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Abstract

This paper provides an assessment of the interventions in reforming the drinking water and sanitation sector in Gujarat as through the Water and Sanitation Management Organisation (WASMO) from a *supply-driven* to a *demand-driven* intervention. The aspect of community participation has been looked into somewhat closely as, *inter alia*, this has implications for equity, sustainability and democratisation of the scheme. Given the disparate hydrogeological characteristics of the state an attempt has been made to provide a critique of the institutional arrangement to address the drinking water 'crisis' in the state. Supplemented by field observations, limited though, this paper attempts a critical examination of WASMO's role as an institution for promoting community management of drinking water and sanitation as well as the relevance and inclusiveness of the demand-driven approach *per se*. Concern has been expressed over the quality and reliability of official statistics on various aspects of drinking water and sanitation as such data have become unavailable or not easily available. The conspicuous absence of *independent, systematic* and *comprehensive* assessment of WASMO interventions, thus, remains a serious roadblock in evaluating the nature and extent of achievement of this heavily-publicised special purpose vehicle in the sector. Moreover, gross neglect of rural sanitation has continued to remain a splodge on the records of achievement by WASMO. As over a decade has passed since its inception, WASMO as an approach needs to be thought through and evidence assessed rigorously in the interest of the community.

Keywords : Drinking water, WASMO, Institutional arrangement, Sector reforms; Rural Gujarat

JEL Classification : O17; O18; Q25; Q28; and R58

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1. The Context

The worsening trend in the availability of groundwater and the extent of deterioration of quality of potable water in the state of Gujarat has been amply documented.[1] For decades now sustainable supply of drinking and domestic water has remained a major issue of debate and action among both the state and the civil society. Especially in the arid and semi-arid zones of the state, ensuring adequate supply of 'safe' potable water on a regular basis has virtually assumed the proportion of a major crisis management. In fact, in both the social and political arena water continues to evoke strong responses, often taking the serious form of 'water riots' during continual drought years.

The active participation of both the state and parastatal bodies notwithstanding, the crisis of water has stayed on. The estimated per capita availability of freshwater in the state was 908 m3 per annum in 2010, rendering the state to be identified as a *water stressed* region. The potential of utilisable water resources has been pegged at about 50 bcm (Sen, 2010: 22). The stress has been accentuated further by the fact that its regional distribution has been extremely uneven; about 70 per cent of the resource is found in the southern and central parts of the state. However, in addition to the geohydrological and climatic factors, several newer issues in water crisis have come up time and again challenging strategies of management of the resource and its sustainable availability and use. For example, overdraw of groundwater for agriculture and industrial use, demand from the urban regions, polluting both surface and groundwater, reviving traditional water harvesting systems or distribution of the Narmada water through expensive pipelines have all concerned both policy makers and the civil society.

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[1] For evidence, see, Gupte (2009), Indu and Krishnan (2007), IRMA (2001), and Chatterjee (2000).

Laudably, the state has hardly spared an opportunity to address the water crisis; it evidently has attached utmost significance to this sector irrespective of the hue of the party in power. This is easily surmised by the fact of the operation of a variety of important state or state-supported institutions/ agencies including the Gujarat Water Supply and Sewerage Board (GWSSB), Gujarat Jalseva Training Institute (GJTI), Gujarat Water Infrastructure Limited (GWIL), Gujarat Water Resource Development Centre (GWRDC), Sardar Sarovar Narmada Nigam Limited (SSNNL), Water and Sanitation Management Organisation (WASMO), Gujarat Infrastructure Development Board (GIDB) and major region-specific projects as sponsored by the central government, World Bank, Dutch government and International Water Management Institute (IWMI-India). Additionally, with a strong tradition of functioning of the parastatal bodies (non-governmental organisations and community based organisations, to be specific) in the state, provision, conservation and management of water have formed a vital share of activity for many of these agencies. Further, the collective and individual efforts of the members of the group called Pravah[2] have been significant in both the field level intervention and substantive contribution to policy formulation at the state level and beyond. Important role has also been played by a few concerned scholars and the media, both print and electronic, to highlight continually various aspects of the water crisis in the state.

2. Scope and Objectives

This paper provides an assessment of the interventions in reforming the drinking water and sanitation sector in Gujarat as through WASMO, which has been created as a Special Purpose Vehicle (SPV) to carry out the activities. Community participation in the quintessentially demand-driven approach has been an explicit objective of the programme. This aspect has been looked into somewhat closely as, *inter alia*, this has implications for equity, sustainability and democratisation of the scheme. The paper begins with a discussion on the disparate hydrogeological characteristics of the state, the nature of the drinking water 'crisis' in the state and, then, moves on to

[2] It is a platform working on drinking water issues in Gujarat. It is a unique forum where the state's most active NGOs and individuals working on drinking water issues engage in debate, research and policy advocacy on drinking water problems in the state.

explain the essential differences between the existing supply-driven and demand-driven approaches. This is important to appreciate the gradual introduction and broad-basing of the demand-based approach (Swajaldhara programme) in the state and the coexistence of both the approaches so far. Detailed analyses have been provided regarding the genesis of WASMO, its earlier form as mainly engaged with the Earthquake Rehabilitation and Reconstruction (ERR) project and the subsequent role towards implementing and broad-basing the Swajaldhara programme (and a few other schemes as well) in all the villages of the state. Supplemented by field observations, limited though, this paper attempts a critical examination of WASMO's role as an institution for promoting community management of drinking water and sanitation as well as the relevance and inclusiveness of the demand-driven approach *per se*.

3. The Lopsided Physiography and Hydrogeology

Located along the west coast of India, Gujarat has a geographic area of 1,96,024 sq.km (5.7 per cent of the Indian territory) and, as per the *Census of India 2011*, a population of 60,439,692 (5.0 per cent of the Indian population), and accounts for about 2 per cent of the total fresh water resources in the country. At the outset it is useful to consider the lopsided physiographic, hydrological and climatic dimensions of the state which would help appreciate the intensity and locale of the crisis of drinking water in the state. While the southwest monsoon during June to September remains the source of rainfall in the state, the variation in rainfall is substantial – it varies between 300 mm in the northwest and about 2000 mm in the southernmost part. "The natural limitation of availability for optimum quantity and quality of ground water resources, in space and time, to meet bare minimum requirement of various sector(s) create more conflicts" (Gupte, 2009: 2). The natural disadvantage of skewed distribution of both surface and groundwater holds the key to the crisis. Additionally, such hydrogeologic profile has also mainly contributed to the various problems concerning the quality of water, including high salinity and fluoride in certain belts. Though, that is not to understate the damage caused to both the quality and quantity of water due largely to the rise in water-intensive agriculture, wastage, overuse and pollution of the resource by the urban population and certain industries in the state. In fact, the annual groundwater draft has risen disturbingly from 5746 mcm per year to 11486 mcm per year between 1984 and 2004 and further to 12990 mcm per year in 2009.

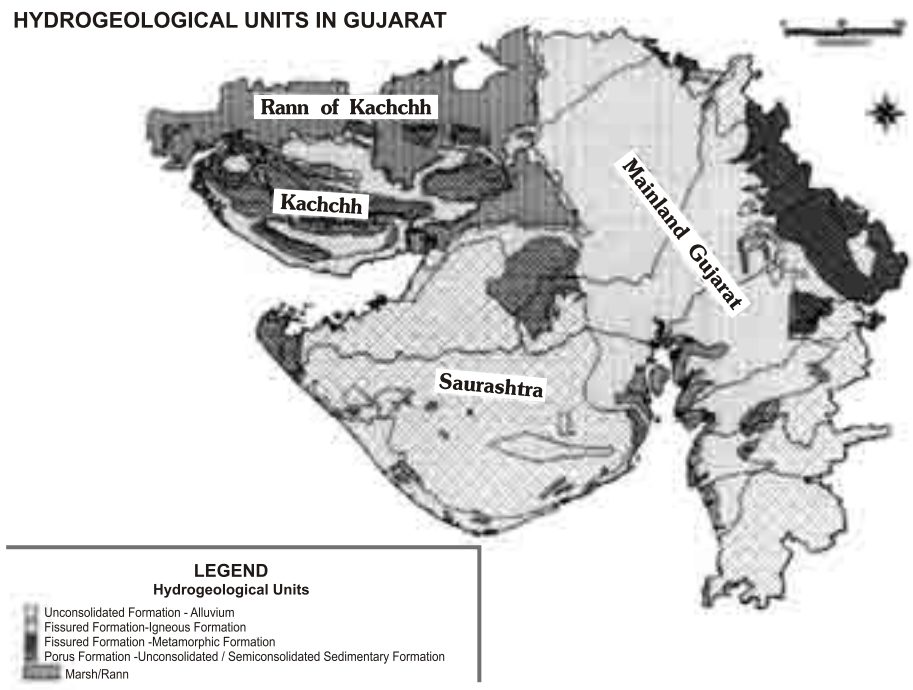
Moreover, the state of groundwater development has gone up to 75 per cent as in 2009. Despite the Narmada water being utilised in most parts of north Gujarat, Saurashtra and Kachchh, there exists a "huge gap" between the demand and supply of water given the growing industrial and domestic use.[3]

Based upon diverse physiographic features, Gujarat can broadly be divided into three distinct regions (Figure 1):

- *Mainland Gujarat:* This consists of two zones: one, the highland on the eastern border, with heights ranging from 300 to 1090 metres; and two, the coastal alluvial plain on the western side, which, basically, is a deep depositional plain, fertile and forms one of the richest aquifers of western India.
- *Saurashtra:* This consists of two zones: one, the highlands of Rajkot and Girnar ranges; and two, the lowlands where central highlands on all sides are covered by deep alluvia.
- *Kachchh:* It is enclosed by the Rann of Kachchh on the northern and western sides and by the Gulf of Kachchh in the south. The former is a low-lying, flat and highly saline area with grassy patches. Large-scale ingress of saline water occurs here during the north-west monsoon.

