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**Management by Participation?
Village Institutions and Drinking Water Supply in Gujarat**

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Abstract

One of the critical dimensions of rural water supply has been participation by the local community in managing the source and finances. This, it has been argued, would ensure stakeholder responsibility and sustainable water supply. Drawing upon case studies of 20 villages (spread across 17 districts) of Gujarat, this paper provides useful clues about the functional dynamics and potential of village institutions in managing water supply towards ensuring sustainability. In order to appreciate the dynamics better, the emphasis has been on the villagers' views on and responses to various mechanisms of sustainable management at the local level. A strong preference for village level self-sufficiency in water was an important observation of the study. Evidently, the Gram Panchayat and Gram Sabha, as compared to alternative agencies, which are not socio-politically rooted in the local place, emerged as the most preferred institutions where issues relating to management and finances could be discussed threadbare with the involvement of the local population. However, very thin attendance, particularly the near absence of women in these meetings and poor interaction points at efforts to be made towards empowering these bodies. Lack of awareness about various aspects of water supply in the village, e.g., source and system, water charges, operation and maintenance, etc., reduces scope for the so-called stakeholder participation. The paper identifies constraints facing wider participation in both decision-making as well as in contributing labour, services and finance towards sustainable management. The analysis has been carried out at a regionally disaggregated level to capture local specificities in practices. Practicable policy suggestions have also been included in the discussion.

JEL Classification : *D70, H40, Q25, R50*

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1. Introduction

In rural Gujarat, even when a near-total supply of potable water through the so-called public safe sources continues to be the prerogative of the state government – as it operates through the paraphernalia of functionaries at various levels of administration – efficient management by popular participation at the village level has remained the ultimate route to success of a given scheme.

For well over four decades now, the predominant source of supply of water by the state has been groundwater. The state follows a given norm¹ and arranges for providing water. This, however, involves massive organisational arrangements wherein inter-departmental coordination holds the key for smooth functioning. Nevertheless, the structure is complicated, the roles overlap, and there does not seem to exist an institutionalised manner of inter-departmental coordination. The state government implements the Rural Water Supply Programme under the state sector Minimum Needs Programme (MNP). The central government, through the Rajiv Gandhi National Drinking Water Mission (RGNDWM) supplements the efforts of the state by providing financial assistance under the Accelerated Rural Water Supply Programme (ARWSP) and the Drinking Water Supply component of the Prime Minister's Gramodaya Yojana (PMGY). The programme to distribute drinking water to the rural areas has been implemented in the state since 1961. It consists of (i) regional water supply schemes; (ii) individual village water supply schemes; (iii) installation of handpumps; and (iv) digging of simple wells.

In reality, the aforesaid supply-driven approach has led to a certain kind of dysfunctionality affecting sustainable water supply. Such an approach essentially has resulted in massive withdrawal of groundwater causing the

¹ Presently, it is provisioning of 40 lpcd and at least one public safe source for a population of 250; when livestock is included the limit rises to 70 lpcd.

decline of its level. Efforts at harvesting both rainwater and surface run-off have been grossly neglected in all these decades by the state. Another critical aspect of the water supply scenario in Gujarat has been both the existence and emergence of defunct sources (mainly, handpumps and tubewells). A growing number of sources becoming or continuing to be defunct is a matter of concern as it involves the issues of management, possibilities for rejuvenation and a thorough re-evaluation of water supply schemes in the state. Several enquiries have been made into major causes of sources falling into disuse and the type of remedial measures that can be taken to reactivate them. These point to the possibilities through which augmentation of drinking water supply is feasible despite geohydrological constraints, especially in Saurashtra, Kutch and northern regions of the state. It has been observed that a considerable proportion of defunct sources in the districts of Saurashtra could be revived by spending small amounts on the repairs. Among defunct sources handpumps were predominant, which were also the major sources of water supply in the districts (Das and Kumar, 1997 and 1999).

Popular involvement in managing public water sources in a typical supply-driven approach is often found relegated to the background. As reported in many studies, lack of participation by the local population has been noticed mostly in planning, site selection, maintenance and operation. Moreover, absence of active participation of the women in such matters is a pervasive problem in the state. Hailed as a paradigm shift, from a grossly supply-driven to an essentially demand-driven approach, the nationwide launching of the Sector Reform Programme (SRP) in 1999 marks the beginning of a strategy that underscores the fact that no longer potable water is to be considered a free good, making available of which would have to be the responsibility of the government. In principle, SRP is aimed at improving the sustainability of water supply systems and sources, besides ensuring effective implementation of schemes. The SRP was introduced with a view to institutionalizing decentralization through community participation.

