

**Contribution of Voluntary Organisations
in
Rural Drinking Water Supply and Sanitation Programmes in India**

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Introduction

Historically, the nature and work of voluntary organisations** in India can be broadly categorised into four types. The first is the role of the service-provider where voluntary organisations serve important needs of deprived sections of the population in diverse areas such as education, health, drinking water and the like. This role has evolved from the earlier motivation of charity and welfare for the poor and the destitute. The second role that voluntary organisations play is that of promoting development interventions in areas like rural development, environment, afforestation, income generation, irrigation, agriculture, and similar activities. Over the years an increasing number of voluntary organisations have become involved in these development initiatives. The third role of voluntary organisations has been to conscientise and organise the poor and the marginalised to struggle for their rights. In recent years such voluntary organisations have also been described as social action groups. Of late, a new form of voluntary action has emerged which facilitates networking and providing support to grass-roots activities. These are national and state level networks and federations involved in research, training, documentation and various other kinds of support systems to other organisations at various levels. Many of these specialise in a particular subject like education, women, health, environment, water resources, sanitation, etc., whilst some provide generalised support.

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** There has been a serious debate (unresolved) in India regarding the appropriate nomenclature for altruistic organisations which work outside the various kinds of establishments, whether governmental or private. For instance, the term Non-Governmental Organisation (NGO) could also include private sector profit making companies or democratic political organisations. It is because of this that there is a preference for using the term 'Voluntary Organisation' (even though, for most part, it is not voluntary) as opposed to 'Non-Governmental Organisation' (which it is and which also is in keeping with internationally accepted typology). Consequently, for our part in this paper, the terms 'Voluntary Organisation' (VO) and Non-Governmental Organisation (NGO) are interchangeable.

A review of the history of the relations between government and voluntary organisation indicates that this has been a somewhat oscillating one ranging from periods of extreme mutual suspicion and hostility to amazing environments of bonhomie and cooperation. Nevertheless, despite perhaps implicit antagonisms of the two latterly described types of VOs, the sphere of interaction has, in fact, been expanding quite significantly.

There is an unverified comment*** on the Societies Registration Act which illustrates the powerful role of voluntary associations in Indian society. The rebellion of 1857 shook the complacency of the then British rulers who instituted a wide ranging survey of the actual conditions and modes of functioning of Indian society. The 1858 report of these findings is said to have revealed two crucial grassroots institutions : the village and caste panchayats and voluntary associations that existed for a variety for purposes thus revealing the long traditions of the voluntary movement in India. The Societies Registration Act 1860, together with other similar pieces of legislation, is said to have emanated from this perception and was designed to exercise vigilance and control over voluntary associations by the colonial state! The fact that this law continues on the statute books is perhaps symptomatic of the governmental or bureaucratic mind set. However, it is not the complete picture.

As the democratic process evolves in a highly diverse and often combative society so does the place and significance of different kinds of social organisations. Paradoxically, in an excessively centralised scenario the space for flexible volatile groups at the ground level seems to be greater in a polity as large as that of India, provided the essentially democratic nature of the State continues to be functional. However, as the process of political democratic decentralisations begins to deepen, as it must for the fundamental structure to remain in tact, the space for non-political or extra political (in the electoral sense) action becomes far more competitive, if not actually threatened. Thus the debate about the role of voluntary organisations in the process of social change and economic development is not only ongoing but a growing one.

At the governmental level, there has been an increasing recognition of the limits of bureaucratic reach particularly in terms of the involvement of people in development and social change and, at the same time, a willingness to cooperate and collaborate with VOs in actually reaching the people. This very healthy attitudinal shift has been reflected in various policy statements (Eighth Five Year Plan document, in policy resolutions of the Ministries of Rural Development, Education, Health, Welfare, Women and Child Development etc., and in programme designs which are backed by earmarked financial allocations under various national social and economic development programmes.

*** '1860 Ke Kanoon', Sarva Seva Sangh Pamphlet, Rajghat, Varanasi

Whilst this has been generally welcomed by VOs as evidenced by the positive responses in getting involved with dialogues on various subjects as well as participation in programmes with financial support, there have been questions raised about whether these would lead to a dilution of independence, greater dependence and even cooption. Although there is no doubt that the quantum of financial resources being channelised through VOs has been increasing substantially, there is, in fact no evidence of any organised effort to subvert the independent voice of the voluntary sector although there certainly are instances of harassment and confrontation over specific sensitive and controversial issues at different levels. In fact, at the higher echelons of government, both at the centre and in the states, there is a far more mature approach towards operationalising a working relationship between official agencies and VOs. What would perhaps be a more vexing future situation would be to evolve a harmonious understanding between democratically elected local government bodies and VOs as this would be the cutting edge for effective functioning and indeed for creating positive spaces for each other.

In so far as water supply is concerned, in India this is a subject under the jurisdiction of the state governments, but has always attracted the intervention of the Central Government because of it being a priority item on the national development agenda. The Bhore Committee of 1944 and the Environmental Hygiene Committee set up in 1948 prepared the ground for the Government of India's promotion of water supply and sanitation programmes in the country. The Environmental Hygiene Committee had recommended 90% coverage of the population with water supply and sanitation within four decades. Unfortunately, its recommendations, especially concerning sanitation, remain unrealised even now.