[3] http://cgwb.gov.in/gw_profiles/st_gujarat.html

Figure 1: Hydrogeology of Gujarat



Source: Gupte (2009: 5).

Broadly, the geological structure can be classified into (a) alluvial and (b) rocky formation, the former having greater groundwater storing capacity and the latter, much less. The distribution of various geological formations in the state includes rocks of Archean system, Delhi system, Fluviatile, Lacustrine and Marine sediments of Mesozoic, Tertiary and Quarternary ages; the oldest rocks exposed in the state belong to the pre-Cambrian group. The alluvial tract occupies a longitudinal position from Banaskantha to Valsad. The older alluvia include the major valley fills of the Banas, Sabarmati, Mahi, Narmada and Tapi rivers. Whereas hardrocks occupy 1,09,304 sq. km, the alluvia cover 86,680 sq. km.

A substantial part of the districts of Saurashtra, south-western part of Kachchh, and the northern part of Kheda are dominated by rocky formations, called Trappean Basalts. Further, the north eastern part of Banaskantha has harder formations of Precambrian crystallines. The coastal belt of the Saurashtra region is dominated by limestone and clay. Coastal, high and low level alluvia prevail in major parts of Kheda and Banaskantha. Kachchh

has both coastal and low level alluvia, but covered in the north by saline marshy land, known as the Rann. Also, traces of sandstones and laterites are observed in Surat and Surendranagar districts. Southern Gujarat, particularly Valsad, Navsari and Dangs districts are dominated by the Trappean Basalts.

South and central Gujarat are endowed with all the three large perennial rivers in the state, namely, the Mahi, Narmada and Tapi and smaller ones such as the Damanganga. Major parts of their catchments are located outside the state. These rivers drain into the Gulf of Khambhat. North Gujarat has very few rivers and they are seasonal in nature. The most important of them are the Sabarmati, Banas, Rupen and Saraswati. They carry stream flows only during three to four months of the monsoon. Whereas the Sabarmati drains into the Gulf of Khambhat, the other three drain into the Little Rann of Kachchh.

Saurashtra has several small and large seasonal rivers constituting 84 river basins. The region has radial drainage and the runoff from the rivers is discharged into the sea. The major rivers are the Shetrunji, Machchhu and Bhadar. Kachchh has a large number of rivulets carrying small amount of annual flows. They all start from the central portion in the hilly ranges that form watersheds. Some rivers flow towards the sea in the south, some flow towards the Rann of Kachchh in the north, and others flow towards the Little Rann of Kachchh in the southeast.

4. Status of Water Availability and Nature of the Crisis

As is indicative through the description of the highly lopsided physiographic features of the state, the crux of the crisis clearly is the declination of the groundwater tables (already very low, as in some areas of Kachchh, Saurashtra and many parts of north Gujarat) attributable to both an adverse hydrogeological condition and the inadequate management of the sources. Based on the hydrogeological endowments and level of groundwater development in different parts of the state, the over-development of groundwater through extensive installation of tubewells mostly in the districts of Saurashtra, north and central Gujarat has been noted and fast depletion of groundwater has emerged as a critical problem here. Kachchh, as noted earlier, has widespread saline area making it unsuitable for groundwater development. This is also the case in the coastal belt of the Saurashtra

region. The groundwater potential in Saurashtra, Kachchh and north Gujarat has been dwindling; particularly, districts such as Gandhinagar, Banaskantha, Sabarkantha and districts of Saurashtra and Kachchh have been experiencing fast decline in the groundwater tables.

Even as detailed talukawise statistics on groundwater development are difficult to compile, the official website of the Central Ground Water Board (CGWB) indicates that in Gujarat of the 184 talukas 31 are classified as 'Over Exploited' (Development > 100%), 12 as Critical/Dark (Development 90% to 100%) and 69 as Semi Critical/Gray (Development 70 to 90%). Details have been presented in Table 1.

Table 1: Groundwater Quality Problems in Gujarat Districts, 2014

Contaminants	Districts Affected in Part
Salinity (EC > 3000 µS/cm at 25 ° C)	Ahmedabad, Amreli, Anand, Bharuch, Bhavnagar, Banaskantha, Dahod, Porbandar, Jamnagar, Junagadh, Kachchh, Mehsana, Navsari, Patan, Panchmahals, Rajkot, Sabarkantha, Surendranagar, Surat and Vadodara (20)
Fluoride (>1.5 mg/l)	Ahmedabad, Amreli, Anand, Banaskantha, Bharuch, Bhavnagar, Dahod, Junagadh, Kachchh, Mehsana, Narmada, Panchmahals, Patan, Rajkot, Sabarkantha, Surat, Surendranagar and Vadodara (18)
Chloride (> 1000 mg/l)	Ahmedabad, Amreli, Bharuch, Bhavnagar, Banaskantha, Porbandar, Jamnagar, Junagadh, Kachchh, Dahod, Patan, Panchmahals, Sabarkantha, Surendranagar, Surat, Vadodara and Rajkot (17)
Iron (>1.0 mg/l)	Ahemdabad, Banaskantha, Bhavnagar, Kachchh, Mehsana and Narmada (6)
Nitrate (>45 mg/l)	Ahemdabad, Amreli, Anand, Banaskantha, Bharuch, Bhavnagar, Dahod, Jamnagar, Junagadh, Kachchh, Kheda, Mehsana, Narmada, Navsari, Panchmahals, Patan, Porbandar, Rajkot, Sabarkantha, Surat, Surendranagar and Vadodara (22)

Source: http://cgwb.gov.in/gw_profiles/st_Gujarat.htm (Accessed on June 23, 2014)

In terms of potential status of freshwater availability in major regions of Gujarat, the constraint seems to be on the higher side in Saurashtra and Kachchh regions, the water-scarce belts. Importantly, the per capita water availability in Gujarat has steadily declined from 4467 cubic metres in 1961 to 1901 cubic metres in 2001 and further to 1568 cubic metres in 2011. The variation in per capita water availability is substantial across major

regions of the state. While in central and south Gujarat it is 1500 cubic metres, in north Gujarat it is 325 cubic metres, in Saurashtra 510 cubic metres and in Kachchh 525 cubic metres (Das, 2013: 5-6).

It is important to note that while geohydrological factors could be identified as an important constraint in the availability of water in certain parts of the state, informed studies have attributed the crisis to sheer mismanagement of the sources as neglect of groundwater recharge efforts, rationalising and controlling water use by different sectors (especially, those diverting for unbridled commercial uses) and little initiative in rejuvenating (and enhancing their capacity through scientific intervention) numerous traditional water harvesting systems in the state (Kumar et al., 2010; Hirway and Goswami, 2008; Hirway et al., 2009; and Das, 2009).[4] In fact, it would be reasonable to argue that *combinations* of climatic, physiographic, geologic and governance factors have contributed to the crisis of drinking water in the state.

5. Approaches to Rural Water Supply

A look into the different levels at which water resource management is carried out within the state is useful to appreciate the deficiencies in the approaches to policy. As drinking water comes under the State List, schemes for providing it to the rural habitations are being implemented by the state government from its own resources. The central government supplements the efforts of the state by providing financial assistance under certain centrally sponsored schemes.

Two distinct approaches towards ensuring sustainable drinking water supply can be identified - the supply-driven and demand-driven.

5.1 Supply-Driven Approach

For over half-a-century now, the state has assumed the responsibility of providing potable water to the rural population. As has been the practice all through, the predominant source of water has been groundwater. The state follows a given norm (presently, 40 lpcd and at least one public safe source

[4] For instance, Kumar et al. (2010: 12) observe that "groundwater resources in the water-scarce arid and semi-arid regions of Gujarat are already "over-exploited" or are on the verge of it. Further exploitation of groundwater for expanding irrigation is not possible in any of these regions".

for a population of 250) and arranges for providing water. This, however, involves the massive paraphernalia of organisational arrangements where inter-departmental coordination holds the key to successful functioning. Nevertheless, the structure is complicated, the roles overlap, and earnest efforts are essential to ensure an institutionalised manner of addressing this issue.

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 GramodayaYojana (PMGY).

The programme to distribute drinking water to the rural areas is being implemented in the state since 1961. It consists of the following:

- Regional Water Supply Schemes
- Individual Village Water Supply Schemes
- Installation of handpumps
- Digging of simple wells

In reality, this supply-driven approach has led to a certain kind of dysfunctionality affecting sustainable water supply, which was observed with groundwater as the vital source. Efforts at harvesting both rainwater and surface run-off have been grossly neglected. A critical aspect of the water supply scenario in Gujarat is both the existence and emergence of defunct sources. A growing number of sources becoming or continuing to be defunct is a matter of concern as it involves issues of management, possibilities for rejuvenation and a thorough re-evaluation of water supply schemes in the state. Several enquiries have been made why these sources fall into disuse and the type of remedial measures that can be taken to reactivate them. This point to several possibilities for augmenting drinking water supply despite geohydrological constraints.