Given the coexistence of these governmental and para-statal efforts towards rural water supply, a crucial issue of concern has been participation by the local communities in managing the sources as well as finances. This paper is an attempt to examine the dynamics of participative process, based on observations from the field. In particular, the nature and efficacy of functioning of village level institutions in addressing rural water supply problem has been dealt with here.

With a note on the geohydrological constraint facing different regions of Gujarat, the analysis on the access and management of water supply at the local level has been drawn upon both quantitative and qualitative information collected from 20 villages spread across the five distinct regions of the state. The significance and relevance of gram panchayat have been highlighted in the concluding section.

Alongside the governmental schemes, there were sporadic initiatives taken up by the non-governmental bodies which largely emphasised water recharge and conservation systems including investing in pond-lining and rainwater harvesting structures. Despite these efforts, there were certain periods of the year in certain areas, where accessing groundwater became a futile exercise. Railway tankers had to be pressed into service, literally on a day-to-day basis, to provide drinking water to these areas, especially in the Saurashtra and Kutch regions.

2. Nature and Extent of the Crisis

The highly lopsided geohydrologic and physiographic features of the state have been considered as responsible for water scarcity in Saurashtra, Kutch, northern and southern regions (mainly, the tribal belt) of the state. Low rainfall coupled with high degree of intra-regional variations in it has been a typical feature of these regions. Growing population as well as demand for water from competing sectors, including water-intensive farming, urbanization and industrialization have further contributed to the pressure on availability of potable water for the local population. This could potentially squeeze the availability of water to the rural population. The crux of the crisis clearly is the declination of groundwater tables² attributable to both an adverse hydrogeological condition and inadequate management of the sources.

A rise in the number of sources turning defunct and the existence of large number of 'No Source' habitations confirm the aforesaid predicament. As is well recognised, the decline in both the availability and quality of drinking water has grave implications for the health and livelihood of the affected population. Table 1 provides official statistics on water availability status at the habitation level. Although, an apparent fall in the figures of 'Not covered' (NC) and 'Partially covered' (PC) habitations during the last decade (1993-2003) would indicate

² Water table is already very low, as in Kutch, Saurashtra and many parts of north Gujarat.

enhanced state efforts towards coverage, the reliability of supply in adequate quantity remains a major issue. As had been argued in detail in Das (2001) and also field observations by both academics and NGOs, such data could be eminently misleading. The definitional inadequacy notwithstanding, the time of survey of these sources can also give rise to very different numbers.

Table 1: Habitation Level Water Availability Status in Gujarat 1993-2003

Year	FC	PC	NC	PC+NC
1993	19970	8981	1318	10299
1995	21994	6553	1722	8275
1999	25193	4639	437	5076
2000	25414	3426	1429	4855
2002	28396	1777	96	1873
2003	29027	1213	29	1242

Notes: FC – Fully covered by a public source providing safe drinking water amounting to at least 40 litres per capita per day (lpcd) for a maximum population of 250 for the whole year.

PC – Partially covered by a public source providing safe drinking water amounting to less than 40 lpcd for a maximum population of 250 for the whole year.

NC – Not covered by a single public source of drinking water supply.

Source: *Gujarat Jal-Disha 2010* and *Socio Economic Review*, various issues.

Based on the geohydrological endowments and the level of groundwater development in different parts of the state, almost the entire Saurashtra region, excepting the coastal belt, is suitable for open well construction. Similar possibilities exist in the north eastern parts of both Banaskantha and Kheda. A large area of these two districts is suitable for normal tubewell construction. In fact, excessive extraction of groundwater through extensive installation of tubewells in these districts has been a major concern. Consequently, fast depletion of groundwater has emerged as a critical problem here. Kutch, as noted earlier, has widespread saline area making it unsuitable for groundwater development. Same is the case with the coastal belt of the Saurashtra region. The groundwater potential in Saurashtra, Kutch and north Gujarat has been dwindling; between 1980 and 1997, the groundwater table has dropped alarmingly in at least five districts (Table 2). From the point of augmenting the resource, the need to stress on both supply and demand management at all levels cannot be over-emphasised.