This paper attempts to document the contribution of voluntary organisations in rural water supply and sanitation since the work of NGOs in these sectors has had a significant impact on the national picture. It also seeks to identify possible areas of intervention in the coming years.

Rural Water Supply Background

In the initial period following independence, the Community Development and Local Development activities took care of village water supply needs, mostly by constructing open or dug wells. This programme was supplemented by the National Water Supply and Sanitation Programme in 1954, which concentrated on more comprehensive water supply schemes requiring technical skills in design and construction. Though financial allotments were modest in the first four national Five Year Plans, the strategy was to integrate the resources and services of the field level agencies. Traditional sources were accepted as safe water sources and they were constructed wherever feasible. This continued till the arrival of the hand pump, after which the traditional sources came

to be viewed as unsanitary and were gradually pushed out of the ambit of formal rural water supply schemes.

The Centrally sponsored scheme of Accelerated Rural Water Supply Programme (ARWSP) was launched in 1972, at a time when it was realised that extensive rural poverty continued to persist in spite of two decades of planned development. In order to achieve, a greater thrust and facilitate an increased flow of resources, rural water supply was also included in the States' Minimum Needs Programme (MNP) in 1974-75. At this point of time the ARWSP was withdrawn but was later reintroduced in 1977 in order to supplement the States' efforts. Both these programmes have been continuously in operation since then, making the Central and State Governments equal financing participants through ARWSP and MNP respectively, in the countrywide rural drinking water supply programme.

The first nation-wide quantification of the problem of rural water supply was made in 1964-65. It was then estimated that about two thirds of the population lived in rural areas where it was comparatively easy to tap local sources like open wells while the remaining population required special engineering efforts in view of scarcity. A two-fold classification of problem villages was formulated: scarcity villages, which were without an assured source within 1.6 Km or 100 metres of difference in elevation; and health-related problem villages, which were prone to endemic diseases like cholera and guineaworm or which had water quality problems of excess fluoride, iron, salinity and the like.

In 1971-72, 90,000 villages were placed in the scarcity group and 62,000 villages were in the water quality problem group. Moreover, 185,000 villages were reported to have only simple open wells. In 1980, 190,000 problem villages, of both types, were identified. A more elaborate survey done in 1985 gave the figure of 227,000 villages in the problem category of which 154,000 villages were due to scarcity and 73,000 village had water quality problems.

The most recent figures as a result of another detailed survey as of March 1995 are as follows :

Total Number of villages	587,179
Total Number of Habitations	1,318,699
Number of Habitations -	
- fully covered (at 40 lpcd)	747,347 (56.67%)
- partially covered	430,377 (32.64%)
- not covered	140,975 (10.69%)

The Tubewell Phenomenon & NGOs

The involvement of VOs in rural water supply originates from their role as service provider in the fields of agricultural

development and irrigation. Organised action in rural drinking water supply first attracted attention of the VOs during the famine of 1966 in the State of Bihar. By the next drought, in Maharashtra State, starting from 1969 the group of Water Resources Development agencies within VOs, was born. National level VO apex organisations like AFPRO were founded and the 'high-speed' compressed-air driven drilling rigs had begun to arrive in noticeable numbers.

The ungainly appearance, the deafening noise, the clouds of dust, the diesel fumes and the sheer speed of the early 'Halco Tiger' drilling rigs had so much public appeal, that the famous 'Life' magazine did a photo-feature in the late 1960s of the drilling project run by the also-famous NGO personality, Fr. Vincent Ferer, then working at Manmad, in Maharashtra State.

What such high profile international coverage did in that period, was to convince the western donor fraternity and multilateral agencies such as UNICEF, as well as the Government of India, that the perfect solution had been found to meet the drinking water needs of the chronically drought stricken tracts of India. It seemed that a tubewell fitted with a hand pump appeared to be tailor-made for the parched, scattered habitations particularly in the hard rock areas of peninsular India and that an alternative had been found to the traditional water sources that had gone dry in the drought and to the more recent, high cost piped-water supply systems to townships which were being vandalised for fresh water, as they passed along rural habitations.

At the state level, autonomous Government bodies like the Groundwater Surveys & Development Agency (GSDA) in Maharashtra State and Tamil Nadu Water Supply and Drainage (TWAD) Board in Tamil Nadu State were founded and the first UNICEF donated rigs reached these bodies in 1970-71.

In UK, OXFAM hand-pulled a drilling rig through the streets for their fund-raising campaign and MISEREOR of West Germany air freighted three large, high capacity rigs for an NGO in Maharashtra in 1973. AFPRO in New Delhi equipped itself to become a technical service agency, providing hydrogeological investigation and engineering services and began processing project applications from voluntary agencies and conducting project appraisal and evaluations for donor groups.

But what did a drilling rig actually do?

Apart from the fact that it raised much dust, was infernally noisy and made a hole in solid rock like a gigantic carpenter's drill, after this noisy machine had been shut off, the end product was not very impressive. All that was left to see was a short piece of steel pipe, four inches or six inches in diameter, sticking out of the ground. While the drilling rig was working, this hole spewed out an endless cloud of dust. If the well struck 'good' water then the dust cloud changed to dirty slurry and then

to huge gushes of water. In those days, a well of 45 m was considered deep and a 90 m (300 feet) depth was very deep indeed.