It is obvious that the most appropriate answers to the issue of rejuvenation of defunct sources could be provided by the concerned departmental

personnel through detailed techno-economic evaluation. Whereas, in cases of permanent fall of water level there could be a need to set up new sources of water, just simple repairs to correct minor mechanical or electrical faults could help rejuvenate many sources that have become defunct. As one study estimated (Das and Kumar, 1999), for the rejuvenation of three fourths of all the defunct sources in nine districts (including Kachchh and Saurashtra) the average expenditure would range between Rs. 1,000 and Rs. 5,000. It is important to note that the remaining quarter of defunct sources could be made functional with an average expenditure of less than Rs. 1,000, a majority of them requiring less than Rs. 500 for a revamp. A considerable proportion of defunct sources in the districts of Saurashtra can be revived by spending small amounts on the repairs. Among defunct sources handpumps were predominant. These were also the major sources of water supply in the districts.

In a typical supply-driven approach popular involvement in managing public water sources is often found relegated to the background. As reported by numerous studies, the lack of participation has been noticed mostly in planning, site selection, maintenance and operation. Moreover, the absence of active participation of women in such matters is a pervasive problem in the state.

5.2 Demand-Driven Approach

As has often been noted, villagers have serious complaints about government agencies not attending to sources for long period and also not taking action during acute need. There have been occasions when the priorities for sources to be maintained have been vitiated due to political interference. This has resulted in non-attendance of sources requiring immediate attention. Besides, villagers in many cases, have not reported problems to the concerned department, either because they do not know whom to contact or do not hope for any positive outcome of their request. Especially, in the case of handpumps no caretaker can be identified to bear the responsibility of informing the concerned departmental agencies whenever required. The non-availability of spare parts or expertise locally has also been described as a cause for the delay in the maintenance of the sources.

At a certain level of praxis, much could be described as poor management and upkeep of the sources as also careful use of the otherwise scarce

resource. Considering the frequent incidence of these problems, a substantive change in approach was called for. Largely influenced by the imperatives of a liberalizing economy and also experiences from a host of similar countries, assigning a larger role to the local community in managing water supply has come to be emphasized. 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, marked the beginning of a strategy that no longer considered potable water to be a free good (implying that its provision would have to be the responsibility of the government). In principle, the SRP 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 a) community participation and b) the demand-driven strategy. The cardinal principles of implementation were awareness creation, popular participation, functional transparency, and stakeholder accountability. The reform process had been implemented through the SRP on a pilot basis in 63 districts in India. In Gujarat, the selected pilot districts were Mehsana, Surat and Rajkot. Apart from the time over-run, some of the key aspects of this programme had not fared well in the state. Two specific components may be noted. One, very poor efforts were made at awareness generation in the concerned villages. Two, the mandatory popular contribution that would ensure direct involvement of the villager (the most important stakeholder of SRP), had often come from influential individuals or organizations largely treating the 10 per cent (of the estimated cost of the project for a given village) contribution as a mere financial/administrative requirement.

Insights from concurrent monitoring of the SRP (Das, 2004)[5] in the state suggest that:

- Baseline survey and PRAs were undertaken in a haphazard manner with no adherence to the guidelines on representative sampling, scale of sample.
- Women's participation in the gram sabhas and Village Water and Sanitation Committees (VWSCs) was limited despite their names mentioned in the list of committee members.
- IEC activities in many villages were inadequate.

[5] As summarised in PRAVAH (2005: 10-11).

- Collection of contribution from households was irregularly conducted and in many cases money came from just a few 'wealthy' people in the village, often the sarpanch or private trusts.
- Bank accounts had not been opened for many villages to create the O & M fund.
- Many NGOs lacked the technical expertise to design appropriate water systems.
- Frequent changes of government officers dissuaded rapport with local communities.
- Delays were also reported because of conflicts between private contractors and local committees in terms of determining rates for both supplies and operations.
- A more focused and sustained capacity building of local leaders and community water managers was necessary.
- None of the SRP schemes included sanitation.

Notwithstanding the performance of the SRP in the pilot districts, the Swajaldhara programme came to be implemented in all the districts of the state; this programme was a broad-based form of the SRP.

6. Emergence of WASMO: Epitomizing the Demand-Driven Approach

For over half-a-century, the single dominant practice of state playing the key role in rural water supply had often been found wanting as it had resulted in inadequate, irregular and unreliable provisioning of the resource. The so-called supply-driven approach also was affected by the typical absence of proper coordination between various concerned government departments. Also, the widespread phenomenon of decades of non-payment of water tariffs, despite being nominal in value, by rural households remained a difficult aspect in the supply-driven approach. While so little could be done to mend the institutional dysfunctionalities and control the tempo of overexploitation of groundwater, by 1999, with almost a decade of economic reforms in operation in India, the water and sanitation sector came under the purview of reforms. The basic aim of the sectoral reforms was to

promote the demand-driven approach emphasizing decentralized community participation, efficiency and transparency in management at the village level.

With the financial support of the Royal Netherlands Embassy, in 1997, the Government of Gujarat (GoG) had started the Ghogha Rural Drinking Water Supply Project which was the first such initiative in pursuing a demand-driven approach. It targeted 82 villages in the talukas of Bhavnagar, Talaja and Ghogha in the Bhavnagar district. To achieve sustainability in rural water supply and sanitation, it emphasized the need for decentralisation and community involvement in all stages of conception, operation and maintenance. As indicated earlier, by 1999, the SRP had been launched in three districts of Gujarat and like the so-called demand-driven approach, the SRP had claimed to have brought decentralized water supply to villages with community participation. The WASMO, interestingly, was created as an SPV of the GoG in 2002 mainly in response to carrying forward the Ghogha Project.

Hailed as a paradigm shift, even before it had taken roots, the demand-driven approach in the water and sanitation sector was touted as the key reform that was based upon the premise of community ownership and responsibility in managing both the facilities and finance. Through the perusal of tenets such as community management and decentralized local governance, the efforts included creation of in-village water supply systems and sanitation facilities. With this experience, WASMO's initiation into the Earthquake Rehabilitation and Reconstruction (ERR) Project was rather smooth and in many ways the pattern of implementation of the ERR project was akin to that of the prototype – the Ghogha project.

7. The Earthquake Rehabilitation and Reconstruction (ERR) Project

As noted earlier, the northwest part of Gujarat has been a chronically water scarce region. Unfortunately, on January 26, 2001, this part of the state was devastated by a stern earthquake of the magnitude 6.9 on the Richter scale. Nearly 1334 villages were heavily destructed or almost destroyed and, expectedly, it caused considerable damage to the major water distribution pipelines and other water supply systems including in-village pipelines, traditional water sources and so on. It called for a substantial reconstruction

of the overall systems in these earthquake-affected areas so as to ensure sustainable supply of drinking water and provisioning of sanitation facilities.

Following careful stocktaking of the damages caused to the water sources as well as supply systems by the earthquake and undertaking detailed planning, the WASMO launched the ERR project in April 2003 and, finally, proposed to cover 1255 earthquake affected villages to restore and develop water supply and sanitation facilities in the districts of Kachchh, Surendranagar and Jamnagar and Santalpur block in Patan, leaving villages of Rajkot district which had been covered under the SRP pilot project of the Government of India. The ERR programme had been implemented in 875 villages of 9 blocks of Kachchh district, 103 villages of Santalpur block of Patan district, 136 villages of 7 blocks of Surendranagar district and 146 villages of 10 blocks of Jamnagar district.

The major objectives of the ERR project were as follows:

- To establish decentralized, demand-driven, community owned rural water supply and sanitation systems which would be planned, approved implemented, operated and managed by the rural populace;
- To ensure drinking water safety through an integrated grouping of pipelines, local traditional sources and multiple sources for alternative use;
- To build effective community institutions at the local level by supporting capacity building and empowerment;
- To ensure that all community groups, including women, are able to play a part in the decision making process and benefit from the programme;
- To improve the living environment of households and community through setting up of sanitation facilities and promoting hygiene awareness in the local population; and
- To provide implementation support to communities through independent civil society organizations who would function as Implementation Support Agencies (ISAs).

The initial fiscal provision for the project has been shown in Table 1. Whereas the initial contribution and involvement by the Royal Netherlands

Embassy was substantial, they withdrew fully, subsequently. Since April 2004, the project came to be funded entirely by Indian sources, especially, both the state and central governments.