Table 2: Decline in Groundwater Table in Gujarat 1980-97

District	Degree of decline (%)
Kutch	162
Surendranagar	153
Amreli	132
Banaskantha	110
Mehsana	104

Source: *Gujarat Jal-Disha 2010*

3. Understanding the Ground Reality through 20 Case-Villages

In order to capture aspects of policy as implemented, this paper enquires into the problem of supply of and access to potable water in Gujarat villages. An important dimension focused here concerns an analysis of popular views on various mechanisms of sustainable management at the local level. This study draws its empirical core through employing a case study approach (for further details, see, Das 2005). A total of 20 villages were chosen from 17 districts of the state, representing all the important geo-climatic/ rainfall regions, viz., Kutch, Saurashtra, Central, South and North Gujarat regions (Map 1 and Table 3). Based on discussions held with state officials, NGO functionaries, academics and other informed individuals, such villages had been finally chosen which would, in all probability, represent diverse scenarios in interventions in rural water supply. The household sample size per village had been kept at 20 (in four villages, however, the sample size was 21); care had been taken to cover all the falias (habitations) and to have representative cases from all castes, particularly those belonging to the Scheduled Castes and Scheduled Tribes. A total of 404 households had been covered finally in the survey. In addition to using structured household level questionnaires, village meetings were also held to obtain information about various aspects of water supply and its management. The study was initiated in November 2003.

4. Sources of Water

A comprehensive picture on the different sources of drinking and domestic water as recorded at the *village level* has been presented in Table 4. It is to be noted that apart from the growing preference for piped water systems (which,

essentially, draw upon scarce groundwater) sample villages across regions had

Map 1: Location of the Twenty Surveyed Villages, Gujarat



- 1 – Radhiwad (Khedbrahma), 2 – Digadi (Kadi), 3 – Wahedpura (Sami), 4 – Chisadiya (Chhota Udepur), 5 – Vakhatpar (Vadodara), 6 – Pipodara (Dhanpur), 7 – Ranjitnagar (Ghoghamba), 8 – Nabipur (Bharuch), 9 – Lawachha (Olpad), 10 – Dagalpada (Ahwa), 11 – Boriyachh (Bansda), 12 – Devsaki (Sagbara), 13 – Kalyanpar (Liliya), 14 – Mithi Viradi (Talaja), 15 – Sachana (Jamnagar), 16 – Kasturbadham (Rajkot), 17 – Thala (Dhrangadhra), 18 – Lakhara (Bhuj), 19 – Dhamadka (Anjar), 20 – Virani (Mandvi)

their share of traditional water conservation and storage arrangements. The fact that in some villages there were large number of public-access open wells and talavs, points to their vital role in meeting the village water needs; the existence of 100 household tankas in a single Saurashtra village is a clear pointer to the importance of alternative traditional sources in addressing the crisis of sustainable water supply in dry regions, at least. In most cases, at present, these sources either lie disused or have been abandoned. So far as the nature of priority attached to main sources of water is concerned, an interesting observation is that there seems hardly any change in the importance attached to the specific sources over the last decade. The continuing complementarity between the traditional and modern sources almost in all villages, probably, strengthens the case for reviving/promoting the former keeping the sustainability issue centrestage. This observation assumes significance due to the fact that during the last decade or so the groundwater table has declined in many villages.

Table 3: Details of Villages Surveyed

Sl. No.	Village	Taluka	District	Region
1	Radhiwad	Khedbrahma	Sabarkantha	North Gujarat
2	Digadi	Kadi	Mehsana	
3	Wahedpura	Sami	Patan	
4	Chiasadiya	Chhota Udepur	Vadodara	Central Gujarat
5	Vakhatpar	Vadodara	Vadodara	
6	Pipodra	Dhanpur	Dahod	
7	Ranjitnagar	Ghoghamba	Panchmahals	
8	Nabipur	Bharuch	Bharuch	South Gujarat
9	Lawachha	Olpad	Surat	
10	Dagalpada	Ahwa	Dangs	
11	Boriyach	Bansda	Navsari	
12	Devsaki	Sagbara	Narmada	
13	Kalyanpar	Liliya	Amreli	Saurashtra
14	Mithi Virdi	Talaja	Bhavnagar	
15	Sachana	Jamnagar	Jamnagar	
16	Kasturbadham	Rajkot	Rajkot	
17	Thala	Dhrangadhra	Surendranagar	
18	Lakhara	Bhuj	Kutch	Kutch
19	Dhamadka	Anjar	Kutch	
20	Virani	Mandvi	Kutch	

