July 2006

Democratisation of water management: Establishing a paradigm shift in the water sector

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The Tamil Nadu experiment with governance reform

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A paper prepared for a seminar on 'Reforming public utilities to meet the water and sanitation Millennium Development Goal' at the UK's Department for International Development, 4 July 2006, organized by the World Development Movement and Water Aid. This paper is for Private Circulation Only.

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1. Introduction

"(The) water crisis is largely our own making. It has resulted not from the natural limitations of the water supply or lack of financing and appropriate technologies, even though these are important factors, but rather from profound failures in water governance … Consequently, resolving the challenges in this area must be a key priority if we are to achieve sustainable water resources development and management."
- UNDP on water governance[1]

There are many influential studies[2] which show that the solution to the global water crisis is not in increasing investment or introducing better technology but in improving water governance.

Nonetheless, reports of numerous conferences, repeat the same jaded mantra: increase investments, introduce more technology, downsize public utilities, curtail the role of government and bring in the private sector.

The addition of newer policy prescriptions, sometimes described as paradigm shifts, do not get much attention. Ideas include: greater community participation through an increased sense of ownership and participation by intended beneficiaries or `consumers'; a shift from supply driven to demand responsive functioning; a shift in the role of government functionaries from being `providers' to `facilitators'; and moving towards greater decentralization in water supply function.

An important question is seldom asked: what happened to the billions of dollars worth of investment in the water sector worldwide in the last two or three decades? What is inexplicable is that in the absence of any scientific evidence or assessment of the type of water assets created by prior investments, or details about how long they remained useful or reasons for their collapse, more investments are sought to answer the water crisis.

It is not the purpose of this paper to argue that new investments are not required to address the challenge of providing safe, adequate and sustainable water to all human beings. To the contrary, while acknowledging the necessity of raising investments to ensure water supply, what we would like to stress is that the solution to the water crisis can be found only by breaking out of the stereotyped solution frameworks adopted until now. We would like to suggest

[1] http://www.undp.org/water/about_us.html, accessed on 12/06/2006
[2] See for example the United Nations World Water Development Report, `Water for Life, Water for People', Challenge 11, `Governing Water Wisely for Sustainable Development'. "The water crisis is essentially a crisis of governance … Weaknesses in governance systems have greatly impeded progress towards sustainable development and the balancing of socio-economic needs with ecological sustainability".

that a much more cost effective but important solution would be to initiate comprehensive governance reform work within the water sector.

This paper highlights one such effort to fill this gap in water governance reform, initiated in the rural water supply division of the Tamil Nadu Water Supply and Drainage Board (TWAD) in the south Indian state of Tamil Nadu. The major state level utility reform exercise titled, 'Democratisation of Water Management' was launched in early 2004 and is still continuing at the time of writing this paper in June, 2006.

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2. Water governance reforms: The context and perspective

According to the Government of India, coverage of safe drinking water to the rural populace rose from a mere 18 per cent in 1974 to 95 per cent in 2002.. This was achieved because of the huge investments made by the Government of India and technological intervention in countrywide and statewide programmes. One of the key components of the water policy of the early 1970's, when large scale water supply schemes were launched nationally, was the strategy to tap ground water.

The consequent strain on ground water aquifers[1], better described as an 'assault' on the natural water system, was so high and occurred at such a speed that there was no way that the water table could recharge and refill itself during monsoons. In the state of Tamil Nadu, it is common for water tables to have declined to as much as 300 metres in some of the western districts. As one commentator describes it, "The triumphant success of well-drilling in India is now helping to shape a potential catastrophe". (Black, 2005, 9).

Over-exploitation and droughts have reduced the annual per capita availability of fresh water to 840m^3 in Tamil Nadu. This is much below the national average of 1200m^3 and is also below the 1000m^3 level which is the international measure of 'water scarcity'. Severe water stress will impact long-term availability of drinking water and in turn the productive livelihoods of the people of the state, especially the vulnerable.

2.1 Changing policy paradigm: Shift to community participation, decentralisation and reducing the centrality of public managers

This dismal situation of acute water stress growing in the 1990's is the context for the important policy shifts that swept the water sector worldwide, affecting India as well. These reforms focused on enabling greater community involvement in water schemes, with genuine emphasis on ensuring gender participation, and also changing the rules of the water game with the hitherto all powerful water technocrats, who decided on all water schemes, to act as just one - and not the only - player in the water sector.

[1] To illustrate, nationally the number of power driven pump sets tapping ground water rose from around 25,000 in the 1950's to more than 20 million by end of 20th century. (Planning Commission Report).

In the new water regime, potential water users were brought into the centre stage of making decisions on choice of technology, choosing location and site schemes, implementation of schemes and future maintenance. Schemes would henceforth not be free as before, users would need to bear part of the capital costs of new schemes and agree to pay user fees. They would also have to take charge of managing the schemes in conjunction with the local village body, the village 'panchayat'.