The solution to the problem of getting water from this deep little hole in the ground, if it was successful, lay in 'the water lifting device' or the hand pump. The cast iron suction hand pump, with its goose-necked handle was nothing new in the shallow water table areas of the Indo-Gangetic plain and coastal tracts of the country. It took little time to make a separate brass cylinder for these pumps to become 'deep-well' pumps and for them to find their way onto tubewells in remote 'up-country' Maharashtra and Madhya Pradesh States from the iron foundries of Gujarat and the hardware markets of Bombay.

It took even less time for the same pumps to break down rapidly after they had been installed.

So, at a very early stage of the rural water supply programme, there was an awareness that a hole in the ground, even if it had found water, did not necessarily mean that water supply had been ensured, unless the pump was sturdy and was looked after.

Among NGOs, the 'drilling agencies' of Maharashtra State produced some legends during the late 1960s and early 70s. John McLeod, a Scottish missionary in Jalna, whilst on home-leave, is credited with visualising that limestone quarrying blast hole drilling rigs could just as well be used to drill for water in India. Chris Wigglesworth, a missionary and a geologist, who followed McLeod in Jalna, was one of the early users of geophysical instruments to locate well drilling sites. Gifford Towle, an American missionary in Marathi Mission, Vadala, Ahmednagar, was an agricultural engineer who set about teaching rural people to operate rigs, manufacture hand pumps and use explosives for deepening open wells. Joseph Kuckmann, trained in animal husbandry, helped Aloysius Fonseca, a Jesuit priest, running an orphanage and school, to set up the drilling operations of Maharashtra Prabodhan Seva Mandal in Nasik that eventually operated 8 drilling rigs in 1972. Fr. Meyer, originally from Switzerland, but by then an Indian national, was operating three rigs from the Technical Drilling Team, Shrirampur. Eric Jallen, a design engineer from Volvo, Sweden, was working on the Sholapur pump with Oscar Carlsson, at Sholapur Well Service and handed over their work to Olle Freberg. Dr. B. B. Singal, took leave from Roorkee Engineering College to set up the first Geological Investigation Team of AFPRO in Ahmednagar. Dr. S. T. Gujar, an Ayurvedic doctor, operated a drilling rig from Maharashtra Arogya Mandal in Pune, and Dr. V. V. Pendse, a psychologist and founder of a large school Pune also did the same. It is indeed surprising that so much was happening during 1969-73, and most of it, in the close vicinity of Ahmednagar. It was only natural that these NGOs came together to form their own federation, Action for Agricultural Renewal in Maharashtra - AFARM, which was registered as a Society and a Trust in Ahmednagar, in 1969.

Similar hectic activity was going on among NGOs elsewhere in the country. During 1969-72, Lt. Gen. Dunn and Ms. Elizabeth Reid were building AFPRO in New Delhi into, literally, a force to reckon with, and had established Geological Investigation Teams in Ahmednagar, Bangalore, Coimbatore, and Hyderabad. Mr. J. N. Kathuria drilled wells in Bihar and went on to start Swissteco Drilling in Hubli in Karnataka State. In Madhya Pradesh State, Vincent Uhl Jr., after working as a Peace Corps volunteer, finished his engineering in USA and came back to set up the E. L. C. Water Development Project, Betul, under the Padar Mission Hospital. Peter Wood in Hyderabad founded the Water Development Society that started off drilling wells like everybody else and ended up, 15 years later, as a major manufacturer of drilling rigs. Dr. John A. Thompson Wells, a thoracic surgeon in Madar Union Sanatorium provided the base for REWARDS, in Ajmer, Rajasthan that operated one drilling rig for a brief period. Bunker Roy, fresh out of St. Stephen's College, New Delhi and after some work with REWARDS, founded the Social Work & Research Centre at Tilonia in Rajasthan state, close to Ajmer. Arden Godshall set up the Action for Water Development Society Mysore in Bangalore with assistance from AFPRO, and Davidson of MYRADA, Bangalore acquired drilling rigs for water supply to Tibetan refugee camps in the then Mysore State. Charles Hineman, an American missionary in Madurai, was not only operating rigs but was supposed to be an infallible water diviner too. Mr. A. P. Mangalam was responsible for the Coimbatore Water Development Project.

The long list of names of people and organisations (and by no means is it comprehensive) is only to establish the fact that what might seem only sporadic well-intentioned concern of a few missionaries for meeting a basic need of rural people, was in fact a broad-based NGO movement under umbrella organisations such as AFPRO and federations like AFARM, involving people of different nationalities, age groups, professional and social backgrounds, and set significant trends in rural water supply strategy for third world countries for the next two decades.

Amongst the external agencies, UNICEF played a major role in providing hardware, logistical support and manpower development to build state-level organisations for rural water supply. The Government of Maharashtra acquired its own fleet of over 60 machines in 1973-74. The pattern of acquisition of drilling rigs in other 'hard rock' states of Karnataka, Gujarat, Andhra Pradesh, Madhya Pradesh and Tamil Nadu was also the same, both in scale and chronology.

In 1974, the Government of India's outlay for the Rural Water Supply Programme was about \$ 20 million and went upto \$ 600 million by 1989. From the start of the RWS programme in India, UNICEF's contribution to the sector remained consistently at about 2% of the Government of India's annual outlay relatively small in quantum but significant in many other ways.