Table 4: Sources of Drinking Water in Sample Villages

Sources	Number of sources (Number of Villages)					
	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
ESR	4 (3)	1 (1)	5 (3)	3 (3)	3 (1)	16 (11)
Talavs	7 (3)	-	10 (2)	10 (4)	3 (2)	30 (11)
Household taps	507 (2)	100 (1)	-	565 (2)	177 (2)	1349 (7)
Handpumps	12 (1)	93 (4)	74 (4)	4 (1)	-	183 (10)
Open Wells	45 (1)	77 (3)	82 (4)	17 (5)	3 (1)	224 (14)
Sump	1 (1)	-	2 (2)	3 (3)	-	6 (6)
Cistern	1 (1)	-	4 (2)	2 (2)	-	7 (5)
Tubewells	-	1 (1)	1 (1)	-	1 (1)	3 (3)
Standposts	2 (1)	4 (1)	9 (2)	16 (5)	5 (1)	36 (10)
Household tanks	-	-	-	100 (1)	-	100 (1)
Pipeline	-	-	1 (1)	-	-	1 (1)
Step Well	1 (1)	-	-	-	-	1 (1)

5. Participatory Management: Role of Panchayats, Gram Sabhas and NGOs

One of the most critical dimensions of rural water supply has been participation by the local community in managing the source and finances. This, it has been argued, would ensure stakeholder responsibility and sustainable water supply. In fact, even at the global level both discourses and experiences have confirmed that people-centred approach to water supply and sanitation is one of the most effective mechanisms to manage the sources, systems and finances in rural areas (for example, see, Narayan, 1995; Manikutty, 1998; and WSSCC, 2000). In rural Gujarat, despite the recognition of pani samitis as an emerging crucial local level institution that would both manage and regulate water supply at the village level, absence or defunct status of pani samitis across the regions was surprising; in the present study of the 20 villages, while in 10 villages pani samitis did not exist at all, in at least three these were practically defunct. Even in the remaining villages, pani samitis functioned minimally. In this context, evidently, the gram sabha emerges as the key institution where issues relating to management and finances can be discussed threadbare with the involvement of

the local population.

However, before dealing in detail regarding the nature and extent of participation at the local level institutions, it would be useful to have an idea about popular awareness concerning existing water supply schemes, water charges, contribution to be made and responsibilities of users. The respondents were asked about their awareness about different aspects of the rural water supply arrangements in their villages. The responses have been compiled in Table 5, which shows high proportion of the respondents across the five regions being aware about the sources and some details about how the systems worked or the mechanism of water distribution. Similarly, villagers in north Gujarat and Kutch indicated greater awareness about the water charges.

Table 5: Awareness about Rural Water Supply Programmes

Particulars	No. of households (%)					
	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
Source and system	47(78.3)	68(85.0)	101(100.0)	70(68.6)	56(91.8)	342(84.7)
Water charges	49(81.7)	39(48.8)	54(53.5)	44(43.1)	40(65.6)	226(55.9)
Contribution	33(55.0)	38(47.5)	65(64.4)	34(33.3)	29(47.5)	199(49.3)
Responsibilities	24(40.0)	40(50.0)	42(41.6)	43(42.2)	37(60.7)	186(46.0)
Total households	60(100.0)	80(100.0)	101(100.0)	102(100.0)	61(100.0)	404(100.0)

With pani samitis yet to be initiated or be made operational in a large number of villages, gram sabhas are considered as the major forum for deliberating local level issues in drinking water supply. Even with the significant presence of gram sabhas in many villages, much remains to be known regarding actual participation and role played by these village institutions. As may be seen from Table 6, however, over two-fifths of the sample households reported not having attended gram sabhas; there was not much variation in this aspect across all the regions, excepting south Gujarat which has a few tribal districts. Of those who attended, about 88 per cent of households reported having discussed issues relating to water supply and a much less about 38 per cent were in some way involved in the planning and decision making process. Respondents from south Gujarat villages did display a high level of involvement in various activities of the gram sabhas, especially if one considers taking part in planning and decision making as an effective form of collective action.