2.2 The challenges of ensuring water governance reform

Whatever the nature of sector reform initiated in the last two decades, of the many problems characterising the water crisis, four stand out:

1. The issue of a significant and growing section of marginalised people being excluded from provision of water service - increasing numbers of `unreached' people, be it in rural or urban areas

2. The continued prevalence of inequity in the distribution of water

3. The problem of water sustainability covering the entire gamut of water management issues from effective management of water sources to conservation and preservation of water bodies and sources

4. An uninvolved technocracy with an entrenched mind set.

Any attempt of trying to bring about water sector reform would need to thus address these four core areas if any sustainable solution was to be found. It is within this framework that the governance reform in TWAD was undertaken.

2.3 Background to TWAD

The Tamil Nadu Water Supply and Drainage Board (TWAD) was constituted under the Tamil Nadu Water Supply and Drainage Board Act (1970) for the purpose of regulation and development of drinking water and drainage in the state of Tamil Nadu barring the Chennai Metropolitan Area. TWAD as an autonomous corporation set up by the State Government, thus had exclusive mandate over all drinking water projects in the state.

The Board is responsible for investigation, design, execution and technical assistance. Operation and maintenance functions are generally the responsibility of local bodies. Administratively, four regional offices, each headed by a Chief Engineer, handle the field work of TWAD. Functions such as design, planning and research are done in a centralized manner from the Head Office in Chennai (formerly Madras).

TWAD prepares its own budget for execution and operation of projects which is approved by the Government of Tamil Nadu. The chief funding sources are from the Government of India, the state government, loans from financial institutions (such as the Life Insurance Corporation and Housing and Urban Development Corporation) and the World Bank.

Prior to the change management process, TWAD's two main modes of functioning were:

1. Individual Power Pump Schemes (IPPS) for individual village panchayats. The local bodies represented their needs to district collectors who in turn directed the requests to the executive engineer of the rural water supply division in the district. The executive engineer prioritises requests for new schemes based on actual village assessment of need and prepares cost estimates for IPPS which is then approved by the head office of TWAD. Thereafter the engineer calls for tenders and executes schemes. On completion of the IPPS, it is handed over to the local bodies who assume ownership and responsibility for the scheme. The power pumps are maintained by local bodies with their own funds assisted by field engineers attached to the power pump maintenance wing at district collectorates.

2. Combined Water Supply Schemes (CWSS) which have become necessary due to the falling ground water table as well as the quality problems experienced by hand pump and other ground water sources. By definition, these piped water schemes are capital intensive and may not be cost effective for remote habitations. Operations and maintenance are also more complex and beyond the scope of local communities to manage on their own. TWAD had implemented CWSS that have benefited more than 15,000 out of a total of 81,787 rural habitations in the state. They are maintained by the operations wing of the TWAD Board with regard to the common components and supply water to local bodies in bulk quantity. The in-village components, distribution and tariff collection is done by the local bodies.

2.4 The crisis of water in Tamil Nadu

Similar to the experience in many other states during the initial periods of the 1970s, a virtual water revolution was ushered in through the introduction of hand pumps in different parts of the states. The ubiquitous hand pumps became the symbol of provision of protected water supply. However with the advent of pumped out, piped water supply, a major change swept both the water providers and local communities. Slowly, yet strongly, the emphasis shifted from introducing hand pumps to introducing powered pumps. The bore pumps and the overhead tanks now replaced the former hand pumps, as symbols of water service and delivery. Both communities and engineers embraced the technology centred, investment-heavy piped water systems as the panacea for water supply problems.

It is significant to note that in terms of distribution, 64.8 per cent of water supply schemes rely on piped water supply and only 18.4 per cent on hand pumps according to the National Family Health Survey of 1998-99. In the rural areas of Tamil Nadu, deep bore wells constituted 77 per cent and shallow bore wells 11 per cent - 88 per cent of all sources of water supply relied on bore wells for water.

In Tamil Nadu, 96 per cent of all sources of water are groundwater based. The phenomenal spurt of piped water schemes across the state in the eighties and

nineties had its eventual impact on ground water tables. Out of the 385 water 'blocks' in the state, 138 were identified as over-exploited, 37 as at critical levels, 105 as semi-critical and 8 as saline. Only 97 blocks were identified as safe. Meanwhile, of the total 81,587 rural habitations in the state, about 27 per cent are affected by quality. Of these affected habitations, about 25 per cent do not have safe sources.

Overall, a challenging scenario presented itself to all those concerned about and involved with water at the start of the new millennium. Despite occasional good monsoons, the first five years of the new millennium witnessed the cumulative impact of years of poor rainfall in Tamil Nadu. Near drought conditions did little to help recharge already precarious ground water tables, as data in the earlier part of this approach paper shows. Unregulated mining of water and un-coordinated use for irrigation and industry only highlighted the deleterious effect of the absence of a rational and integrated water policy framework.

