices) and the annual operation and maintenance cost would be Rs. 500 crore (at 2001 prices). The project is important for Gujarat as it will cover a little less than half of the total villages and more than 55 percent of urban centres. So far, the project has covered 1,224 villages and 32 towns.

In February 2004, the IWMI-Tata Program (ITP) inaugurated a "Citizens' Monitoring System" with the objective of providing public domain information on the progress and recent developments on NPP through a 'non-evaluative' system which would go beyond the progress made in the physical infrastructure and look at how it is changing and impacting the lives of millions of people in Gujarat.

The initiative attempts to map the coverage of water supply and quality of the service provided under the project. Participatory in nature, it will involve a large number of NGOs, CBOs, people's organizations, and citizens in the process of monitoring. It will, thus, be an exercise in capacity building and empowerment of people which is one of the major objectives of PRAVAH, a

network of voluntary organizations and individuals spread over the entire state and working in the area of drinking water. The findings will be used for policy advocacy at the community level, village level, and state level. The ultimate objective is to move towards the goal of ensuring safe, adequate and sustainable water supply to all in the state.

### APPROACH

So far about 1,300 villages of Kachchh and Saurashtra have been covered under the monitoring system. Two schedules have been designed to collect the relevant information. Schedule 1 is designed to collect information about the socio-economic characteristics and the status of water and sanitation in village. This includes information on sources of water supply and the share of Narmada water in total supply; quality and quantity of water supply; management of water supply; a brief history of water supply in the village; and views of people regarding water and sanitation in the village. Schedule 2 is designed to collect data on the status of Narmada water in the villages. Data will be collected four times a year to capture seasonal variations. Data on the quantity and quality of water; regularity of water supply; management of water supply; water charges and their recovery; and payment of water and electricity bills by the village panchayat under NPP will be collected through this schedule.

Data for two of the four rounds of surveys for the period May 2004 to April 2005 have been compiled and processed. The present note highlights the major findings of the survey with respect to the reach, regularity, management and distribution of Narmada water. It also presents

<sup>1</sup>The research covered by this IWMI-Tata research highlight is an outcome of a collaborative effort by IWMI Tata Water Policy Program, PRAVAH, and Centre for Development Alternatives (CFDA). It was carried out with generous support from Sir Ratan Tata Trust, Mumbai, under IWMI-Tata Water Policy Program. The research paper can be downloaded from the IWMI-Tata Website <http://www.iwmi.org/iwmi-tata>.

This is a pre-publication paper prepared for the IWMI-Tata Annual Partners' Meet. This is not a peer reviewed paper; views contained in it are those of the author(s) and not of the International Water Management Institute or Sir Ratan Tata Trust.

**Table 1: Villages Officially Covered Under the NPP**

Districts	Villages in Master Plan Coverage	Water supply started as per GWSSB record (April 2004)	ITP-PRAVAH-CFDA	
			Villages covered in 1st Round	Villages covered in 2nd Round
Ahmedabad	375	134	121	97
Amreli	616	248	218	251
Bhavnagar	795	312	281	276
Jamnagar	751	59	51	51
Junagadh	995	41	47	62
Rajkot	856	219	269	267
Kachchh	948	211	0	184
<b>Total</b>	<b>5,336</b>	<b>1,224</b>	<b>987</b>	<b>1,188</b>

Source: GWSSB, Gandhinagar and ITP-PRAVAH-CFDA Survey

results on average distance traveled by people for accessing Narmada water, the quality of the water supplied, and overall perceptions of people about the NPP.

## STUDY AREA

NPP is expected to cover all districts of Saurashtra and Kachchh, and selected parts of Ahmedabad, Mehsana, Banaskantha, Sabarkantha and Panchmahals districts. So far, five districts of Saurashtra, namely, Amreli, Bhavnagar, Jamnagar, Junagadh and Rajkot, and parts of Ahmedabad district have been covered under the project.