In the mid-1970s, the debate on the logic of operating drilling rigs by NGOs as 'contractors' to the government, and an examination of the 'non-intended effects' of water resource development in the framework of radical theology in vogue at that time, evoked internal criticism and resulted in the conscious decision of some projects to close down their drilling activities. But the drilling rigs had a compelling logic of their own and most NGOs continued their work. State-level contracts were being negotiated for large scale well drilling programmes from the late 1970s and here most NGOs found themselves out of depth in this aspect of the real world. The machines had to be kept busy regardless of the nagging feeling in some minds that all was not well. NGOs found themselves unable to stay in the 'business', because that is what tubewell drilling had become. And the myth of equating a hole-in-the ground to a successful village drinking water source was being successfully perpetuated.

By the early 1980s, the NGO 'drilling agencies' like War On Want, Jalna; Maharashtra Prabodhan Seva Mandal, Nasik; MM Water Development & Mechanical Training, Vadala Mission, all of Maharashtra State and similar NGOs of Tamil Nadu State had closed down their well-drilling operations, partly because their equipment was now obsolete and partly because there were large numbers of private rig owners bidding for state government drilling contracts. Some other NGOs, like Maharashtra Arogya Mandal, Jnyana Probodhinee and Sholapur Well Service of Maharashtra continued drilling tubewells with newer machines and installing hand pumps under Government and donor financed programme, as did Social Work & Research Centre in Rajasthan State. NGOs like Swissteco Drilling, Hubli and ELC Water Development Project, Betul, continued to be innovators in drilling technology, introducing 'combination' rigs and deep drilling into the country and beginning geophysical site investigation, yield testing, water quality testing and data banking as part of an effort to integrate water supply programmes. In Andhra Pradesh things took a curious turn, with the Water Development Society making the manufacture of drilling rigs and accessories a thriving medium and small scale industry in Hyderabad, till, by the mid-1980s, there were about 6 brands of rigs being made in that one city.

Thus, the rural water supply programme in India, one of the world's largest RWS programmes today, has gained very substantially from the dedicated work and experiences of NGOs since the late 1960s.

In terms of the investment made by the Government of India so far in rural drinking water supply, the estimated expenditure has been about Rs. 148.2 billion (\$ 4.94 billion) and the anticipated future requirement of funds is estimated at Rs. 178.5 billion (\$ 5.95 billion) for assuring both quantity and quality (40 lpcd) of water supply.

The Hand Pump

To return to the question of an 'appropriate water lifting device' from a tube well, it is not that the hand pump was totally neglected while rigs were coming in. The voluntary agencies based in western Maharashtra had started their search for a better hand pump almost when they began operating their first rigs in the late 1960s.

The first documented alternative to the cast iron pump of that era, was designed by Cyrus Gaikwad, a driller, working at the War On Want Project, Church of Scotland Mission, Jalna, Maharashtra, in about 1969. The design travelled southward to the American Marathi Mission's Water Development & Mechanical Training Project, Ahmednagar, where the 'Jalna' pump became the 'Jal-Vad' and took on a few improvements. Much further south at the Coimbatore Water Development Project, the Jalna pump underwent more modifications, using a steel cable instead of a link chain on the handle, but did not prove viable.

At about the same time, 1969-70, from their base of the Hindustani Covenant Church founded by Swedish missionaries in Sholapur, Eric Jallen and Oscar Carlsson produced the 'Sholapur Pump' at Sholapur Well Service. This was another landmark in the contribution of NGOs to rural water supply. The Sholapur pump laid down the basic design principles and essential dimensions of what eventually became the India Mark II hand pump, considered as one of the world's best, cheapest and certainly the most commonly installed hand pump in the third world. Even today, the handle and the pivot geometry of the Sholapur Pump has remained unchanged in the India Mark II and all its subsequent reincarnations. It stands to Olle Freberg's credit, when on behalf of the Sholapur Well Service, in 1974 at a meeting of AFARM, he turned down a proposal to patent this design, as a result of which the design and manufacture of the India Mark II is, today, in the public domain.

Again, back in 1973, the dissatisfaction with the performance of hand pumps began to take a formal shape. A survey, commissioned by UNICEF, conducted in parts of Maharashtra by voluntary agencies indicated that 80% of the hand pumps were out of order at any given time. The reason for this dismal situation was attributed to the design of the pumps of that time, which were mainly of the cast iron variety with pivots that were very prone to damage under extremely high usage, hostile environment and lack of maintenance. With hind-sight, the poor performance of these pumps should not have been surprising at all, because the cast iron pumps had been designed for careful domestic use by single families and a favourable maintenance environment by rural communities of Europe and North America. In the much harsher rural Indian situation, the hand pump completed its lifespan within a few weeks.

The results of the Maharashtra survey led to a close examination of existing hand pump possibilities and serious design work began using the Sholapur Pump as the base. A group of

voluntary agencies, Sholapur Well Service, War On Want Jalna, MM Water Development Vadala, Maharashtra Arogya Mandal Pune and Jnyana Prabodhinee Khed Shivapur, under the auspices of the federation, AFARM Pune, produced the 'conversion head' to tide over the immediate crisis with the cast iron pumps. During 1974-76, the NGOs of Maharashtra supplied 6,500 conversion heads to the national rural water supply programme through UNICEF.