Table 6: Participation in Gram Sabha

No. of households (%)

Particulars	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
<i>Attended gram sabha</i>	36 [60.0]	52 [65.0]	49 [48.5]	58 [56.9]	37 [60.7]	232 [57.4]
Discussed problems on water supply	33 (91.7)	44 (84.6)	44 (89.8)	54 (93.1)	29 (78.4)	204 (87.9)
Complained for inconvenience	6 (16.7)	27 (51.9)	25 (51.0)	21 (36.2)	17 (45.9)	101 (43.5)
Involved in planning and decision making	12 (33.3)	16 (30.8)	25 (51.0)	22 (37.9)	12 (32.4)	87 (37.5)
N	36 (100.0)	52 (100.0)	49 (100.0)	58 (100.0)	37 (100.0)	232 (100.0)
<i>Did not attend gram sabha</i>	24 [40.0]	28 [35.0]	52 [51.5]	44 [43.1]	24 [39.3]	172 [42.6]
Reasons for non-attendance						
Shortage of time	14 (46.7)	17 (44.7)	22 (36.1)	19 (40.4)	13 (44.8)	85 (41.5)
Gram sabha timing not convenient	-	6 (15.8)	8 (13.1)	8 (17.0)	2 (6.9)	24 (11.7)
Women would not attend gram sabha	4 (13.3)	4 (10.5)	14 (23.0)	4 (8.5)	1 (3.4)	27 (13.2)
No information about time of gram sabha	8 (26.6)	9 (23.7)	10 (16.4)	12 (25.5)	10 (34.5)	49 (23.9)
Meant for literates only	3 (10.0)	2 (5.3)	7 (11.5)	3 (6.4)	3 (10.3)	18 (8.8)
Views not cared for	1(3.3)	-	-	1(2.1)	-	2 (1.0)
N	30 (100.0)	38 (100.0)	61 (100.0)	47 (100.0)	29 (100.0)	205 (100.0)
<i>Total households</i>	60 [100.0]	80 [100.0]	101 [100.0]	102 [100.0]	61 [100.0]	404 [100.0]

Notes: Bracketed figures in italics indicate percentages to respective total households given in italics. All other bracketed figures show percentages to respective total figures (N) under the given category, due to multiple responses.

Further, it may be instructive to look into the reasons cited for not attending gram sabhas. Lack of time, improper timing of the meetings, and importantly, women not attending reflect factors responsible for low participation and poor management at the village level. Moreover, in a few cases, households belonging to the lower caste groups were either not informed about the gram sabhas or, even when attended, their views were not given any attention; these acted as disincentives for further participation. Whereas the reasons for non-attendance need to be looked into for encouraging larger participation, the proportion of households attending gram sabhas (over 57 per cent) may be considered a fairly high degree of achievement when compared to similar attendance rate in meetings held under Panchayati Raj

institutions (PRIs), or even under the Panchayat Extension Scheduled Areas Act (PESA).

In gram sabhas, so far as discussion on specific issues on water is concerned, experience suggests that there could be wide gap between a decision taken and actual action taken. Table 7 lists different water supply related issues discussed at the gram sabhas during the year 2003. The most frequently raised concerns have been irregular and inadequate water supply as also laying pipelines or installing standposts for the purpose. As gram sabhas also discussed other water related problems, the institution of pani samiti did not seem to be of much importance. As mentioned earlier, it was disappointing to note that in about half the sample villages, pani samitis simply did not exist. Further, wherever these existed they hardly met regularly or took up issues of importance at the local level.