Table 2: ERR Project: Overall Financial Particulars

Details	Amount (Rs. Lakh)
Total project provision	17,226.78
Contribution	
Royal Netherlands Embassy	14,880.00
Government of Gujarat	1,620.00
Community	485.00
Salvage value of existing water supply systems	243.00

The overall implementation of the programme at the village level followed a two-stage approach, the total time period being 18 months. Whereas the first phase contributed to imparting learning and building confidence concerning decentralized governance and community ownership, the second phase focused upon scaling up structural activities. Accordingly, the first programme cycle covered the initial six month period and works on community mobilization with the use of information, education and communication (IEC) materials, formation of Pani Samitis to directly involve villagers in the responsive decision-making process. During the second cycle, which extended for a year, the hardware aspect of the project received priority. Activities included preparing and finalizing detailed proposals with approximate costs for village action plans (VAPs) and household contributions and also execution of structural work for required water and sanitation facilities along with water resource management work wherever applicable. The whole process mainly involved the following:

- Formation of the Pani Samiti
- Opening of the bank account
- Preparation of the VAP
- Finalization of the VAP
- Disbursement of funds
- Start of construction/structural work
- Completion of the physical structure
- Fixation of water and sanitation tariff

The programme envisaged a period of five years commencing from October 01, 2002. Hence, by September 30, 2007 all works were purported to be completed with the financial closure by March 31, 2008. The programme was scheduled to be implemented in two phases. The Phase I was to be the "Learning Period", for which it proposed the implementation to be restricted to 200 villages. The Phase II implementation was proposed to proceed on the basis of Phase I implementation experience after 18 months. For the implementation of this project, WASMO had established three Coordination, Monitoring and Support Units (CMSUs) at the district level who in the field were supported by Engineering Support Cells (ESCs) and ISAs. The latter was to interact directly with Pani Samitis that had been created in each village as a sub-committee of the panchayat.

8. Role of the Implementation Support Agencies (ISAs)

An important feature of the ERR was the crucial role assigned to ISAs who would engage in the mobilization of community to participate effectively in the programme in a sustainable manner. ISAs were not only to play their roles in initiating, coordinating and organizing activities at the village level, but also to act as conduits between WASMO and the local population. The project envisaged that four to nine NGOs could be selected to work for the project period.

The ISAs were chosen by WASMO to ensure that they had adequate experience and potential to take part in this programme in a proactive manner. There were only a few ISAs which did not have previous work experience in a given aspect of the programme. However, many of the ISAs had enough earlier experience working in the programme locations. Hence, ISAs were sought to be chosen keeping in view that these had prior experience in working in or at least had some understanding of the water and sanitation sector, and had a demonstrated performance and accountability record, in addition to the presence in the area.

In order to implement various components and activities of the ERR project, ISAs were expected to play an important role in the execution of such activities as to develop local institutions like Pani Samitis and fortify existing institutions like gram panchayats. As per the project guidelines, ISAs were

given a set of responsibilities in the context of the programme. These were as follows:

- Community mobilization by awareness generation and soliciting their participation;
- Institution-building by forming effective Pani Samitis in accordance with the guidelines;
- Sanitation and hygiene promotion through awareness campaigns that especially involved women and children and facilitated the construction of sanitation facilities;
- Ensuring equality in and across the village protecting the interest of weaker sections;
- Managing water resource by facilitating plan preparation in consultation with the community;
- Facilitating operation and maintenance of the systems created by imparting training; and
- Ensuring transparent and appropriate account keeping by Pani Samitis through imparting training and being part of the audit process.

A total of 31 ISAs had partnered with WASMO in the programme and 1255 villages were assigned to them to facilitate and support the implementation of the project, within a stipulated phasewise time schedule.

9. Role of the Pani Samiti

In this programme, the Pani Samiti had been perceived as the village level service institution that was responsible for the management of in-village water supply and sanitation facilities. Pani Samitis were to occupy a status of a functional committee of the gram panchayats. Major responsibilities of the Pani Samiti were to:

- Carry out the construction of water supply and water harvesting structures;
- Purchase construction materials;

- Monitor and ensure quality of works;
- Ensure that water was being supplied as per norms;
- Collect regular operation and maintenance contribution;
- Guarantee transparency in fund collection and utilization;
- Ensure optimal use of water;
- Insist upon maintenance of environmental cleanliness, and
- Ensure that water supply and sanitation structures were kept clean and functional.

As detailed earlier, it is interesting to note that while the Ghogha project was underway since 1997, the SRP was introduced (through three pilot districts) in Gujarat in 1999. The transformation of the Ghogha project in to the ERR with the very similar features was, eventually, to perpetuate the demand-driven approach. The SRP was broad-based into the Swajaldhara in December 2002. As is known, the Swajaldhara programme had two streams. The first, Swajaldhara - I, is directed at gram panchayats, groups of gram panchayats and intermediate panchayats at block or taluka level. Swajaldhara - II is directed at districts.

At present 13 Gujarat districts are part of the national Swajaldhara programme, while 11 others are covered under the SRP. Kachchh district is exclusively covered by the ERR Project. The approach, guiding principles and institutional aspects of all these programmes are very similar. The institutional framework comprises the National Swajaldhara Monitoring Committee (NSMC), which is the national level monitoring agency. At the state level, WASMO is the State Water and Sanitation Mission (SWSM) for Gujarat. WASMO coordinates the activities of the District Water and Sanitation Committees (DWSCs) and the Village Water and Sanitation Committees (VWSCs) or Pani Samitis. This arrangement ensured that WASMO was there to stay for long and its *de facto* status had been transformed from the original SPV to an entrenched and powerful agency for the demand-driven approach to drinking water and sanitation in the state.

10. Functional Dimensions of WASMO

As WASMO, steadily and summarily, deepened the demand-driven approach in water supply and sanitation in Gujarat, agencies such as the GWSSB, GJTI and GWIL dove-tailed their functioning and approach to contribute to WASMO's rise as a centralising agency. This is despite the fact that both the GJTI and GWSSB had been engaged for long within the supply-driven framework, attended to discrete needs of geohydrologically determined regions and also had undertaken the initial initiatives in introducing the SRP or, Swajaldhara, as it was known subsequently.

Even as the geohydrological lopsidedness has often been cited as a major barrier to broad-basing water access in most parts (excepting much of the south) of the state the issue of managing water as between competing uses continues to be the crux of the problem. This has implied that a mere over-emphasis on decentralisation of the local drinking water distribution would fail to address the water management question. For instance, the low rainfall in north Gujarat notwithstanding, the alluvial soil and topographic conditions favour groundwater recharge and rejuvenating aquifers. These have resulted in sustaining huge groundwater reservoirs over the last few decades during when thousands of tubewells have been dug in the region.

However, with the mindless mining of groundwater for both agriculture and industrial consumption, the role of WASMO seems to have been stymied considerably. As reported by the *United Nations World Water Development Report 2014* unsustainable use of water for agriculture is the prime reason for the groundwater level falling in most parts of Gujarat. "In Gujarat, one of the drier states in India, policies to ration farm power supply, and thus water supply, have been recommended to encourage farmers to use water more sparingly" (UNWWAP, 2014: 110). The problematic policy of the state government to provide subsidised power primarily for irrigation has caused depletion of groundwater in most un-irrigated areas, leading to a severe drinking water crisis. A 2012 report of the CGWB observed that more than half of the borewells in Gujarat had recorded a decline in the water level. It held that "Out of this, 28% wells have shown a fall in 0-2m range. About 12% of the wells have shown fall in 2-4m range and about

18% wells have shown fall in water level in more than 4m".[6] What is worrying is that these approaches to extract as much groundwater in the name of promoting agriculture has hardly been contested as a major cause for the drinking water crisis in the state.

The WASMO's institutional approach of a systematic partnership building (Figure 2) with the local community and all possible stakeholders and steps towards 'empowering' the local water users (Figure 3) appear impressive. However, if such organisational framework has failed to intervene effectively in stopping excessive groundwater exploitation and polluting of groundwater by several industrial units in both south Gujarat and Saurashtra districts then one wonders if such information serves any social purpose. For example, how does one deal with the data on near-total coverage of villages through Pani Samitis (Figure 4) existing side-by-side with the fact of overdrawal of groundwater and contamination of water sources. How does one address the issue that while the south Gujarat region has been richly endowed with water resources, both ground and surface, industrial effluents have systematically polluted the water resources in several parts of the region. This has led to a despicable situation where indiscriminate and poorly regulated water pollution by the industry has ruined the drinking water sources. Similarly, the coastal region of Saurashtra has been subjected to overdrawing groundwater allowing salinity ingress to have grown over the years.

The simple question is that can the demand-driven approach (as WASMO has propagated so vehemently) be insensitive to the availability, conservation and quality of drinking water. What does decentralised management add up to if it has been unable to respond to the serious issue of falling access to drinking water due to exploitation and mismanagement of the sources.

Interestingly, while the extraordinary governance and decentralised approach of WASMO are hailed as having succeeded in making nearly all rural households access *safe* drinking water, the actuality differs considerably. Table 3 makes it amply clear that of the total rural households just about 46 per cent (if one considers the three relatively safe sources, namely, tap water from treated source, handpumps and tubewells/borewells) have been covered by somewhat dependable sources while a sizeable population consumes unsafe water. It is important to cross-check the information

[6] http://www.hindustantimes.com/india-news/gujarat-one-of-the-most-water-starved-states-in-india-un-report/article1-1205787.aspx

provided by the *Census of India 2011* with that provided by WASMO. For instance, while the proportion of rural households with tap connectivity in 2011 is recorded as a mere 16.7 per cent by the *Census*, WASMO puts the figure at 72.2 per cent for the same year and 77.8 per cent by August 2013. Reliability of data on access to safe drinking water by rural households in the state is an exceptionally serious issue and requires vigilance and caution.