By 1976-77, using the Sholapur Pump and the subsequent conversion head as the basis, UNICEF sponsored the evolution of the India Mark II hand pump, working with MERADO, Bangalore and Richardson & Cruddas, Madras to develop the first prototypes and put them under field trials in Coimbatore. It was in 1979, over 10 years after the first rigs had come, that standards and specifications, IS:9301, were written for the India Mark II deep well hand pump by the Indian Standards Institution. At this point, when large scale manufacture was being contemplated, NGOs moved away from hand pump manufacture. Sholapur Well Service was the only significant NGO that continued in the field of hand pump development at that time and had limited themselves to research activities with new materials and designs till it finally closed its operation in the mid-1980s.

Maintenance of Hand Pumps

By the mid-1970s, it was clear that the lack of regular maintenance of hand pumps was seriously affecting the rural water supply programme and that many hand pumps remained out of operation for long periods of time. The Madurai Conference of July 1979, sponsored by UNICEF and attended largely by the Public Health Engineering Departments and Water Supply Boards of several state governments was a landmark as the much-debated Three Tier Maintenance System was first presented as an effective solution for hand pump maintenance.

The efficacy of this position seemed to be well established at that time, because Francis, a government official in Tamil Nadu State, under a project with UNICEF assistance, was able to organise voluntary caretakers in Tirunelveli district to undertake routine checks and report pump break-downs using preprinted postcards to the block level mechanics and upwards to mobile maintenance teams based at the district level. At one point of time, Mr. Francis was said to be operating a network of 6000 'Volunteers Caretakers' and his training programmes had the mass appeal of a traditional village fair.

At Madurai, most of the technocrats were openly sceptical about the viability of a maintenance system that pivoted on a voluntary cadre. But gradually the Three Tier Maintenance System began to receive country-wide sponsorship (which was not quite the same as country-wide acceptance).

What actually happened over the years, was that state governments claimed that they had 'adopted' and 'implemented' the Three Tier Maintenance System, whereas they actually invested in

establishing a very skeletal form of only two institutional tiers, i.e., the block mechanics and the district mobile maintenance teams. There was an almost total absence of the critical third tier, the 'Caretakers'.

The technocrats' collective lack of faith in the common man and his capabilities was a very strongly entrenched trait, not to be overcome easily. That is not to say that the Three Tier Maintenance System did not have some shortcomings but it was just not implemented seriously. Like Francis, Frede Engelund, a Danida Adviser, was able to make this system work in its entirety in Chindwara and Raipur districts of Madhya Pradesh during the mid-1980s.

Meanwhile, like the proverbial bad penny, the voluntary agencies popped up again. The Social Work & Research Centre, Tilonia, Rajasthan, which had a low profile in well drilling among NGOs, shot into the limelight, having evolved a 'One Tier System' for hand pump maintenance through the village based hand pump 'mistry' (mechanic) which sought to establish that maintenance could be easily left to the village community. This generated a sometimes unseemly debate between the UNICEF and SWRC sponsored maintenance systems, eventually to the weakening of both.

By 1991, with about 1.8 million hand pumps installed in India, the near-absence of village level caretakers was true country-wide, except in small pockets. Instead, different permutations of the Two-Tier System, essentially based on creating decentralised village-level maintenance capability, began to appear with varying degrees of government sponsorship. One of the well-regarded efforts in decentralised hand pump maintenance was the Two Tier Self Employed Mechanics System in the Danida assisted project in Orissa State, which started in 1986 and by 1994 provided village level maintenance coverage to about 7,500 hand pumps in 18 blocks through 330 self-employed mechanics and 2,800 user committees. In the latter stages of expansion of this system, NGOs participated extensively in formation of user groups, identification of artisans for training and compiling inventories of water sources. A second such effort was by the SWACH Project in Udaipur, Rajasthan, which trained women mechanics to undertake maintenance of hand pumps as a part of the larger drinking water project in a guineaworm infested area. Currently, UNICEF are supporting twenty-nine independent hand pump maintenance projects, with different state governments, but with NGO involvement in each case, for identifying water sources, establishing village councils for water supply and sanitation (WATSAN Committees), identifying trainee-mechanics, conducting training and health education campaigns, local fund raising for pump maintenance and monitoring water quality.

While the above efforts were indeed pioneering and all the correct words are currently being used at policy levels about the need for community participation, transfer of maintenance responsibility to the users, 'empowering' women to maintain pumps, unfortunately, there has not been any substantial change

in the skewed resource allocation that favours expenditure for construction of new wells against investment in maintenance organisations to ensure sustained operation of existing wells.

The cost of maintenance of hand pumps is generally viewed by state governments as an expensive proposition and the prospect of transference of financial responsibility of maintenance costs to communities is increasingly finding favour, especially in view of the new decentralised Panchayat system throughout the country.

The issue of community participation and management of water sources needs answers to questions of whether cost recovery implies partial or total cost recovery of maintenance only from user-communities or of costs of the capital and maintenance of water supply installation and treating water supply as a saleable service. The basic position of the government, that the provision of water is a government responsibility does not make such a debate any simpler. The recent trend to broaden the scope of maintenance as maintenance of the water source, including rehabilitation of wells and replacement of pumps, which goes far beyond the earlier limited definition of maintenance of hand pumps, complicates matters further.