Table 7: Gram Sabhas and Discussions on Water Related Issues

Issues Discussed	Frequency of Issue Discussed
Irregular water supply	7
Laying pipelines and installing standposts	7
Digging wells/ ponds/ installing handpumps	3
Unreliable electricity	2
People's monetary contribution	2
Water connection charges	1
All (multiple responses)	22

Apart from the efforts by the state government, certain gram panchayats in their own right have taken important steps towards augmenting water supply in their respective villages. The assessment of need (for meeting water deficit and creation of sources) and financing have been undertaken at the panchayat level only. So far as this study is concerned, whereas in Pipodra village in Dhanpur taluka of Dahod district, as many as 15 open wells have been constructed with the gram panchayat funds, to supplement the water supply through handpumps, in Boriyach village in Vansda taluka of Navsari, 12 open wells have been dug in a similar manner. Further, in Chisadiya village of Chota Udepur taluka in Vadodara, of the 30 handpumps ten have been erected through finance from the district panchayat. The gram panchayat has purchased a tanker which is utilised as a supplementary source for occasions like marriages, village functions and

death ceremonies. The tanker is given to the household on daily charges, which have been fixed at the gram sabha. In Kalyanpar village of Liliya taluka in Amreli, initially an elevated storage reservoir (ESR) and house tap connections were provided by the district panchayat. However, as the household taps did not work properly, later a standpost and a few handpumps were constructed with the district panchayat funding.

Interestingly, in an unusual gesture the Forest Department has constructed two wells in village Dagalpada in Ahwa taluka in Dangs. These wells remain the only source of water during the summers. In case of Devsaki village in Sagbara taluka of Narmada district, the DRDA has allotted a sum of Rs.80000 towards watershed promotion. Under this programme pipeline laying, setting up of five standposts and repairing of village well have been completed. These activities are being implemented through the help of an NGO, AKRSP, which has formed a watershed development team for the purpose. The Irrigation Department also has taken initiative to desilt a talav in the village. In Sachana village of Jamnagar taluka the GWSSB has constructed a storage tank, which would be fitted with taps for the convenience of the villagers. Further, a 2 lakh-litre sump and 1 lakh-litre ESR are being constructed by the GWSSB, through funding from the Asian Development Bank.

In quite a few villages in the state, NGOs have played an important role in providing drinking water and maintaining the sources. Village Pipodra in Dhanpur taluka of Dahod comes under the watershed programme, which is being undertaken by Utthan (an NGO) in nine villages. The organisation has also set up three handpumps in the village for which the concerned households have paid an amount of Rs. 2500 per handpump. They have also put in place handpump recharging mechanism in around 12 houses of the village. A network of pipes has been arranged by the NGO to direct the roof top rainwater for recharging the handpumps. This is very helpful as it improves the groundwater level. Utthan has also set up a roof top water harvesting structure complete with pipe network and underground tank in one house of the village, so that others become aware of its benefits. The BAIF Foundation-Lachchakadi has been working on a watershed development project in the area that includes the sample village Boriyach in Vansda taluka of Navsari. They have helped the villagers in building up check dams, development of drip irrigation and sprinkler irrigation schemes. This, in turn, has improved the groundwater level and has largely tackled the

drinking water problem of the area. Moreover, the NGO has also installed around 17 handpumps across the village. These handpumps have concrete flooring and are equipped with handpump recharging mechanism.

It is important to note that both statal and para-statal bodies have been active in the sphere of management of water supply in rural areas. It may be, hence, useful to get an idea about popular preference for such agencies.

6. Preference for Sources and Agencies

A discussion on the analysis of respondents' views on the critical aspects of water supply has been presented here in this section. These relate to their preference for a certain source, management agency, mechanism of payment of water charge and which agency should be responsible for maintenance and repairs. As shown in Table 8, on being asked the preferred systems/ schemes of water supply for rural areas, the rather strong preference for individual water supply schemes in south Gujarat, Saurashtra and Kutch indicates that village level self-sufficiency in water was the most sought after option. Whereas in central Gujarat handpumps were the most preferred sources, in north Gujarat most households preferred either individual or regional water supply schemes. Interestingly, only about 6 per cent of all responses suggested Narmada as a potential source of water for rural Gujarat.

Table 8: Choice of Sources of Water Supply

Source	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
Individual scheme/ GP bore/ ESR/ SP or HP	25 (41.7)	22 (24.4)	74 (70.5)	71 (67.0)	47 (77.0)	239(56.6)
Regional scheme/ building cistern/ providing SP	24 (40.0)	19 (21.1)	11 (10.5)	8 (7.5)	2 (3.3)	64 (15.2)
Handpumps (by GWSSB/ NGO/ others)		33 (36.7)	12 (11.4)	3 (2.8)		48 (11.4)
Reviving TWHS/ digging wells	4 (6.7)	12 (13.3)	4 (3.8)	6 (5.7)	2 (3.3)	28 (6.6)
Narmada water	7 (11.7)	1 (1.1)		10 (9.4)	8 (13.1)	26 (6.2)
Watershed programme/ construction of check dams		3 (3.3)	2 (1.9)	4 (3.8)	2 (3.3)	11 (2.6)
RWH at hh level/ community level			2 (1.9)	4 (3.8)		6 (1.4)
Total responses	60 (100.0)	90 (100.0)	105 (100.0)	106 (100.0)	61 (100.0)	422 (100.0)

Note: Multiple responses.