Technocratic approaches of the agencies providing water did not lend themselves adequately to stakeholder inclusive methods and lacked capabilities to enhance peoples' participation. Absence of a sense of ownership and alienation from meaningful association led to a lack of involvement of the users and stakeholders in water management and reluctance to participate in ensuring sustainable drinking water use practices.

Coupled with an outdated approach and complaints of inefficient service delivery, the water crisis presented itself as a complex multidimensional problem calling for inputs from a variety of disciplines, perspectives and experiences.

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3. Democratising water management: The process

The current change process was launched at the end of 2003 in the background of both the acute water crisis detailed above, and the changing institutional paradigm in which the water engineers were no longer seen as only the sole providers but were to play a different and expanded role of being 'social engineers' and 'facilitators' of community participation in the first phase, and of competing with other players in a vastly changed water supply scenario in future phases.

It was apparent that older perspectives and responses were not only insufficient but also inappropriate in dealing with the challenging situation which presented itself to the TWAD Board in early 2004. It was equally clear that there was no alternative to launching a serious introspection of current technological perspectives underlying TWAD's style and nature of functioning. TWAD also needed to review its relations with the community and other stakeholders including political executive, the willingness of individual engineers in the organisation to critically re-examine their mode of functioning,

relationship with the community and personal issues of values, ethics and behaviour.

Given the imperatives of a crisis of water delivery mixed up with the challenge to the future relevance of the organisation, the rural water division of TWAD decided that the only way forward was not to regurgitate old solutions but to start afresh: by going back to ask fundamental questions about the need and relevance of the public utilities, the values and vision it should embody, distortions and corruptions in practice, and the shape of future direction of change efforts to reinvent a role and relevance for itself.

In effect, TWAD launched an ambitious process, covering the entire statewide department, of personal change and institutional transformation. Towards this end, almost the entire population of engineers covering all levels underwent personal, group and collective exploration and discussion of issues in small groups of 30-35 persons each, in intensive residential workshops of 5 days.

The change process was structured around interventions at three levels:

1) Workshop: Space for exploration
Where engineers could critically examine, explore and debate issues relating to personal, professional and institutional issues;

2) Village/Community: Site for experimenting with learning
The place where engineers forge new relationships based on norms of equality, equity, democratic functioning, respecting dignity, ensuring reaching the unreached and emphasizing collective solution finding.

3) Workplace: Sphere for internalising learning into formal systems
The work spot as the place where the formal system impacting the work environment and performance had to be the site in which changed values, norms and visions of functioning had to be rooted.

Given the hierarchical nature of relations within the TWAD, it was important to create a training context which promoted a sense of egalitarian relationship amongst participants, free exchange of views uninhibited by official positions and an atmosphere promoting critical discussion. A traditional Tamil cultural tradition called the *koodam* was adapted to present day circumstances and made the basis for interaction amongst all participants.

Between May 2004 and June 2006, 350 engineers, from the senior most to the youngest engineers, were involved in core workshops over five days. The aim at these workshops was to evolve a broad consensus amongst all engineers that they needed to accept the imperative of change management. First of all this had to be at a personal level and thereafter be willing to be part of the collective effort to work internally in changing working culture, response patterns and sense of accountability and responsibility, and externally to build strong bonds of egalitarian relationships with the stakeholders in particular and community at large, around issues of community ownership, participation and democratic functioning.

Each participant was encouraged to initiate two small change projects, one in their immediate work area and another in work with the community. The plan of action included a time-line and set of indicators to evaluate their own functioning.

As the change process gathered momentum, a change management group came to be formed to study made up of volunteers who came forward to champion the change process within and outside the organisation. Care was taken to ensure that the change management group was as diverse as possible, accommodating people from different age groups, experiences, educational backgrounds and regions.

3.1 Change processes: Intervention design

There were three broad areas for intervention.

3.1.1 Attitudinal transformation

Amongst individuals – covering the manner in which individuals perceive their own roles and functions and nature of relationship between themselves, the Water Board and the community at large.

Within the organisation – encompassing the manner in which the organisation relates to the ordinary citizen who is now being addressed as a 'consumer' of the services offered by the Board, with the privilege of rejecting the services of the Board in favour of other private players.

Amongst key stakeholders – the larger change effort will also have to include changes in the way other stakeholders and the community at large also perceives the relevance and importance of the Board and the services it offers.

3.1.2 Perspective changes

Recognising that the thrust of all service delivery institutions, and in particular in the water supply sector, should be '***reaching for the unreached***' in a manner ensuring equity and based on norms of social justice.

We can highlight some of the more important components of the perspective changes that needed to be brought about in the internal functioning of the water utility's functioning.

Shift from access to service delivery:
This approach, in effect, was rooted in the view that the citizen being supplied with water was considered not merely a consumer served by the water delivery system but as a citizen, a key stakeholder with a right to safe, adequate and regular water. By acknowledging the right of the citizen, the water department was recognizing and reflecting a shift, in self perception, from being sole determinants of all water related policies, planning and implementation to being one of several, albeit important, players in the water field.