Table 3: Households by Main Sources of Drinking Water in Rural Gujarat, 2011

Particulars	Number of Households	Proportion (%)
Total Rural Households	67,65,403	100.0
Sources of Drinking Water		
Tap water from treated source	11,28,286	16.7
Tap water from un-treated source	26,45,096	39.1
Covered well	2,53,535	3.7
Un-covered well	5,65,425	8.4
Hand pump	12,33,167	18.2
Tubewell/Borewell	7,35,908	10.9
Spring	9,795	0.1
River/Canal	36,811	0.5
Tank/Pond/Lake	24,401	0.4
Other sources	1,32,979	2.0

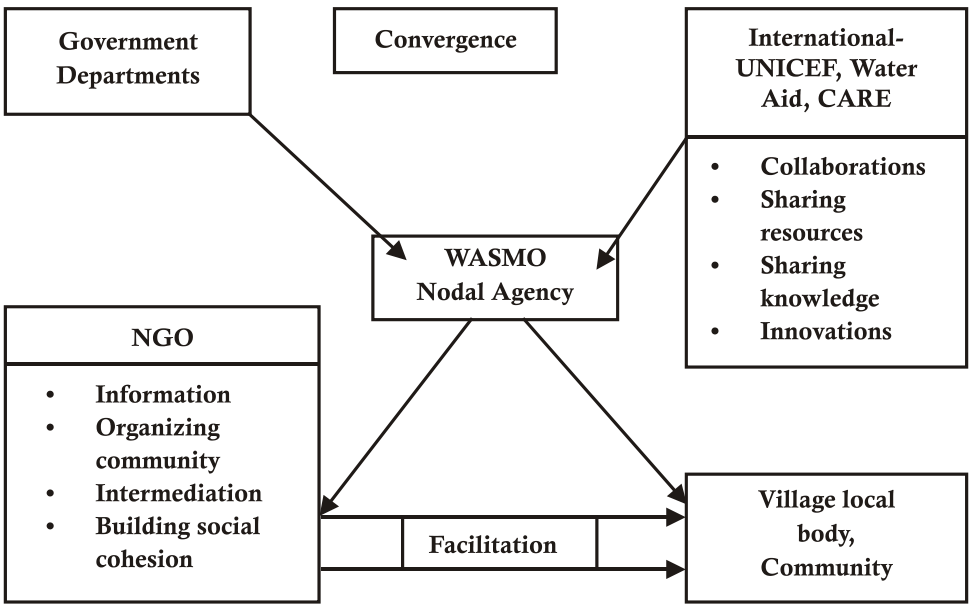
Source: *Census of India 2011*, as reproduced in Government of Gujarat (2013), *Socio-economic Review 2012-13*, *Gujarat State*, Directorate of Economics and Statistics, Gandhinagar, p. S-92.

Further, through a pointed reference to WASMO lagging behind in undertaking work under the Swajaldhara/SRP it has been observed that while during 2011-12 of the 1500 schemes only 1057 (70.5 %) could be completed, during 2012-13 of the 1200 schemes only 605 (50.4 %) could be concluded up to December 2012 (Government of Gujarat, 2013: 60). These schemes include tribal areas as well. If even by the 2012-13 several schemes were yet to be completed, the point to ponder remains the veracity of the various claims of near-complete coverage of rural households through WASMO intervention.[7] The staff composition (Table 4) with over 80 per cent of the

[7] http://indianexponent.com/the-ugyly-truth-behind-the-much-touted-power-irrigation-infrastructure-of-gujarat/

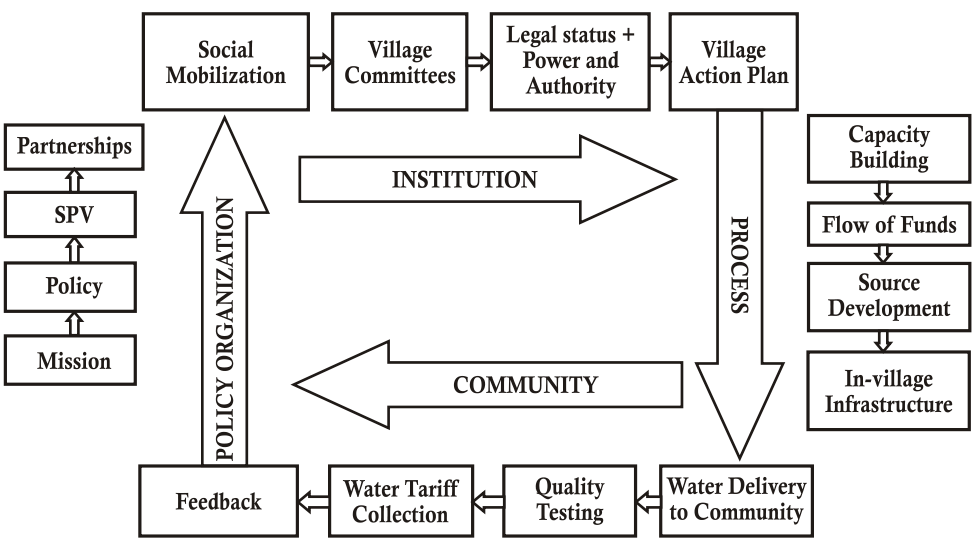
personnel accounting for 'technical' and 'social mobilisers' though *appears* impressive does not justify the existence of large number of rural households not having access to safe potable water.

Figure 2: Partnership Profile of WASMO



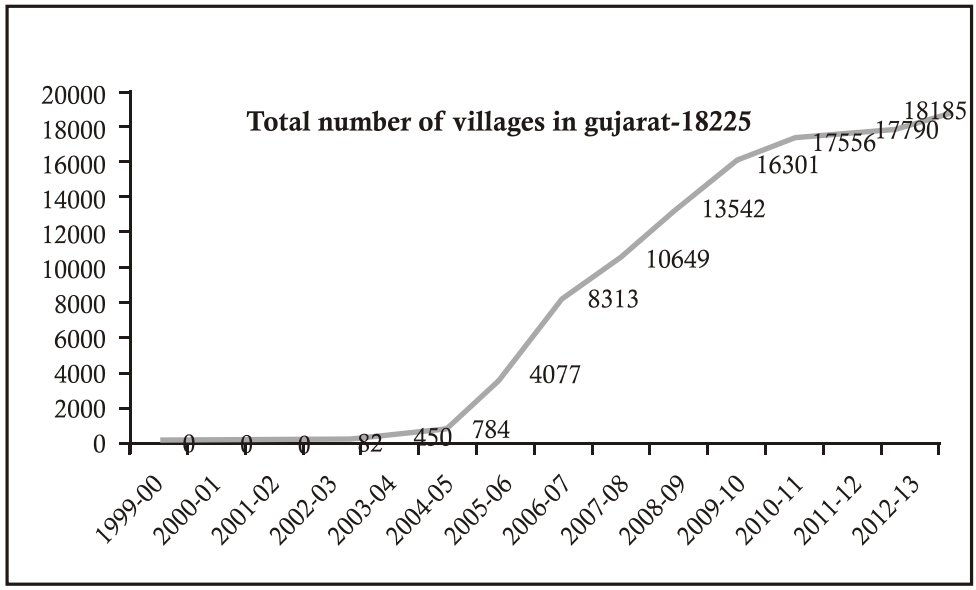
Source: WASMO, Gandhinagar.

Figure 3: Processes and Organisation of the WASMO Intervention



Source: WASMO, Gandhinagar.

Figure 4: Formation of Village Water and Sanitation Committees (Pani Samitis)



Source: WASMO, Gandhinagar.

Table 4: WASMO's Staff Composition

Details	**Percentage**
Technical Staff	38.18
Social Mobilizes	42.55
Communication Staff	3.64
Finance Staff	11.64
Administration staff	4.00
Total	100.00

Notwithstanding the notable variance in data on coverage as projected by WASMO and alternate sources, the expenditure across several programmes by WASMO has grown significantly (Table 5). Despite being a state sponsored SPV, over 70 per cent of all funds available to WASMO comes from the Government of India funded programmes, the prominent among them are, eventually, Swajaldhara (50.0%) and ERR (21.1%). Similarly, SRS (accounting for 89.5% of the funds available through the Government of Gujarat) has been the dominant programme under the state government.

Table 5: Expenditure Incurred by WASMO under Various Programmes, 2002-12

(Rs. Lakh)

Source	Programme	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Cumulative 2002-12
GoI	Swajaldhara		262.45	742.31	2702.15	2699.95	4481.10	6613.52	9394.85	9282.81	4479.40	40658.54
	ITDP					259.80	193.36					453.16
	ARWSP							6460.61				6460.61
	WQ					157.68	338.28	118.63	65.20	15.20	29.94	724.93
	ERR	1.52	2922.56	1405.48	2607.06	2785.06	2178.99	2059.82	3233.68	5.50	-12.00	17187.67
	Ghogha	2041.75	1083.75	1357.54	840.15			2.70		0.30		5326.19
	Jalmani								331.59	958.70	12.88	1303.17
	Admin. & Cap.								475.18		546.66	1021.84
	WSSO								514.67	1224.62	1018.92	2758.21
	CCDU						30.18	29.87	25.71			85.76
	R.O.						480.00				-69.77	410.23
	School Water Supply						450.00	345.91	1165.57	1516.61	130.82	3608.91
	RRWHS						448.44	625.66				1074.10
	11th FC			50.00	166.00							216.00
	Total GoI	**2043.27**	**4268.76**	**3555.33**	**6315.36**	**5902.49**	**8600.35**	**16256.72**	**15206.45**	**13003.74**	**6136.85**	**81289.32**

contd...