Technology Mission & CAPART

The Government of India began to contemplate the formation of the National Technology Mission for Drinking Water in the early-1980s for which a number of consultations with NGOs were convened by the Ministry of Rural Development. Bunker Roy's position as an Adviser to the Planning Commission facilitated this process to a great extent, and for the first time, the Seventh Plan document carried a section on the role of NGOs in the developmental process of the country.

The Technology Mission on Drinking Water was started in 1986. Its intention was to provide safe drinking water to all the remaining 227,000 'problem' villages by the end of the Seventh Plan. At the same time 55 Mini-Missions, which were area-based pilot projects, were started to evolve holistic models for further replication. Five Sub-Missions were also formulated to tackle water quality problems and to promote sustainability.

The 'Mission Mode' was meant to bring about a qualitative change in the method of governmental functioning with definite goals, time bound targets, speedy procedures, participatory functioning and an integrated approach, representing new thinking in the field of rural water supply. There was a clear recognition of the holistic nature of water supply that called for as much stress on the software aspects like health education, community participation, human resource development as on the sheer hardware of rigs and pumps. The Mission also recognised the importance of R&D in the sector and the need to integrate the services and resources of related departments and agencies. For the first time, the Mission sought to bring together various related agencies in an extensive network. Similarly, the Sub-Missions aimed at field

level applications of various technology options in solving the problems of water quality.

By the end of the Seventh Plan a stable working relationship had been arrived at between the Government and NGOs. Several Ministries provided windows for voluntary agencies. As a part of Government of India's efforts in the International Decade for Drinking Water and Sanitation, two government sponsored support organisations, namely, People's Action for Development India (PADI) and Council for Advancement of Rural Technology (CART) were merged to form the Council for Advancement of People's Action and Rural Technology - CAPART in 1986, as a registered Society and an autonomous body under the aegis of the then Ministry of Rural Development.

After virtually a lapse of direct involvement in RWS for 10 years, CAPART introduced the ARWSP among NGOs working in rural areas to make available potable drinking water to villages in the country. The Technology Mission for Drinking Water and now called the Rajiv Gandhi National Drinking Water Mission (RGNDWM), was to provide the professional backup for this work. However, while it was expected that NGOs would be involved in innovations on alternative sources of drinking water like development and improvement of traditional sources, water harvesting, appropriate technology in soil and water conservation projects enhancing potability of water sources, most NGO projects opted for only direct installation of hand pumps on tubewells since the alternative approaches were time consuming and required careful planning and extensive dialogue with communities.

In fact, if CAPART projects are any indication, over 80% of the drinking water projects sanctioned for 1990 were purely for installation of hand pumps, accounting for 87.5% of the funding for this sector. Effectively only 12.5% was assigned for development of alternative water supply methodologies. Even these have not been evaluated in a meaningful manner so as to understand lessons learnt and replication of successes. Within CAPART, assisting rural water supply is obviously a very important activity. CAPART's Annual Report of 1993-94 states that about 23% of its programme budget, about Rs. 125.8 million out of Rs. 547.3 million was spent on ARWSP and Technology Mission projects.

Health education was one of the important areas of intervention by NGOs through CAPART assistance. Under the RGNWDM, during 1988-90, 475 NGOs conducted over 5000 awareness camps through the country to inform the people on how to demand and gain access to potable water and how to use it once they have got it. People's participation particularly that of women was recognised as being critical in transportation and use of water in homes. The awareness programmes tried to integrate disciplines like health education, soil and water conservation and water use practices.

Whilst the first priority was to provide enough water, the quality of water also assumed significant importance. The National Defense Laboratory, Jodhpur, with the RGNDWM-CAPART assistance,

developed easy to operate potable water testing field kits and provided training to representatives of NGOs.

Within CAPART, the experience with NGOs has been mixed. NGOs are perceived as being able to penetrate remote areas that are normally out of reach of the Government. NGOs have the ability to negotiate better with drilling contractors since they are unencumbered by governmental procedures. Hence they are able to get favourable drilling prices and are procedurally simple in having work executed and releasing payments. The selection of sites for water sources by NGOs is better as they are less prone to succumb to pressures of local vested interests and since they actively involve the community in locating new water sources.

CAPART finds that NGOs are capable of effective organisation of users, raising contributions towards the maintenance of pumps and improving the utilisation and sustainability of water sources. NGOs tend to undertake water supply projects in peak stress periods improving the potential sustainability and reliability of successful sources. Lastly, the NGOs exhibit a greater degree of transparency in their conduct and accountability, since they operate from sound ethical positions.

On the negative side of things, CAPART perceives all the above positive attributes in only about 60% of the NGOs that it supports. Costs of water supply projects are often high and this serves as a motivating factor for NGOs to over-extend themselves and formulate projects in geographical areas where they have no infrastructure and community contact. A major motivation for such projects is because water supply projects are viewed as 'money spinners' and, in such cases, the NGO becomes just one more intermediary in the hierarchy of contractors, unable to assure involvement of local people and sub-contracting smaller items of work to others. The use of sub-standard material and poor quality construction has also been seen. There is the possibility of duplication by obtaining funding for the same water sources from different support agencies. These problems assume a significant dimension, since in 1995, CAPART has black-listed over 500 NGOs who will be debarred from further assistance although not only those with funding for water supply and sanitation projects.