Shift from providers to partners:
The water providers responsible for delivery of services were also accountable for the outcomes (ie, effectiveness with which they performed and ensured satisfactory delivery of the services, acknowledging these to be a right of the citizens). While acknowledging 'citizenship' rights, the arena of citizen responsibilities in managing a scarce resource were brought into the frame of the partnership that the TWAD functionaries sought to put in place with the communities accessing drinking water.

Shift to sustainability enhancement approach:
The changed perspective of examining system performance around issues of efficiency and effectiveness is grounded in a much more pressing imperative; ensuring the sustainability of the water system involving issues of conservation and scientific, rational and appropriate use of water. The sustainability approach would have to be rooted in a holistic, integrated and multi-dimensional perspective on changes in the water sector.

3.1.3 Institutional transformation

Encompassing issues of bringing about changes in the institutional culture of the organisation focusing on issues of internal democratic functioning, respect for individuals, norms of relating. In general creating an enabling working environment and responsive work culture amongst all levels of the utility personnel.

Emphasising the importance of creating relationships based on respecting dignity, self respect and self-dependence of all persons and groups who, together, have to partner the enormous task of preserving nature and water systems for future generations

Renegotiating relationships with all other stakeholders inside and outside the water sector.

Energising new partnerships amongst key stakeholders through values of equity and social justice and evolving a shared vision of ensuring 'reaching the unreached' as the core thrust of the water delivery system.

3.2 Critical issues: Dimensions of the challenge

1. One of the most important concerns was to strengthen water security by ensuring the supply of adequate amount of safe drinking water to all citizens of the state without further endangering the already precariously poised water system.

2. Another focus was to encourage and enable active partnerships between government departments, local bodies, actual stakeholders and wider representatives of civil society, with a shared goal of building sustainable water systems.

3. To initiate concrete efforts towards institutional transformation of both formal and traditional water management systems, to ensure

restructuring water access systems which would realize new norms of conservation, appropriate use of technology, knowledge and skills, and approaches based on values of equity and social justice thereby resulting in better functioning of the water institutions and effectiveness of water delivery services.

4. Equally importantly, to focus on working towards reviving traditional water bodies and management systems while sensitizing and empowering stakeholders and the local community to play a more active and intense role in managing the water systems.

5. To achieve convergence and coherence in policy formulation, planning and implementation to bring about `Convergent Community Action' by bringing together state service provider community and officials with an informed, involved and active community.

6. To create a sense of common ownership, identity of interest and understanding of mutually complementary roles of the various stakeholders aimed at enabling sustainability of water systems.

7. Focus on capacity building of different stake holders including government officials, women and local communities, local bodies, NGO representatives and elected representatives.

8. The eighth concern is strategic utilization of the technocratic and managerial expertise of the state agencies as the starting point to transform the organisation into a more people focused, community responsive and publicly accountable organisation.

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4. Outcomes

A few months after the initiation of the change management process inside TWAD, the impact of the process started to manifest itself. It became apparent that the first batches of engineers, charged with a new sense of purpose and given the space and encouragement to not only critically re-examine prevailing water management practices but to actually experiment with newer approaches were changing practices in the field.

This was particularly so as one of the main issues in the change process initiated was to persuade participating water engineers to evolve a set of parameters to evaluate in a critical manner the context of water schemes in the villages during the field visit. These covered issues of a socio-economic analysis of the need for new water schemes, community wise, studying the supply aspect in the context of sustainability and environmental considerations, issues related to recovery of operation and maintenance costs and contribution to capital costs, the importance of sanitation schemes and the willingness of village residents to accept changed sanitation methods.

In effect two broad categories of actions were being implemented:

1. The need, necessity and relevance of proposed water schemes was being self-critically reviewed in terms of the need for new investment, exploring the potential of expanding, rejuvenating or repairing existing water schemes, reviving abandoned or non-completed schemes.

2. A conscious attempt was made to evolve a new mode of relating with the community. The initial efforts to improve relations with the community produced almost instant result the moment engineers started relating with the community as people and not subjects. Though subsequent responses, especially requiring stakeholders to assume additional responsibility and involvement required far greater effort, the fact that engineers were visiting and working with them to find solutions struck chords with local people.

It was in the initial period, during the fourth batch of workshops in August 2005, that the first major breakthrough was made which was to have a profound impact in the very paradigm's functioning.

In the course of the discussions relating to the type of challenges confronting the department and the type of strategies that needed to be adopted, a tentative proposal got articulated which evoked very intense response from almost all the participants. This related to the strategic thrust of TWAD which was focused on tapping ground water sources and construction of overhead tankers, whether as IPPS or as CWSS.