GoG	SOW	13.29	176.71	75.11	129.99	103.34	43.01	69.42	82.58	58.57		752.02
	SRS			860.87	1268.13	1569.18	3363.57	4736.93	6817.64	7521.21	4233.74	30371.27
	Community Managed Programme*						1100.00					1100.00
	H2H						1000.00	83.83				1083.83
	Agariya							129.67	224.38	91.56	1.55	447.16
	Ashramshala							2.19	0.12			2.31
	Advance Technology							1.50	18.00	35.93	14.38	69.81
	R & D								6.60			6.60
	WQ							72.51	19.61	17.62	7.94	117.68
	Total GoG	**13.29**	**176.71**	**935.98**	**1398.12**	**1672.52**	**5506.58**	**5096.05**	**7168.93**	**7724.89**	**4257.61**	**33950.68**
Others	Unicef							43.12	35.99	37.93	35.30	152.34
	Grand Total	**2056.56**	**4445.47**	**4491.31**	**7713.48**	**7575.01**	**14106.93**	**21395.89**	**22411.37**	**20766.56**	**10429.76**	**115392.34**

Source: WASMO, Gandhinagar.

Notes: GoI – Government of India; GoG – Government of Gujarat; ITDP – Integrated Tribal Development Programme; ARWSP – Accelerated Rural Water Supply Programme; WQ – Water Quality Monitoring; WSSO – Water Sanitation Support Organisation; CCDU - Communication and Capacity Development Unit; RO – Reverse Osmosis Plant: RRWHS - Roof Rain Water Harvesting Structures; FC – Finance Commission; SOW - Source of Water ; SRS – Sector Reform Scheme; H2H – Homeless to Home; R & D – Research and Development.

* In Narmada, Valsad, Dang and Dahod.

11. Claims and Reality in Rural Drinking Water Coverage

The predominance of WASMO as a successful[8] organisation in effecting the demand-driven drinking water and sanitation programmes in rural Gujarat has been kept afloat through a strong and inimitable strategy of projecting its positive image consistently. In fact, the repeated promotion of the organisation as devoted to their catchphrase 'Users are the best managers' and proclamation of an almost complete achievement in coverage and implementation have to be understood within the context of an absence of evaluation exercises by independent agencies. Whether there exists a conscious strategy by WASMO to obfuscate any such objective evaluation needs to be established.

Such an observation questioning the reliability of the WASMO data crops up due to a particularly disturbing development. In the absence of any objective and regular assessment of the progress by a competent 'third party' the data from the *Census of India* for the two time points of 2001 and 2011 provide an insight into the ground reality of rural drinking water and sanitation in Gujarat. Even as Census operations are not primarily aimed at drinking water and sanitation statistics, the results obtained can be treated with high degree of reliability. Table 6 classifies districts in terms of proportion of rural households not having a single safe source for drinking water, which includes taps, handpumps and borewells. It is revealing that the status of access to safe drinking water was far better in 2001 as compared to the same a decade later in 2011. The proportion of rural households having no safe drinking water source was 23 per cent in 2001 and it had shot up about three times to about 67 per cent in 2011. Further, while in 2001 excepting one district (Porbandar with 53 per cent) no district had more than 50 per cent of households without access to a safe source of drinking water, in 2011, 16 districts had over half of their rural households with access to any type of safe source. Interestingly, these districts include Porbandar, Patan, Ahmedabad, Surendranagar, Rajkot, Kachchh, Jamnagar, Amreli, Bhavnagar, Mehsana and Gandhinagar all of which are shown in the WASMO database to be practically free of such an inadequacy. As an aside, even the data provided by the central government's Ministry of Drinking Water and Sanitation indicate these and several other districts of Gujarat hardly have any safe drinking water issue as most rural habitations have been categorised as 'Fully Covered' (Table 7). It may be noted that the Ministry's data are based upon what the concerned agencies (GWSSB and WASMO) of the state government provide.

[8] Going by the fact that it has been the recipient of three national and international awards as often highlighted in the agency's publicity materials.

Table 6: Rural Households in Gujarat Having No Safe Drinking Water Source, by District, 2001 and 2011

Proportion	Districts (% of Rural Households having No safe drinking water source)	
	2001	2011
>70 %	-	Porbandar (71.92); Patan (71.45); Junagadh (70.23) **3 districts**
50-70 %	Porbandar (52.92) **1 district**	Ahmedabad (68.86); Surendranagar (68.14); Rajkot (66.93); Kachchh (65.52); Jamnagar (63.32); Amreli (62.85); Sabarkantha (60.40); Bhavnagar (57.96); Anand (57.00); Mehsana (54.68); Banaskantha (54.46); Gandhinagar (53.61); Bharuch (53.10) **13 districts**
<50%	Dahod (44.48); Surendranagar (41.22); Panchmahals (41.02); Dangs (40.56); Bhavnagar (37.11); Valsad (31.76); Jamnagar (30.08); Navsari (28.20); Junagadh (26.53); Rajkot (23.84); Katch (22.64); Amreli (22.27); Ahmedabad (21.70); Surat (21.20); Kheda (18.57); Sabarkhantha (18.38); Banaskantha (16.83); Bharuch (16.68); Anand (16.00); Patan (12.69); Vadodara (12.62); Narmada (11.66); Mahesana (6.89); Gandhinagar (3.77) **24 districts**	Kheda (49.67); Dahod (48.92); Panchmahals (44.84); Dangs (44.77); Navsari (41.85); Vadodara (41.35); Surat (37.34); Valsad (31.00); Narmada (26.96); Tapi (21.94) **10 districts**
Gujarat (All households)	23.13	66.96

Source: Census of India, 2001 and 2011

Table 7: Status of Rural Habitations with Respect to Drinking Water Supply

(As on April 01, 2013)

District	Number of Habitations			
	Total	Fully Covered	Partially Covered	Quality Affected
Ahmedabad	703	701	2	0
Amreli	646	643	3	0
Anand	909	896	3	10
Banaskantha	1730	1586	6	138
Bharuch	787	783	0	4
Bhavnagar	795	795	0	0
Dangs	326	310	16	0
Dahod	3144	3144	0	0
Gandhinagar	412	405	7	0
Jamnagar	748	748	0	0
Junagadh	900	870	25	5
Kachchh	1070	1070	0	0
Kheda	2052	2048	3	1
Mehsana	830	830	0	0
Narmada	720	597	108	15
Navsari	2035	1846	188	1
Panchmahals	2526	2526	0	0
Patan	649	649	0	0
Porbandar	182	182	0	0
Rajkot	861	861	0	0
Sabarkantha	2444	2429	3	12
Surat	1543	1517	26	0
Surendranagar	696	696	0	0
Tapi	1663	1657	6	0
Vadodara	2149	2122	6	21
Valsad	3895	3894	1	0
Total	34415	33805	403	207

Source: http://indiawater.gov.in/imisreports/Reports/Physical/rpt_RWS_Coverage Of HabitationNew_D.aspx?Rep=0

12. Water Quality Issues

Other than the scarcity of groundwater resource, the quality of the available water is also an important aspect for consideration. As is well known, the problem of excess fluoride and nitrate is particularly acute in the whole of

Saurashtra and Kachchh districts; particularly, in the Amreli district, there are many villages with high level of groundwater fluoride content. Parts of Sabarkantha, Rajkot, Junagadh and Kheda are also affected by such deterioration in water quality due to excess nitrate. In most parts, the TDS content has been found to be much higher than the permissible limits. The entire coastal belt, stretching from the north western point of Kachchh through Saurashtra districts to the southern part of Kheda has been affected by saline ingress rendering the groundwater unsuitable for drinking. As reported in Das (2005), respondents in villages in Amreli, Jamnagar and Surendranagar complained of ailments such as body ache, joint pain and kidney stones reflecting high fluoride and TDS in water being used for domestic purposes. It is also well known that the groundwater in Liliya taluka of Amreli contains excessive fluoride to the tune of 11 ppm, which is far higher than is permissible. Similarly, in Thala village of Dhangadhra taluka in Surendranagar, the groundwater contains fluoride of the order of 1.5 ppm which is higher than the permissible limit. Two of the sample villages, Sachana in Jamnagar taluka of the district Jamnagar and Lawacha in Olpad taluka of Surat, were located on the seashore and had excessive salinity in the groundwater, rendering the water from the handpumps unpotable.

Groundwater contamination being an important problem, the official list provides names of only those villages which would have sent water samples for testing to the laboratory at the apex body, the GJTI at Gandhinagar. Such information is clearly inadequate. Data on the names of individual villages affected by water quality problem or (even) taluka level number of villages with water quality problem are almost impossible to obtain, the stated explicit reason being that such information has been kept *confidential*. From a policy perspective, it is crucial that such important information be made available to the public. Secrecy and reluctance to share this data, to say the least, will certainly be against the interest of the development of the state.