Table 1 presents information on the villages covered under NPP and the villages covered in the ITP-PRAVAH-CFDA survey. The coverage varies from 1.9 percent in Jamnagar to 29.2 percent in Amreli. In other words, the project is in the process of implementation. Of the total villages (1,288) covered under the project, the study has covered 1,188 villages for the purpose of monitoring (Table 2).

## SURVEY RESULTS

### Reach of Narmada Water

NPP has so far covered five districts of Saurashtra (Amreli, Bhavnagar, Jamnagar, Junagadh, and Rajkot) and parts of Ahmedabad and Kachchh. Of the total number of villages covered in the study (1,188), about 950 villages (80.0 percent) have actually received Narmada water at least once. The discussion hereafter refers to only these 950 villages.

- Narmada water is not the only source of water in these villages. About 71.9 percent villages also use well/bore-well/hand pumps; about 28.4 percent use local pond/tanks; and 35 percent use private irrigation well/tube wells. It appears that perhaps local sources are not meeting the demand at present and therefore Narmada water fills the gap.
- Use of multiple sources for managing drinking water is very common at the household level too

**Table 2: Actual Coverage of Narmada Water Supply**

Districts	Total villages surveyed	Villages where Narmada water reached	Percentage of villages where Narmada water reached
Ahmedabad	97	93	95.9
Amreli	251	233	92.8
Bhavnagar	276	221	80.1
Jamnagar	51	19	37.3
Junagadh	62	53	85.5
Kachchh	184	116	63.0
Rajkot	267	215	80.5
<b>Total</b>	<b>1,188</b>	<b>950</b>	<b>80.0</b>

**Table 3: Household Level Accessibility**

District	Narmada water	Percentage Households					
		Juth pipeline	Well/ Bore/ Hand pump	Village pond	Irrigation well	Tanker	RRWHS
Ahmedabad	90.2	7.9	16.2	5.8	0.3	0.0	4.5
Amreli	96.1	73.5	61.4	5.2	28.6	1.3	8.7
Bhavnagar	87.9	16.5	32.7	4.5	13.1	2.4	11.6
Jamnagar	70.5	28.8	17.2	18.9	1.3	3.3	0.0
Junagadh	18.6	75.4	15.0	7.4	5.8	1.4	0.0
Rajkot	85.8	21.0	37.7	3.4	19.9	2.3	2.5
<b>Total</b>	<b>85.6</b>	<b>37.3</b>	<b>40.1</b>	<b>4.8</b>	<b>18.2</b>	<b>1.8</b>	<b>6.4</b>

(Table 3). Apart from Narmada water, about 37 percent households use water from *Juth* pipeline, 40 percent from well, bore well/hand pump, 4.8 percent from village pond and 18.2 percent from private irrigation wells. About 1.8 percent households also use tanker water and about 6.4 percent households use rooftop rainwater harvesting structures. Narmada water has become an important source of water at the household level in about 85.6 percent of households.

#### Regularity of Narmada Water

- During October 2004, 10 percent villages received Narmada water daily and another 31 percent villages received it for more than 20 days (Table 4). About 54 percent villages received it for less than 20 days, of which one-third villages received it for less than 10 days.
- Information about the regularity of water supply in the last three months of the monitoring period is given in Table 5. The first period refers to May to July 2004 and the second period refers to August to October 2004. We observe an increase in the number of days during which Narmada water was received.

- Table 6 presents some more information about the regularity of Narmada water supply. About 24 percent villages received water daily, 48 percent received it on alternate days, 13.5 percent received it twice a week and the rest of the villages received it once a week or once in fifteen days.

- One observes a mismatch in the figures in daily supply in Tables 5 and 6. This is probably because of misunderstanding of two commonly used terminologies i.e. “regular” and “daily”. In Table 5, the response was to the numbers of days water was received whereas in Table 6, regularity was probed. Many of the investigators probably interpreted the term “regular” as “daily”. Nevertheless, it is a fact that not all the villages get the water on a regular basis.