As participants reflected on constraints and pressures arising from target oriented schemes a critical view slowly emerged articulating the need to take stock of the situation, study the existing pattern of schemes and to make course alterations as found necessary. This found articulation in the form of a draft resolution, which after many rounds of discussions throughout the length and breadth of the statewide department was finalised as follows:

Box 1. The Maraimalai Nagar Declaration:

- **We will evaluate the existing schemes and ensure that the schemes are put into optimal use first.**
- **Then rehabilitation will be undertaken wherever necessary along with revival of traditional sources.**
- **This will be taken up before taking up any new schemes in the block.**
- **We will all aim at 10 per cent increase in coverage with the same budget.**

The momentous significance of the Maraimalai Nagar Declaration becomes apparent when we consider the fact that TWAD, like many other state controlled autonomous public utilities, is not supported for its revenue from

state budgets, but instead depends on revenues earned from schemes it implemented. For many years, TWAD Board was entitled to 18 per cent of all budgeted schemes, from which it would need to take care of salaries, operating expenses and other costs. By this logic, the more number of schemes TWAD undertook the greater would be its earnings. In 2002 the Government reduced the earning percentage from 18 per cent to 13 per cent. Apart from leading to reduced earnings, there was apprehension in the minds of engineers about future financial stability or viability of the TWAD given the sweeping changes overtaking the water sector and the slow advent of the private sector in the water arena.

Seen against this background, the unanimous acceptance of the Maraimalai Nagar Declaration was not just historic but a very courageous break from the past paradigm. In effect the engineers were voluntarily accepting reduced earnings by agreeing that before they undertook fresh or new investments they would:

1. Evaluate existing schemes and ensure that they were put to optimal use first

2. Rehabilitate old or existing schemes

3. Examine the possibilities of reviving traditional sources

4. Only after exhausting all these stages, if there was still need for fresh investment, they would recommend and implement new schemes.

Initially there was resistance and opposition to the declaration within the organisation. Some saw in it a criticism of past policy; others saw it as striking at the core of the functioning of the organisation and as potentially damaging to the department. Yet others saw it as articulating something they had felt often, but had not yet put together as a perspective for action. In order to evolve a consensus, discussions were initiated at formal and informal level throughout the organisation on the Maraimalai Nagar Declaration.

Despite the contested nature of the Declaration, slowly a consensus evolved that the Declaration was not only acceptable but also required to be pushed inside the organisation, with the involvement of other stakeholders as well. The process of widening the consensus and ensuring implementation was strengthened by bringing on board District Collectors, policy makers, opinion makers and members of civil society. The involvement of local people was strategically important as they had grown used to the idea that tackling water scarcity could only be through new schemes involving sinking new bore pumps and constructing overhead tanks.

As the state level discussion on the Maraimalai Nagar Resolution progressed with more engineers implementing it in the field, a critical issue forced itself: where were all these change efforts going?
Institutionalising Change Management: Formation of the Change Management Group (CMG)

The increasing acceptance and implementation of MM Nagar declaration pushed the change process to the next phase emphasizing the need for formation of a core group at the state level, which would spearhead all change activities. The nature, spread and impact of different change projects initiated system wide required to be coordinated, planned, monitored and supported. This led to the formation of a Change Management Group (CMG) at the state level.

Building on the spirit of the *koodam*, CMG members were those who volunteered to be part of the exercise. Their work as CMG participants would be over and beyond their regular work and they would not get any special concessions or rewards for being CMG members. Care was taken to ensure that the CMG was a representative body having representatives from different age groups, covering all the regions of the state and having a cross section of people. The newly formed CMG evolved its own mandate for functioning: (i) To work further on the outcome & strategize for change; (ii) To develop skills in managing change through Pilot Projects; (iii) To be an in-house group to dialogue with the rest of the system and to (iv) Empower individuals and groups through in-house capacity building & creating a core team to envision and lead the change process. The Statewide CMG originally had 43 volunteer members.

Creating a New Vision

The need to have a larger vision of the future course of the utility's functioning became an imperative. To chart out the contours of a broad vision for the TWAD Board, a collective exercise was initiated. In the first phase, the 43 members of the CMG, the body of engineers who had volunteered to pioneer the change process, sat for a collective exploration of issues confronting the water sector in general and the crisis looming in the water supply sector in the state, and evolved a Draft Vision. This was taken up for discussion statewide, including with stakeholders in the 145 pilot villages. The final form of the Vision that came to be evolved is as follows:

Box 2. Our Dream - Secure water for all, forever

Our Vision

1. **Conservation of nature as a guarantee for the future water**
2. **Vibrant, revived and recharged water bodies**
3. **Assured, equitable and sustainable water for all**
4. **Successful community managed water supply system through active participation including women and poor**
5. **Safe disposal of solid and liquid waste for clean and healthy environment**
6. **Cost effective technology options to ensure Local maintenance and sustainable Financial management**
7. **Formation of Common Water Regulatory Authority for judicious use of water for all sectors**

The newly evolved Vision went far beyond the realms of what a water engineer would generally be engaged in. For the first time, the utility's functionaries saw their role as guardians of not just water resources, but of conserving nature itself. Accepting a broader mandate for themselves freed them from viewing their roles in a narrow, limited manner allowing for greater creativity and innovation in their functioning.