13. Availability of Electricity and Functioning of Taps

At the village level the nature and timing of the supply of power are highly erratic directly affecting the household availability and access to drinking water. The problem of power supply is so intricately linked to the issue of water availability that the crisis of water scarcity has to be seen partly as

a product of the low or no voltage power position that often makes it impossible for water pumps to work on all the seven days of a week. The other interesting feature is the widely prevalent illegality of household power connections that implies a free-rider situation where no charges are being paid by those who use the facility. It is important to address this problem with reference to sustainability of water supply in rural areas. That the gram panchayats are not supposed to pay electricity charges and power theft by individual households is common should not be acting against their access to adequate and regular supply of water.

14. Potential for Water Harvesting

In all societies, systems of conserving water for dry seasons, in particular, have been found. However, with excessive emphasis on and development of modern piped water supply, the disinclination towards harvesting both rainwater and surface run-off, even in rural societies, has been quite apparent. Nevertheless, with the growing crisis of availability of freshwater and the falling groundwater tables, attention is being reverted to appreciating the potential of revival of traditional water harvesting systems in rural areas. As may be surmised from a detailed study in Gujarat villages (Das 2009), the two most important reasons for neglect cited are that traditional sources had dried up (or no longer able to meet the local demand) and the other (mainly, piped systems) sources provided larger quantities at practically no cost. Interestingly, there was relatively high level of awareness regarding the benefits of both the traditional and modern rainwater harvesting systems in all the sample villages. The major constraint in adopting/ reviving harvesting systems was reported to be poor affordability. As regards measures to revive sources, the most frequently reported suggestion was to desilt the *talavs* and wells. These observations are, intrinsically, cautionary. The essentiality of reviving/ modernizing traditional sources cannot be overstated for a sustainable water future and it is wise to recognize that overdrawal of groundwater (despite the convenience of the piped system) can potentially be a fragile approach to addressing the crisis of drinking water in the state.

15. Sanitation: The Neglected Sector

Gujarat's record in the sphere of sanitation, particularly in rural areas, has been remarkably poor. Sanitation facilities must be made mandatory in all schools for a better and stronger spread of the awareness about hygienic

practices and reduction of diseases such as diarrhoea. While household toilets are to be largely encouraged, community sanitation facilities need to be professionally managed and these are best suited to public utility spaces. In awareness generation campaigns for ICT purposes, visual demonstration (emphasizing television) can be effectively used. The rural areas are in no shape even for ensuring household connectivity to drainage outlet, an important provision to maintain a hygienic environment.

Considering the rural sanitation data as obtained from the *Census of India*, it is obvious that in 2011 while in 19 districts 50 to 75 per cent of rural households did not have access to any form of toilets, six districts had over 75 per cent of their rural households without any form of toilets (Table 8). The overall coverage figure for rural Gujarat between the two Censuses has risen from about 22 per cent to 33 per cent, far from the almost complete coverage impression as might be surmised from WASMO's publicity materials. These figures belie the systematically persuasive assertion of achievement in the rural sanitation sphere through initiatives by WASMO.

Table 8: Rural Households in Gujarat Having No Toilets of any Type, by District, 2001 and 2011

Proportion	Districts (% of Rural Households having No Toilets)	
	2001	2011
>75 %	Dahod (93.64); Dangs (90.97); Panchmahals (90.54); Narmada (88.39); Banaskantha (87.64); Porbandar (85.00); Surendranagar (84.81); Valsad (83.73); Bhavnagar (83.13); Jamnagar (81.01); Kheda (80.06); Patan (79.54); Ahmedabad (77.87); Sabarkantha (77.66); Navsari (77.16); Rajkot (77.00); Vadodara (76.61) **17 districts**	Dahod (93.85); Narmada (83.96); Panchmahals (82.99); Banaskantha (82.85); Surendranagar (79.17); Tapi (77.02) **6 districts**
50-75 %	Surat (74.75); Kachchh (72.78); Junagadh (72.62); Mahesana (70.81); Amreli (69.61); Gandhinagar (69.17); Anand (68.56); Bharuch (62.57) **8 districts**	Dangs (74.74); Kheda (74.60); Valsad (72.42); Vadodara (71.46); Sabarkantha (68.92); Bhavnagar (67.89); Ahmedabad (67.13); Jamnagar (65.17); Patan (64.06); Porbandar (60.85); Anand (58.74); Gandhinagar (57.17); Rajkot (56.03); Mehsana (55.62); Navsari (55.53); Bharuch (54.19); Junagadh (53.96); Kachchh (50.83); Surat (50.07) **19 districts**
<50%	-	Amreli (47.86) **1 district**
Gujarat (All households)	78.35	66.96

Source: Census of India, 2001 and 2011.

These observations have serious implications for ensuring equity in coverage as well as sustainability of sources. That the arid and semi-arid districts of the state (including those in Kachchh, Saurashtra and northern regions) continue to be affected by poor coverage by drinking water and sanitation

facilities raises questions about the efficacy of WASMO in undertaking the huge responsibility for rural Gujarat. In fact, in a detailed study on slippages in drinking water and sanitation status in rural Gujarat the unsustainability of water supply has been attributed to the following: "(1) tail end villages are usually deprived of water supply, (2) for the other villages also the water supply is frequently irregular and unreliable, (3) the adequacy of water is also poor (less than 10 lpcd some times), and (4) the quality of water is not potable either because of the problems with the source or because of contamination caused by leakage or breakage in the pipe line" (Hirway et al., 2010: 11).

16. Observations from the Field

In order to obtain an impression about the current status and functioning of the WASMO programme, a rather quick field survey was undertaken in four villages. These villages were chosen randomly from the four distinct regions of the state: V-1 (North) – from Banaskantha district; V-2 (South) - from Surat district; V-3 (Saurashtra) - from Porbandar district; and V-4 (Kachchh) - from Kachchh district. Given the constraints of time and resources data were collected through a structured village level questionnaire and discussion with villagers. The respondents included a few members of the Pani Samitis, talati and/or sarpanch and other villagers.

The distribution of population and households are given in Table 9. Going by the size of population and number of households these are relatively smaller size villages excepting V-1 which is slightly larger than an average village in Gujarat. The average household size is less than 5 in the sample villages of Saurashtra and Kachchh. Further, the sample villages for V-2 and V-3 have majority households belonging to the OBC. From Table 10 one could obtain an idea regarding the existence of various public drinking water sources. It may be observed that all the sample villages have basic water storage and distribution facilities as overhead tank, sumps and *havedas* (drinking water troughs for animals). It is interesting to note that in V-1 and V-3 almost all households have tap water connection; this is not the case, however, in the other two sample villages. Similarly, only V-2 has a fairly developed water filter plant which has become a source of income for water infrastructure maintenance in the village. Purified water is sold at Rs. 0.85 per litre and all households consume this water. The remaining three sample villages do not have any such water filter plant. No rainwater

harvesting systems have been developed for community use by WASMO in any of the sample villages.

Table 9: Population and Households of the Surveyed Villages

Details	V-1 (North)	V-2 (South)	V-3 (Saurashtra)	V-4 (Kachchh)
Population	2308	719*	957*	1253
No. of Households	437	131	236	263
Average Household Size	5.3	5.5	4.1	4.8

Source: *Census of India, 2011.*

Note: *Predominantly belongs to Other Backward Castes (OBCs), including Suthar, Vaghri, Valand, Darji, Koli Patel, Mer, Rabari and Bawaji.

Table 10: Drinking Water Sources for Community Use in the Surveyed Villages

Village/Source	V-1 (North)	V-2 (South)	V-3 (Saurashtra)	V-4 (Kachchh)
Regional Rural Water Supply	-	-	1	-
Overhead tank	1	1*	1	1
Underground tank (Sump)	1	1	1	1
Handpump	4	2	-	-
Standpost		5	1*	5**
Tubewell /Borewell	1	1	-	1
Well	-	1	-	1
Rainwater harvesting structure	-	Pond	-	-
Drinking water trough (*haveda*) for animals	3	1	3	1
Tap Connection	250	-	200	-
Filter plant linked to pipeline (WASMO)	-	1	-	-

Source: Field Survey.

Note: * Non-functional ** Out of five four are non-functional.

A few questions were asked to have an idea about the manner in which the WASMO scheme was implemented in the sample villages. Table 11 indicates that people's contribution of 10 per cent of the total cost of the scheme had been collected in all the four villages. However, excepting for V-4, there were no uniform contribution amount (10 per cent of the total project cost divided by the number of households) was collected. For instance, in V-1 and V-2 the household contribution ranged as much between Rs. 500-5000 and Rs. 100-11000. This has been an issue usually discussed in connection with ensuring 'popular/community participation' in Swajaldhara programmes. Often a few dominant residents of the village insist on paying a larger share to convey the impression of those being better-off households and would not encourage households with lower income and/or social status to claim 'equal' participation in the water projects. By ignoring this aspect of discrimination (but making sure that 10 per cent of the total cost is collected from the villages) the WASMO programme has undermined the spirit and efficiency of community participation.

Provision of the kit for checking water quality at the village level was an important component of the drinking water supply programme; the local villagers were to be trained to use the contraption to keep a close vigil if the quality of drinking water was deteriorating. As Table 11 shows, in V-1 no such kit was given and in V-2 no quality checking had been conducted at all. Another look at the data suggests that the WASMO enthusiasm might have waned following the early years' activity. This is due to the fact that in V-1 and V-2 the Pani Samitis were formed during 2010-11.