- As regards frequency of water supply, most villages (96 percent) received it once in a day, while the rest of the villages received it more than once.

- As regards duration of water supply, the investigation showed that about 42 percent villages received Narmada water for less than one hour a day, and 9 percent received it for less than

**Table 4: Number of Days of Narmada Water Supply**

Districts	Narmada Villages	Percentage of villages receiving water (days)				
		1 to 9	10 to 19	20 to 29	30	No response
Ahmedabad	93	8.6	12.9	61.3	16.1	1.1
Amreli	233	24.9	56.7	5.2	6.9	6.4
Bhavnagar	221	8.1	20.4	54.3	10.0	7.2
Jamnagar	19	0.0	68.4	31.6	0.0	0.0
Junagadh	53	3.8	20.8	50.9	22.6	1.9
Rajkot	215	12.6	52.1	18.1	8.8	8.4
<b>Total</b>	<b>834</b>	<b>13.5</b>	<b>39.0</b>	<b>31.3</b>	<b>10.1</b>	<b>6.1</b>



**Table 5: Increase in Regularity of Narmada Water Supply**

Districts	Percentage of villages receiving water							
	May to July 2004 (Number of Days)				August to October 2004 (Number of Days)			
	1 to 29	30 to 59	60 to 89	90	1 to 29	30 to 59	60 to 89	90
Ahmedabad	15.9	21.4	51.4	11.4	8.1	18.9	56.5	16.7
Amreli	34.6	49.6	9.6	6.3	30.7	54.7	7.1	7.5
Bhavnagar	19.5	21.3	43.0	16.3	13.5	21.7	59.7	5.4
Jamnagar	0.0	64.3	35.7	0.0	0.0	63.2	36.8	0.0
Junagarh	4.7	46.5	25.6	23.3	5.7	18.9	50.9	24.5
Rajkot	18.4	54.1	19.6	8.1	19.3	52.8	20.2	7.7
<b>Total</b>	<b>21.3</b>	<b>38.4</b>	<b>29.0</b>	<b>11.4</b>	<b>18.4</b>	<b>39.4</b>	<b>33.4</b>	<b>8.9</b>

**Table 6: Frequency of Narmada Water Supply**

Districts	Narmada Villages	Percentage of villages with following regularity of Narmada water supply					
		Daily	Alternate day	Twice a week	Once in a week	Once in 15 days	No timings
Ahmedabad	93	47.6	23.8	3.6	2.4	4.8	17.9
Amreli	233	3.6	51.6	23.1	14.7	0.9	6.2
Bhavnagar	221	42.9	37.6	9.0	4.8	2.4	3.3
Jamnagar	19	15.8	73.7	10.5	0.0	0.0	0.0
Junagadh	53	11.1	55.6	0.0	0.0	0.0	33.3
Rajkot	215	17.7	60.8	12.4	5.3	3.8	0.0
<b>Total</b>	<b>834</b>	<b>23.7</b>	<b>47.8</b>	<b>13.5</b>	<b>7.4</b>	<b>2.5</b>	<b>5.2</b>

half an hour a day. Out of the rest receiving Narmada water (51 percent), the supply was for more than one hour a day.

According to official norms, Narmada water is to be supplied daily (when it is supplied), once, twice, or thrice a day depending on local arrangements, and for more than one hour if water is to be provided at the rate of 70 litres per person per day.