To breathe life and to give concrete shape to the Vision, in the next phase, the CMG took each component of the Vision and evolved a detailed action plan to realize each of the dreams. The details were so fine tuned they included a proposed time line of activities, parameters for evaluating progress, the varieties of stages to be traversed and so on. What resulted was the creation of a detailed template of action to guide the water engineers. The creation of the template for actualizing the vision and its implementation as a community based project in over 100 villages came to be known as, 'Total Community Water Management'.

Encompassing the Vision, the CMG sets itself to work with the community towards:

- improved systems and system management for better service delivery
- protecting and improving the source potential
- revival of traditional water bodies for other uses and recharge
- ensuring equitable water supply especially to weaker sections
- a clean environment in and around water points
- regular disinfection practice and periodical water quality testing
- better O&M practice for low user cost
- judicious use of scarce water and to undertake conservation measures
- practice of waste water reuse and recycling
- 'Reaching the unreached'

The change management and capacity building intervention was from the beginning, conceptualised keeping in mind the field reality. The field projects were the testing grounds for experimenting the learning of the workshops. In a sense, the project villages were the experimental workspace to implement many of the concepts learnt through the exploratory process of group learning in the workshop.

The statewide projects involved about 80 Rural Water Supply sub divisions of TWAD Board. The focus of the project was to take up a holistic approach to water supply by involving the community in formulation, implementation and subsequent management of water supply system including reviving of traditional practices. The fruits of this new way of thinking and working, started manifesting early, highlighting the potential of such change processes in improving the delivery systems of vital services.

It is against this backdrop of continued experimentation, learning, exploration and action that we now turn attention on the main outcomes. The following

tables highlight the impact of the new perspectives in 140 Village Panchayats (VPs) where pilot change projects were implemented.[1]

Box 3. The main outcomes as of end-April 2006 (From 472 villages under 145 Panchayats across 29 districts)

Contribution: Rs.1.42 crores contributed by 50,896 households in 145 village panchayats, in 29 districts reflecting their sense of ownership

Investment cost: Overall reduction by 40-50 per cent: average project costs are Rs.1827 per household, while regular schemes are Rs.4580

Low cost options: 50 per cent of schemes are now rehabilitation such as pipeline extensions instead of more expensive options

Savings: Savings of between 8 per cent to 33 per cent have been achieved over the regular budget. Operation and maintenance expenditure reduced to Rs.18.6 per household

Equity: 65 per cent of schemes were for groups where the majority were below the poverty line including scheduled castes

Sustainability: 90 per cent households are undertaking rainwater harvesting; 150 traditional water bodies revived

4.1 Shift 1: Choice of technology option

One indicator about the extent to which the Declaration was being implemented is to see the type of choices engineers were able to persuade local village panchayat heads and the community to adopt in the 140 VPs. The first of the following two tables shows that all the 140 pilot villages chosen for implementing the change projects had water supply levels less than the government stipulated 40 lpcd (litres per capita per day). Thus, the selected villages, as per water supply requirements, needed new interventions for water supply.

Table 1. Nature of scheme opted in pilot villages

Description	No. of Schemes	Percentage
Hand Pump, Mini Power Pump	28	8
Individual Power Pump	128	39
Extension of Pipe Line	23	7
Expanding existing sources	33	10
Rehabilitation of old	97	30

[1] Note: Although there were 145 VPs where change projects were introduced, data for the present report could be collated completely only for 140 VPs.

schemes		
Combined Water Supply Schemes	8	2
Scheme Improvement Programme	13	4
Total	**330**	**100**

From the department's perspective what is most important in the choice of schemes shown above is that the more investment centred schemes, the IPPS and CWSS, constituted only 41 per cent of schemes selected. Rehabilitation of old schemes was as high as 30 per cent, extension of pipe lines to serve new areas 7 per cent and source augmentation 10 per cent. In all, 47 per cent of schemes finally decided for implementation and executed in the 140 pilot villages included alternate options as the first choice. This was breathing life to the Maraimalai Nagar Declaration. As we shall shortly see this approach was to have a major impact in the cost effectiveness of schemes.

It will help to gain a better appreciation of the implications of the above mode of functioning only if we consider the water supply levels of the chosen 140 villages. All the 140 villages were chosen had a supply level less than 40 lpcd. Of them, 50 per cent of the villages had supply levels less than 20 lpcd indicating acute water scarcity, and another 34 per cent had supply levels ranging between 20-30 lpcd. The significance of the choice of technology is that engineers and community members jointly explored different technology options in the context of the new vision and charter for work and finally consciously chose not just cost effective solutions but also environmentally sustainable choices.

4.2 Shift 2: Finding more cost effective solutions

Nearly 50 per cent of schemes have low capital intensive (ie, cheap) focusing mostly on rehabilitation: extending pipeline, mini power pumps or hand pumps. This reflects a different way of decision-making, based on community ownership, choice and willingness to manage the operating costs. The following two tables highlight this process.