Table 11: Implementation of WASMO Schemes

Village/Activity	V-1 (North)	V-2 (South)	V-3 (Saurashtra)	V-4 (Kachchh)
Total cost of the scheme (in Rs. lakh)	15.00	11.50	12.00	10.00
People's contribution (in Rs. lakh)	1.50	1.20	1.20	1.00
Range of contribution per household (in Rs.) (appx.)	500-5000	100-11000	500-2000	450 each
People's contribution in kind, including labour (No. of households)	5	20	-	25
Village/Activity	V-1 (North)	V-2 (South)	V-3 (Saurashtra)	V-4 (Kachchh)
Year in which kit for quality check provided	—	2011	2007	2003
Frequency of quality checking during last 2 years	—	—	10-12 times	7-8 times

Source: Field Survey.

In carrying out the processes to initiate the programme at the village level, it was reported that WASMO personnel had visited the villages and explained the issue about people's contribution to the project as a mark of community ownership. However, respondents, excepting in V-2 did not recollect much about awareness programmes and if meetings including Gram Sabhas were held to consult the villagers regarding the action plan, community supervision, replacing old pipelines or installation of filter plants.

Pani Samitis have been described as the key local level institutions that facilitate smooth management of the water supply and distribution by the community representatives. Table 12 on the working of Pani Samitis suggests that in V-1 and V-2 the members hardly met. These are again quite different from V-3 and V-4 where Pani Samitis, formed during the early phases of WASMO, have been meeting a few times a year. Pani Samitis have, nevertheless, been generally managing various components of the water supply infrastructure as shown in Table 13.

Table 12: Working of Pani Samitis

Village	Year of Formation	Frequency of Meetings*	Membership Profile		
			Total	Caste	Sex
V-1 (North)**	2010-11	No information	8	SC-1 OBC-7	Male-6 Female-2
V-2 (South)	2010-11	1	9	ST-1 OBC-8	Male-7 Female-2
V-3 (Saurashtra)	2004-05	2-3	7	No records available	
V-4 (Kachchh)	2003-04	5-6	7	SC-1 General-6	Male-4 Female-3

Source: Field Survey.

Notes: * Annual average ** The new Pani Samiti was yet to be formalized.

Table 13: Management of Water Supply Structures

Village	Structure	Management
V-1 (North)	Overhead tank, Pipeline	Pani Samiti-Sarpanch
V-2 (South)	Filter plant, Pipeline, Standpost-5	Pani Samiti
V-3 (Saurashtra)	Overhead tank, Underground tank (Sump), Pipeline, Standpost, Pump house, Haveda	Pani Samiti
V-4 (Kachchh)	Underground tank (Sump), Water harvesting structure	Gram Panchayat

Source: Field Survey.

An additional activity of WASMO involves provision of drinking water and sanitation facilities at the village schools. As may be seen from Table 14, adequate and timely availability of water through tubewells/borewells at the school premises has been an important facility for children studying here. It was impressive that schools in all the sample villages have separate toilets for boys and girls. These toilets also have tap connection for water. The roof water harvesting structures, albeit, were absent in V-1 and V-2 pointing to the lapse by WASMO.

Table 14: Water Supply Provision by WASMO at Village Schools

Village	V-1 (North)	V-2 (South)	V-3 (Saurashtra)	V-4 (Kachchh)
School (Standards taught)	1 (I-V) 1 (VI-VIII)	1 (I-V)	1 (I-VIII)	1 (I-VIII)
Handpump	1	-	-	-
Tubewell/Borewell	2 (connected to tank)	1 (with RO plant)	1 (with sump)	1 (connected to tank fitted with water filter device)
Adequate and timely availability of water	Yes	Yes	Yes	Yes
Boys toilets	1	1	1	2*
Girls toilets	1	1	1	2
Roof water harvesting structure	—	—	Functional	Functional

Note: * One toilet does not have tap water connection.

Views regarding the performance and approachability of WASMO in managing the water supply structures have been summarized in Table 15. As may be obvious from the responses, the Pani Samitis have been undertaking operation and maintenance activities; they consult WASMO, if necessary. While the role of WASMO during the formative years has been acknowledged as satisfactory, the attention and support have declined over the years.

Table 15: Functioning and Monitoring of WASMO Activities/Facilities

Village/ Mechanism	Managing Difficulty	Visits to Monitor WASMO Activities/ Facilities	Opinion on WASMO's Performance
V-1 (North)	Villagers manage themselves Approached WASMO for motor problem, but they would do it after 5 years Concerned over decreasing groundwater level	WASMO personnel had come last year in overseeing documents of Pani Samiti	Installing pipeline for the village was helpfulMotor with higher HP required
V-2 (South)	Pani Samiti solves most problems	WASMO personnel from Surat office visit at times	WASMO's work is satisfactory
V-3 (Saurashtra)	Pani Samiti solves most problems In cases, approach WASMO	WASMO personnel rarely visits	Easy access to water after WASMO's intervention contributed to overall development of the village
V-4 (Kachchh)	Pani Samiti solves most problems WASMO also helps.	Unlike earlier phases, no one from WASMO comes these days	Old tank has been defunct since 1985, but WASMO not keen to build a new one.

17. Issues in Governance Deficit

Instances of impropriety in governance attributed to WASMO have been brought to light through the national media. A recent report[9] has been indicative of lapses in managing the programme:

The country's apex auditor has found that Gujarat's key water supply agency

[9] http://www.indianexpress.com/news/key-water-supply-agency-wasmo-pulled-up/930847/

lacks the ability to mobilise the public, dug wells to benefit private farmers (which is not allowed), and left four-fifth of its expenditure unaudited. The Comptroller and Auditor General's audit of Water and Sanitation Management Organisation (WASMO) says, "The state government could achieve water distribution schemes in 7932 (44 %) villages by 2010. In violation of guidelines, wells were dug in private land benefiting the private land owners, who used these wells for irrigation purpose." WASMO dropped 276 villages from water supply schemes for want of social mobilisation, the CAG notes, adding there were delays ranging from 18 to 45 months in rendering services of social mobilisation, capacity development, etc. by the implementation support agencies. "Testing of water by field Test Kits and feed back to affected villages, etc., had not achieved desired results... Operation and Maintenance Fund meant for Swajaldhara was paid to Gujarat Water Supply and Sewerage Board by Government of Gujarat," it said, highlighting the diversion of finances.

Similar reports suggesting irresponsibility on the part of WASMO in allowing water pollution to rise in villages around the industrial belts of south Gujarat, namely, Vapi, Ankleswar and Nandesari. As the report[10] observes:"About 32% of the state's drinking water sources were found to be "contaminated" in a premonsoon survey, but affected villagers were not alerted, claimed CAG. Though there were "alternate sources of safe drinking water" in 4215 villages, the top state body, Water and Sanitation Management Organisation (WASMO), remained indifferent and did not alert the villagers. The report blamed the lackadaisical attitude of the state government, including agencies like Gujarat Pollution Control Board (GPCB), for ignoring effects of pollution on human health."

18. Concluding Observations

It is important to observe that since almost over a decade now, relevant and comprehensive official statistics on various aspects of drinking water and sanitation have become unavailable or not easily available. This is quite in contrast to the situation prevailing earlier. These relate to reliable data on habitations classified as Fully Covered (FC), Partially Covered (PC) and Not Covered (NC) as much as those concerning villages or habitations

[10] http://articles.timesofindia.indiatimes.com/2012-04-02/ahmedabad/31274402_1_cag-report-water-pollution-gpcb

afflicted with chemical and other contamination as excess fluoride, excess nitrate, and excess salinity, etc. Similarly, it has been a daunting task to access official information on implementation of various schemes like regional or group schemes, individual schemes, Narmada based pipeline scheme and so on. For instance, the evaluation study on WASMO's ERR was not available for scholarly reference.[11] The absence of and inaccessibility to such documents on this vital sector has restricted meaningful analysis and course correction as would have been required. The conspicuous absence of *independent, systematic* and *comprehensive* evaluation of WASMO interventions, thus, remains a serious roadblock in evaluating the nature and extent of achievement of this heavily-publicised SPV in the sector.

Moreover, there is hardly any data available on regularity, adequacy and quality of drinking water by habitation and by season. Little is known about if socially marginalised communities (SCs, STs, OBCs and religious minorities) have been sidelined under these schemes. Further, we have no information about the dynamics of *functioning* of Pani Samitis as different from their *formation*. For instance, with the completion of the term of a Pani Samiti within the stipulated two-year period the following new Pani Samiti often have members with conflicting interests or lack necessary support from their predecessors. Concern has been expressed regarding the centralising tendency of the WASMO hierarchy and weakening of participation of community based organisations. Staff shortage and high attrition have implied that effective governance, including responding to village level needs in the sector, has been compromised. The eventual entry of the corporate entities in this 'community managed' programme has now been possible with companies offering to pay the *popular* contribution on behalf of the villagers/users through the CSR route to comply with the requirement under the new dispensation of the Companies Act. Above all, gross neglect of rural sanitation has continued to remain a splodge on the records of WASMO.

As over a decade has passed since its inception, WASMO as an approach needs to be thought through and evidence assessed rigorously in the interest of the community.

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[11] Referred to as 'Rapid Assessment Study by GIDR 2007' in Sama et al. (2008: 132)

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