A Holistic View of Water

While the high-profile drilling agencies of Maharashtra can claim to have shown the path in rural water supply during the 1970s, there was another group of NGOs who preferred to take a different track. The drought in Maharashtra in 1969 also provided them their starting point, but their focus initially was to provide relief to drought-stricken villagers through work and wages in their own environment so that people would not have to leave their homes to look for work in the cities.

'Food for Work' was a favoured strategy of that period, using which Hazel Skuce of Baramati Agricultural Trust constructed 100 percolation tanks by the late 1970s. Gram Gourav Prathisthan under the direction of Vilasrao Salunke, laid the foundations of

Pani Panchayat in the same period in Naigaon, close to Pune, and developed the concept of equitable distribution of water, based not on size of land holding or cropping preferences, but treating water as a scarce resource to which every family should have a right.

Others like Anna Hazare, after retirement from the Indian Army, returned to his village, Ralegaon Shindi, in Parner Taluka of Ahmednagar district and quietly started a soil and water conservation programme that is famous today as much for its moral and social organisation as its effective demonstration of the watershed approach for sustainable natural resource management by the community. This has been the major influence in the new 'Common Guidelines' of the Ministry of Rural Areas and Employment.

Elsewhere in Maharashtra also, dry land farming, soil and water conservation and watershed development projects began to develop. One of the early watershed development projects was in Devpimpalgaon, near Jalna, implemented by the Marathwada Sheti Sahayaya Mandal with financial assistance from the Swiss Development Corporation and technical assistance from AFPRO-GIT, Ahmednagar. A second project, at Adgaon, in Aurangabad district, by the same group of NGOs was also significant in the gradual turn-around towards a more comprehensive approach to water.

By the early 1980s and the growing concern for larger environmental issues such as afforestation, conservation and dry land agriculture, watershed development and a holistic approach to water related issues began to find a voice. One of the major events of that period was that a large number of NGOs concerned with water resources development came together in 1982 in Aurangabad and founded NAWDA -the National Association for Water Resources Development Agencies.

In many other parts of the country the trend amongst the NGO fraternity was similar. In Rangabelia, an island in the brackish gangetic delta of West Bengal, the Tagore Society for Rural Development showed that fresh rain water could be harnessed and stored on the island for human consumption. Rees, from the Kasar Trust in Almorah, Uttar Pradesh worked on protecting traditional springs or 'Naulas', in the Himalayan foothill regions. Two thousand kilometres to the south, in Ramanathapuram, Tamil Nadu, AFPRO-GIT Comibatore provided the technical expertise to CTVT to work on one of the very early CAPART assisted projects on rejuvenation of traditional tanks and rain-water harvesting structures in an area where groundwater had become saline due to over-pumping and intrusion of sea water. Similar work has been done by Kelansar Vikas Samiti, near Jodhpur, Rajasthan, on traditional water harvesting and storage structures - 'Tankas' and 'Nadis'. SWRC, Tilonia designed its new campus using roof and rain water harvesting as a basic strategy. Vivekanada Research and Training Institute in Mandvi, Gujarat demonstrated remarkable success in recharging groundwater and improving its chemical quality by constructing recharging tubewells in sandy stream beds in the arid zone of Kutch. The State Government of Orissa began to

work with the Lutheran World Service, to construct open wells in the remote tribal districts of Kalahandi and Bolangir.

However, the magic of the drilling rig still has not faded. SWRC, Tilonia, in 1995, is drilling in Leh, the northernmost part of India, at 3000 m above sea level and installing handpumps at the highest places in the world.

Rural Sanitation An Overview

Unlike the Rural Water Supply Programme, which has a long history of four decades, government intervention in a big way in rural sanitation came only in 1986 with the launching of the Central Rural Sanitation Programme (CRSP) which has remained highly centralised, with limited involvement of NGOs in local area planning, training, implementation and monitoring.

The magnitude of the problem is formidable. The National Sample Survey of 1989 indicated that only 11% of rural households had access to latrines and that this figure would not exceed 14% after taking into account non-governmental and private initiatives. With an estimate of a total of almost 1.3 billion rural households in this country, it would mean that 1.1 billion households were without latrines. If all components of a comprehensive sanitation programme were to be implemented, the size of the problem is many times larger.

Sanitation is not only an individual or family matter and it is not just the safe disposal of human excreta. It is also not the same as propagation of low cost household latrines. Sanitation has to be understood as a holistic package encompassing liquid and solid waste disposal, excreta disposal, home and food hygiene, personal hygiene and environmental hygiene.

India has a rich tradition of voluntary action, largely a product of the freedom movement. However, the majority of voluntary organisations implementing rural sanitation programmes have confined themselves to construction of low cost household latrines. There are success stories but they are few and far between. CAPART has been playing an important role to involve more NGOs in rural sanitation programmes. However, the implementation of the CRSP through NGOs using CAPART assistance has not been holistic. There has been very little effort towards creation of awareness and demand generation and the implementation strategy based on subsidy has failed to produce the desired results.