Table 3. Cost range of schemes

Cost Range (Rs. In '000s)	No. of VPs	Percentage
< 100	2	1
100 to 500	36	26
500 to 1,000	46	33
> 1,000	**56**	**40**
Total	**140**	**100**

The full implication can be gauged when we consider the capital cost range per household where there is an emphasis on most households paying the lowest costs for schemes.

Table 4: Capital cost range per household

Cost range per household	No. of VPs	Percentage

(in Rs.)		
< 1000	57	41
1001-2000	48	34
2001-3000	21	15
3001-4000	7	5
4001-5000	4	3
5001-6000	1	1
> 6000	2	1
Total	**140**	**100**

One of the most significant impacts, which portray the inherent potential of this process of personal and institutional change, is the reduction in the capital cost per household by 40 per cent in the project villages. It has been found that the average cost per household in non-pilot schemes was about Indian Rupees (Rs) 4436 (on habitation basis) whereas in the pilot batch the average cost is only Rs.1555 (on village basis). In real terms this means the possibility of additional coverage of 400,000 households every year, within the same budget.

4.3 Shift 3: Towards community involvement

As a measure of the involvement of the community and its sense of ownership, the project has envisaged 10 per cent of the capital cost as a community contribution, in cash or labour. Over a period of one year, the community has contributed Rs.14.2 million in cash. Over 56,000 households have contributed to implement water supply or recharge schemes in 145 village panchayats. One of the more significant features has been better targeting of villages in terms of those truly requiring improvement.

In the project about 65 per cent of the schemes have targeted villages with more than 50 per cent BPL population. This is in sharp contrast to the generally low targeting of regular schemes.

4.4 Shift 4: Towards savings

In line with the Maraimalai Nagar declaration many of the districts have taken up vigorous scrutiny of all investment proposals, in the search for sustainable and cost effective solutions. The savings over the annual budget have been as high as 18 per cent of the regular budget in Namakkal district, 36 per cent in Tiruvallur district and 44 per cent in Erode district. In fact in Namakkal, the district team has utilised the savings to take up a unique community participatory source rehabilitation programme in 220 habitations by involving the community in decision making and financing the projects.

4.5 Shift 5: Towards conservation

The finiteness of water availability was a constant message of the project. The community was encouraged to take up ground water recharge activities including revival of traditional water bodies as a first step to revisit historical practices of community living and sharing of scarce resources. Water balance studies informing the status of water availability at micro level, for the village, was carried out in all the 145 village panchayats and shared with the

community. The community also participated in the physical implementation of 45 ground water recharge schemes. In all the project villages special Grama Sabhas were convened on 2 October and 26 January to take up cleaning and revival of traditional water bodies.

An important component of this shift was also the initiation of many programmes leading to better waste water disposal methods, which was identified as one of the essential elements in the new Vision.

4.6 Shift 6: Towards reducing operations and maintenance expenses

Adoption of appropriate technology options, ensuring timely maintenance thereby reducing potentially expensive replacements in the future, regulating hours of pumping and supply, maintaining both adequate quality and quantity all had an effect in the nature and functioning of water systems at each village. The regulation of pumping hours included (i) ensuring that the power of the bore pump was according to norms and higher end pumps were not used by the village panchayats and (ii) maintaining a cap on the hours of pumping based on the ensuring balance between quantity of water available in the source and quantity required for supply. This had a major impact in reducing the hours of pumping thereby impacting on electricity costs. Equally importantly, from the angle of sustainability of water source, the regulation of pumping hours ensured the replenishment of the water source.

In monetary terms, the following table highlights the potential inherent in the new paradigm of operation:

Table 5: Operations and maintenance cost comparison

O & M Cost	Regular VPs	Pilot VPs	
	2004-05	2004-05	2005-06
O & M Expenditure Average per VP pm (Rs)	23,908	16,041	12,182
Tariff Collection Average per VP pm (Rs)	3,048	3,501	4,756
Collection as a percentage of expenditure	12.75 per cent	22 per cent	39 per cent

4.7 Shift 7: Towards sustainability

Apart from choice of appropriate low cost, people friendly technology, the TCWM initiative led to a plethora of innovative schemes. For example tree plantations were taken up in a big way and hundreds of tree saplings have been planted in more than 120 villages. Though accurate estimates are yet to be compiled, it is estimated that the number of saplings number in the thousands. In Palangarai village in Tirupur block of Coimbatore district alone, more than 7,000 saplings have been planted with over 80 per cent survival rate. This, with the construction of almost 32 check dams has led to the water table in the village rising up from 1200 feet to 800 feet.

Other efforts have included revival of water bodies in the form of desilting water tanks, ooranies and the like in over 120 of the 140 villages which formed the pilot initiative. Rain water harvesting was revived and restored in

90 per cent of the villages and new forms of solid and liquid waste were introduced. Soak pits, kitchen garden and construction of septic tanks, not the domain of the regular engineer, became the norm.