In an unexpected revelation of willingness to pay annual fees for water supply, an overwhelming 87 per cent of all households surveyed, irrespective of regions, indicated in the affirmative (Table 9). This runs contrary to the actual practice whereby water charges have hardly been paid for decades. Further, expectedly, gram panchayat was mentioned by about two thirds of households as being the most preferred agency to collect the water cess. It appears from the responses that pani samitis are gradually gaining popular attention in the Kutch region.

Table 9: Payment of Water Fees and Choice of Collection Agency

	North Gujarat	Central Gujarat	South Gujarat	Saurashtra	Kutch	All
Willing to pay	54(87.1)	58(73.4)	93(91.2)	98(97.0)	49(81.7)	352(87.1)
Not willing to pay	4(6.5)	21(26.6)	9(8.8)	3(3.0)	8(13.3)	45(11.1)
Not reported	4(6.5)				3(5.0)	7(1.8)
Total	62(100.0)	79(100.0)	102(100.0)	101(100.0)	60(100.0)	404(100.0)
Preference for the authority for collection*						
Gram panchayat	38(70.4)	28(48.3)	67(72.0)	61(62.2)	26(53.0)	220(62.5)
Pani Samiti	12(22.2)	12(20.7)	16(17.2)	20(20.4)	21(42.9)	81(23.0)
Govt/ GWSSB	3(5.6)	3(5.2)		14(14.3)	2(4.1)	22(6.3)
Falia level group		8(13.8)	9(9.7)	2(2.0)		19(5.4)
NGO	1 (1.9)	1(1.7)				2(0.6)
No specific agency		6(10.3)	1(1.1)	1(1.0)		8(2.3)

Note: * All figures in this part of the table refer to respective regional figures concerning "Willing to pay".

As regards appropriate agency to take responsibility of overall management of sources, finance and maintenance and repair, Tables 10 and 11 read together confirm that gram panchayat is clearly the most preferred local level institution. Pani samitis are also mentioned by some households, but yet to emerge as a major institution for addressing rural water supply issues.

As summarized in Table 12, respondents did make specific suggestions to manage the sources better and also to ensure smooth collection. While the predominant view was that of collective or participative management of this critical resource at the village level, there were other suggestions as well. These

included paying greater attention to O and M of the sources and systems³ and following a firm approach towards collection of water fees.⁴

Table 10: Preference for Agency for Management of Rural Water Supply

Agency	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
Gram panchayat	32 (55.2)	37 (44.6)	59 (57.3)	65 (65.7)	30 (49.2)	223 (55.2)
Pani samiti	7 (12.1)	19 (22.9)	10 (9.7)	19 (19.2)	19 (31.1)	74 (18.3)
NGO	5 (8.6)	13 (15.7)	6 (5.8)	5 (5.1)	1 (1.6)	30 (7.4)
GWSSB	7 (12.1)	8 (9.6)	7 (6.8)	5 (5.1)	6 (9.8)	33 (8.2)
Falia level group	1 (1.7)	6 (7.2)	20 (19.4)	1 (1.0)	1 (1.6)	29 (7.2)
Self management			1 (1.0)	1 (1.0)		2 (0.5)
Not responded	6 (10.3)			3 (3.0)	4 (6.6)	13 (3.2)
Total responses	58 (100.0)	83 (100.0)	103 (100.0)	99 (100.0)	61 (100.0)	404 (100.0)