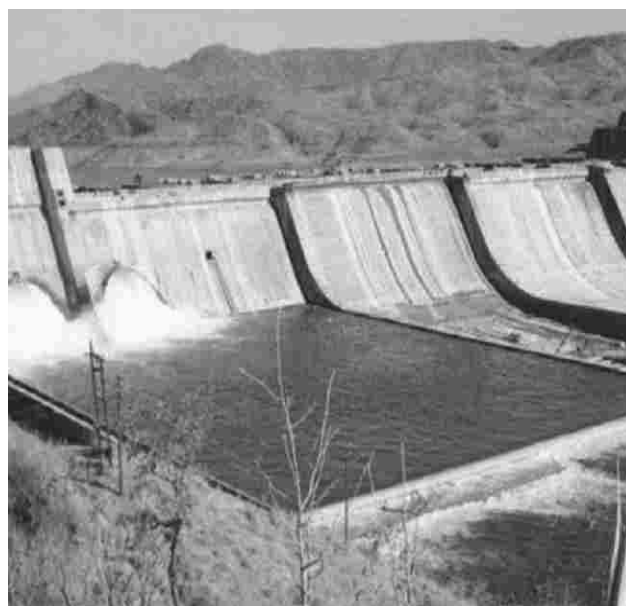
### Pani Samitis for Management of Narmada Water

- About 70 percent of the villages have not yet set up *Pani Samitis* to manage water supply within the village.
- Only 8 percent *Pani Samitis* (which are set up) meet once in a month, about 12 percent *Pani Samitis* have not met at all, while 50 percent have met only once in the last three months.
- Of the *Pani Samitis* that have met so far, 66 percent discussed issues relating to water management and water tax, 31 percent discussed mechanical problems of water supply like repairing of pipeline, and only 31 percent discussed about development of local water sources. In short, there

is a long way to go in achieving local management of water supply at the village level.

### Distribution of Narmada Water

- The task of the Gujarat Water Supply and Sewerage Board (GWSSB) is to bring water to the village to a common pump or a common stand post. Internal distribution is the responsibility of the village panchayat or the *Pani Samiti*.



- More than 40 percent households got Narmada water from a common pump or a stand post, while 60 percent households had individual connection from earlier days. Households belonging to lower castes were more dependent on common stand post or common tanks perhaps because they are usually poor and could not afford individual connections (Table 7).

### Distance Traveled

Of all those who have access to Narmada water, about 72 percent got it within a distance of 100 metres and 16 percent got it within 100 to 200 metres distance. That is, about 88 percent households traveled less than 200 metres for fetching Narmada water. There were some villages where households (11 percent) traveled more than 200 metres (Table 8 and 9). *Falia*-wise information indicates that a higher percentage of backward castes (SC, ST, and OBC), traveled longer distances (more than 200 metres or sometimes more than 1000 metres) for fetching Narmada water.

We also found that only about 1 percent of the villages had water metres to record the total quantity of water supplied.

### Water Quality Testing

Water testing is not common under the NPP project. Only 12 percent villages reported that water was tested in their villages. Of these, 90 percent villages had their water tested only once during the year.

- Water was tested only at the main source and not at the stand post or household level
- When tested, it was done by GWSSB in 60 percent of the cases and by the village panchayat in 30 percent cases; and
- Test results were not displayed in most cases (only 5 percent villages reported display of the results). The results were also not available to us.

### Perception of People about Narmada Water

Villagers were asked to rank water-related problems in the village in order of severity of the problem. Scarcity during summer was ranked first by the highest percentage (41.6) of villages, followed by round the year water problem (19.4), dry wells (18.8) and many other problems like, fluoride in drinking water, hardness of water, irregular power supply for pumping, etc.

**Table 7: Caste-wise Status of Dependency**

Caste Composition of <i>Falias</i>	Percent of Households receiving Narmada water from	
	Common Stand Post	Common Tank
General	43.4	13.0
SC	48.8	21.0
ST	71.3	47.4
OBC	48.3	24.3
Different Lower Castes	53.2	25.5