4.8 Other results

The growing confidence of the local community with the engineers translated into direct involvement in the water supply system. As the results of an independent impact study sponsored by UNICEF showed, the impacts of a changed perspective of functioning was not only felt by the local people in the form of changed behaviour and response from the water engineer, they also could see the causal link between that and the improvement of water supply in their villages.

The UNICEF study on `The Impact of Change Management Training on TWAD Engineers' was conducted by AJ James. James notes that, without any investment by the government, and with public participation, the following outcomes have been reported so far:[1]

- Formation of Village Water Supply Committees for self-management of water supply in all 145 villages
- Roof rainwater harvesting in 90 per cent of all households with public participation and contribution
- Equitable and regular water supply in 116 villages
- Reduction in O&M expenditure by 10-30 per cent by reducing pumping hours and supply hours to match actual requirements
- Revival of around 140 traditional water bodies
- Segregation of solid waste into degradable and non-degradable wastes and disposal into common compost yards or at household level in about 80 villages
- Construction of household soak pits in about 50 villages
- Tree planting in schools, backyards and along streets by the community (especially children) in 110 villages

Discussing the summary results of the study, James notes, while the change management approach deliberately did not set down a 'blueprint' for community mobilization and participation, a few common elements are visible on the ground:

- Engineer behaviour: Trained engineers' interacted with village communities in pilot habitations differently from untrained engineers in Swajaldhara habitations. They were more willing to behave as part of the community and also involved them in discussions on possible solutions to specific water supply problems.
- Involvement and awareness creation among target groups: Trained engineers also made a special effort to spread awareness among women and SC households. Also, their insistence on maintaining records of water pumping hours, water supply hours and electricity

[1] From DRAFT FINAL REPORT on `QUANTIFIED PARTICIPATORY ASSESSMENT OF THE IMPACT OF CHANGE MANAGEMENT TRAINING TO ENGINEERS, December 2005 – March 2006 Submitted to the Tamilnadu Water Supply and Drainage (TWAD) Board Chennai, 31.3.2006, AJ James, Pragmatix Research and Advisory Services.

meter readings, and their efforts to discuss water costs and tariffs and link these to costs of water supply, served to spread the awareness of these important aspects of water supply.

- Water conservation and tariffs: Detailed discussions by trained engineers of costs and tariffs helped raise awareness of the need for water conservation and to collect water tariffs. Trained engineers also motivated communities to agree to pay a monthly charge of Rs. 10 for the use of public tap stands, and to remove 'pit taps', which is not paralleled in the Swajaldhara habitations.

Reaching the Unreached: Response of Women and SCs (Dalits)

The most important finding of the Impact Assessment study relates to the paradigm shift that is slowly impacting the functioning of the state level utility: the shift to focusing on `reaching the unreached'. Thus in the response of women's groups in the Pilot villages where change experiments had been implemented, 76% reported that the water engineer visited the village regularly, met and interacted with them, 84% reported that the engineer behaved as a community member and 61% that all this led to joint identification and actual implementation of solutions.

About 78% of the Dalits in the Pilot villages reported that the water engineer was regularly visiting the Dalit habitations, 80% said that the engineer provided them the space and encouraged them to talk and participate in village meetings and 57% reported that action was initiated on solutions identified for problems of water supply.

The study highlighted the importance of institutional and policy support to the water engineers to ensure that the gains made in the last two years were consolidated and taken forward. Equally, the study emphasizes the need to focus more attention on deeper levels of community involvement and participation, with care to ensure involvement of marginalized groups.

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5. Conclusion

At the end of two years since the introduction of a new paradigm or perspective of functioning, much has been achieved, but much more needs to be done. Several issues are clear.

Future interventions seeking to address the water crisis cannot and should not follow the time worn, stereotyped, and jaded way of seeking and pumping in new investments of money and technology while continuing to ignore the more pressing issue of reforming water governance. The issue of governance ultimately is also political as it concerns dealing with issues of power, authority and money. Greater transparency, openness and democratic functioning threatens not local communities but power elites, inside and outside government be they officials, planners, politicians and the new breed of professionals who are now ubiquitous – the consultants.

The work in Tamil Nadu shows that investing in governance reform is so hugely cost effective – the training costs are pitifully low compared to the cost

of investing in technological options. Then again, when solutions are sought to be found from within – be it within the culture and practice of the water utility, or from within the traditional and cultural practices of communities, new bonds of relating are forged. Bonds which are based on the intuitive and learned genius of the land, which is the only way the change process can get anchored and grow.

This then should be the thrust for international agencies- to persuade, and if persuasion does not work, to pressure governments to initiate measures to bring about greater attention to the three legs of the new paradigm:

- Reaching the unreached
- Equity
- Sustainability.

It is only through such attempts that we can ensure that there are drops of water for our grandchildren and their grandchildren. As one water engineer of the TWAD Board remarked, "It's the only gift we can give to the unborn 5th generation who we will never see but who will experience the wisdom of the path we have now begun to travel".

Are international institutions, intelligentsia and concerned citizens of the world listening?

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