Table 11: Preference for Agencies to undertake Maintenance and Repair

Agency	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
Gram panchayat	39 (63.9)	38 (47.5)	58 (55.8)	62 (62.6)	30 (50.0)	227 (56.2)
Pani samiti	6 (9.8)	16 (20.0)	10 (9.6)	15 (15.2)	19 (31.7)	66 (16.3)
Govt./ GWSSB	10 (16.4)	9 (11.3)	6 (5.8)	10 (10.0)	8 (13.3)	43 (10.6)
Falia level group/ locally trained people	2 (3.3)	8 (10.0)	19 (18.3)	4 (4.0)	-	33 (8.2)
NGO	1 (1.6)	4 (5.0)	5 (4.8)	2 (2.0)		12 (3.0)
Self management	-	2 (2.5)	3 (2.9)	3 (3.0)		8 (2.0)
Not responded	3 (4.9)	3 (3.8)	3 (2.9)	3 (3.0)	3 (5.0)	15 (3.7)
Total responses	61 (100.0)	80 (100.0)	104 (100.0)	99 (100.0)	60 (100.0)	404 (100.0)

³ As observed mainly in north Gujarat, Kutch and central Gujarat.

⁴ Emphasized by sample households from north Gujarat, Kutch and south Gujarat regions.

Table 12: Popular Suggestions for Managing Water Supply

Type	North Gujarat	Central Gujarat	South Gujarat	Sau-rashtra	Kutch	All
Overall management with people's participation	23 (27.4)	61 (54.5)	87 (53.0)	60 (48.4)	24 (32.4)	255 (45.7)
Concentrate on O&M	28 (33.3)	34 (30.4)	30 (18.3)	20 (16.1)	24 (32.4)	136 (24.4)
Strict rules on collecting water fees on time	21 (25.0)	8 (7.1)	36 (22.0)	24 (19.4)	18 (24.3)	107 (19.2)
Mobilizing funds properly	4 (4.8)	1 (0.9)	1 (0.6)	4 (3.2)	2 (2.7)	12 (2.2)
Improvement of water resources	8 (9.5)	8 (7.1)	10 (6.1)	16 (12.9)	6 (8.1)	48 (8.6)
Total responses	84 (100.0)	112 (100.0)	164 (100.0)	124 (100.0)	74 (100.0)	558 (100.0)

Note: Multiple responses

7. Concluding Observations

The empirical core of this study comprises detailed enquiries in 20 case-villages chosen to represent diverse scenarios of water supply interventions across the west Indian state of Gujarat. With distinct geohydrologic and climatic zones, the intra-state variations in water availability, quality and access are significant. The state and various para statal bodies have eminently recognized the problem of drinking water, especially in rural areas, as demand for the resource has kept rising from various competing sectors. A clear instance of such concern is reflected in the plethora of schemes and programmes that exist in the state concerning source, finance and overall management.

With this backdrop, this study focuses on the functioning of drinking water systems and various policy interventions. In order to appreciate the dynamics better the emphasis has been on the villagers' views on and responses to various mechanisms of sustainable management at the local level. A strong preference for village level self-sufficiency in water was an important observation of the study. Using a case study approach, this study identifies efficient management by popular participation at the village level as the most effective route to providing safe drinking water. Lack of participation in planning, site

selection, operation and maintenance as well as major absence of active participation of women have been responsible for the dysfunctionalities in rural drinking water supply efforts. Nevertheless, the predominant view that emanated from the field enquiries was that of collective or participative management of water supply at the village level.

A specific enquiry in the study concerned with the households' preference for and utility of the few main agencies dealing with water supply and maintenance. As was obvious, gram panchayat was clearly the most approached institution whether for minor complaints, emergencies, M & R or financial management. Nevertheless, villagers also depended upon the taluka panchayat and GWSSB for specific needs. In any case, a generally high level of satisfaction was reported by the villagers, certainly when they dealt with the gram panchayat and to some extent when the agency was GWSSB. It may be noted that in quite a few cases the households would not approach any agencies and be satisfied taking up the task onto themselves. The overwhelming choice of gram panchayat as the most preferred body to manage the source, collect water charges and also to go in for maintenance and repairs underscores the significance and relevance of this local level institution. This probably is one of the most important finding of this rather limited field level exercise towards comprehending the nature of the problem of sustainable water supply in rural areas and possible way-outs.

A disaggregated view of how different geo-climatic regions/ villages generally respond to the challenges of managing and improving the sources and collection of funds and an assessment of the need for alternative sources of water indicates the varying possibilities that could inform policy. The present study has been an attempt in that direction.

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