**Table 8: Distance Traveled by Villagers for Narmada Water**

Districts	Responding Narmada <i>Falias</i>	Percentage of Households traveling following distance to get Narmada water				
		<=100 M	101-200 M	201-500 M	501-1000M	>1000 M
Ahmedabad	268	86.2	7.5	6.3	0.0	0.0
Amreli	749	88.5	5.2	4.8	1.2	0.3
Bhavnagar	830	71.1	19.0	9.0	0.8	0.0
Jamnagar	65	92.3	6.2	1.5	0.0	0.0
Junagadh	297	55.2	37.4	7.4	0.0	0.0
Kachchh	331	47.4	16.3	28.7	6.7	0.9
Rajkot	882	70.5	17.7	10.5	1.3	0.0
<b>Total</b>	<b>3,422</b>	<b>72.7</b>	<b>15.8</b>	<b>9.9</b>	<b>1.4</b>	<b>0.2</b>

**Table 9: Falia wise (Habitat) Distance Traveled by Villagers for Narmada Water**

Caste Composition	Responding Narmada Falias	Percentage of Households traveling following distance to get Narmada water				
		<=100 m	101-200 m	201-500 m	501-1000m	>1000 m
General	535	83.7	10.7	5.1	0.6	0.0
SC	425	77.2	13.2	8.7	0.7	0.2
ST	75	86.7	9.3	4.0	0.0	0.0
OBC	962	65.3	15.9	15.7	3.0	0.1
All Backward castes	159	80.5	10.1	6.9	2.5	0.0
NR**	845	67.7	23.0	8.4	0.6	0.4
<b>Total</b>	<b>3,422</b>	<b>72.7</b>	<b>15.8</b>	<b>9.9</b>	<b>1.4</b>	<b>0.2</b>

\*\* Indicates the falias for which caste composition was not available

**Table 10: Water Quality Testing**

Districts	Narmada Villages	No of villages where water quality is tested (%)	
		Yes	No
Ahmedabad	93	0	100
Amreli	233	27.3	72.7
Bhavnagar	221	7.4	92.6
Jamnagar	19	31.6	68.4
Junagadh	53	1.9	98.1
Rajkot	215	5.5	94.5
<b>Total</b>	<b>834</b>	<b>12.0</b>	<b>88.0</b>

In general, villagers were happy about Narmada water though, in most cases, they received raw water. About 63 percent households reported that the quantity of water supply was adequate, when supplied. About 92 percent households reported that the quality of water was “good” and 94 percent households reported that the taste of the water was “good”.

## CONCLUSIONS

The two rounds of citizens' monitoring have thrown useful light on the design and working of NPP. The broad observation of the study is that the implementation of NPP is progressing in the state. So far, the project has covered about 1,224 villages (till April 2004) as against the target of 8,215 villages. In the recent survey (October 2004), we found considerable increase in the number of villages receiving Narmada water

(from 72.3 to 83.1 percent) in the Saurashtra region. However in Kachchh the percentage of “covered” villages getting water is low (63.04).

The rules/guidelines formed for the project are not strictly being followed at the field level, particularly with respect to regularity of water supply. In order to improve the performance of the scheme a lot still needs to be done: (1) regular water testing needs to be organized under the project; (2) water metres need to be installed in each village to collect volumetric water charges; (3) there is a need to organize provision for disposal of used water; and (4) there is also a need to organize water treatment at the right level. Though *Pani Samitis* are expected to play a major role under NPP, the project has a long way to go in organizing such *Samitis* for efficient water management at the village level.

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## IWMI-Tata Water Policy Program

The IWMI-Tata Water Policy Program was launched in 2000 with the support of Sir Ratan Tata Trust, Mumbai. The program presents new perspectives and practical solutions derived from the wealth of research done in India on water resource management. Its objective is to help policy makers at the central, state and local levels address their water challenges – in areas such as sustainable groundwater management, water scarcity, and rural poverty – by translating research findings into practical policy recommendations.

Through this program, IWMI collaborates with a range of partners across India to identify, analyse and document relevant water-management approaches and current practices. These practices are assessed and synthesised for maximum policy impact in the series on Water Policy Research Highlights and IWMI-Tata Comments.

The policy program's website promotes the exchange of knowledge on water-resources management, within the research community and between researchers and policy makers in India.

## IWMI-Tata Water Policy Program

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