Evolution of the Programme in India

In the post-independence period the Central and many state governments started to work on liberating scavengers. Numerous committees were appointed to analyse the working and living conditions of scavengers, whose means of livelihood was disposal of human excreta from latrines in urban areas. Though all the reports were thorough and clear in their recommendations, the

states were generally slow in acting on these recommendations and wherever implemented, the results were not commensurate with the efforts. However, they did generate considerable awareness and almost all states started making efforts for the rehabilitation of scavengers.

In 1968, after the Government of the India decided on installation of sewerage systems in cities so that scavengers could be freed, three states - Bihar, Gujarat and Kerala took up the programme in right earnest. The numbers being small, almost all dry latrines were converted in Kerala. The programme undertaken by Bihar and Gujarat also had significant impact.

The sanitation programme was located with the Ministry of Health and later with Works and Housing between 1954 to 1985. One objective of the International Decade for Water Supply and Sanitation was to cover 25% of the rural population with household latrines by 1991 but this did not get the desired impetus. In 1986, the Ministry of Rural Development was made the nodal Ministry for planning, implementing, supervising and coordinating the CRSP. A programme was then launched to construct one million sanitary latrines in houses of the Scheduled Caste (SC) and the Scheduled Tribe (ST) population and to provide 250,000 additional latrines to health sub-centres, schools, panchayat ghars and anganwadis. The CRSP was also integrated with the Minimum Needs Programme (MNP) in 1987. When, however, the Technology Mission on Drinking Water in villages was launched in September 1986, sanitation was not brought within the ambit of the Mission. This position remains unchanged.

The total resources that were to be mobilised under the CRSP, were to be shared between the central and state governments. The criteria for allocation of funds to the states were linked to the criteria for allocation of funds under the ARWSP which provides for weightage to rural population (50%), area (20%), incidence of poverty (20%) and spill-over 'problem villages' (10%).

As a strategy, it was decided to construct two-pit pour-flush water seal latrines at an estimated cost of Rs.1200 per latrine. The criteria and norms under the CRSP were modified in February 1991 in the light of gained experience. It was decided that out of MNP Funds, the States would provide an amount at least equal to one-third of Central assistance. The earlier weightage was also changed to incidence of poverty (50%), rural population (40%) and hilly states on the basis of population (10%). The cost of a latrine for an individual household was raised to Rs.2500 out of which the contribution from the beneficiaries/panchayats was to be at 20%, 15% and 10% with reference to minimum demand for 20, 50 and 100 units respectively. As a special dispensation, contribution from SC/ST families was fixed at 5% in the form of either labour or material or cash.

These initiatives and efforts notwithstanding, the experience has not been happy with the pace of implementation being slow and utilisation and maintenance of assets created not being

satisfactory. On the basis of feedback received at the National Seminar on Rural Sanitation in September 1992, which was attended by professionals and institutions in the field as well as NGOs, the CRSP was overhauled and a revised set of guidelines issued in June 1993, which laid out a new approach to rural sanitation as a more integrated package. The concept of the 'Sanitary Mart' as a critical mechanism in rural areas capable of handling multiple functions required for a sanitation programme in a village such as generation of demand, identification of appropriate technology, local skill development, provision of software components (Information, Education, Communication - IEC) and supply of low cost materials was proposed for wider replication. Similarly, NGOs were asked to play a definite role in the programme and at least 10% of the available funds were earmarked for implementation by the voluntary sector. Yet another innovative provision was the recognition of the need for creating an appropriate environment through health education and motivation for which 10% of the outlay was earmarked for the first time. In order to ensure a sense of participation and to inculcate a feeling that the asset belongs to the beneficiary, the new guidelines provide for an uniform 20% contribution by the beneficiaries.

It is somewhat early to make an assessment of the performance of the revised scheme. The general impression, however, is that the refinements in strategy have not yet resulted in commensurate qualitative improvements at the operational level. Perhaps the progressive features of the new programme need to be more sharply defined and classified in details both at the conceptual as well as at the implementation level.

UNICEF New Delhi gives the following status of rural sanitation in India:

"The Rural Sanitation Programme (RSP) in India has been a late starter. Unlike the Rural Water Supply Programme, which has its history spread over three decades, Government intervention in Rural Sanitation came almost 20 years later. It was only in 1986 that the Government of India (GOI) formulated the Central Rural Sanitation Programme (CRSP) and in 1987 Rural Sanitation came under the State Minimum Needs Programme (MNP). Thus, the RSP is virtually a seven-year old child. Nevertheless, the programme seems to have gathered momentum in the recent past. Promoting rural sanitation to bridge the rural-urban gap in the coverage level continued to be the major thrust area under the Environmental Sanitation Project of UNICEF. Besides, the efforts made by the Government, private initiative appears to be catching up in this sector. It is, therefore, not surprising that while the Government reported a 3% sanitation coverage through its own programme (in terms of households having access to latrines), results of the National Sample Survey, now available have indicated that around 11% households in rural areas had access to latrines in 1989. This 8% difference is attributed to households going for latrines on their own without any Government subsidy."

The Concept of Sanitation

Sanitation is not merely an individual or family affair. It is not just disposal of human excreta. It is certainly not coterminous with the physical construction and installation of low cost sanitary latrines. On the contrary, sanitation has to be a total concept encompassing the following components:

- collection, storage and use of drinking water
- liquid waste disposal
- solid waste disposal
- excreta disposal
- home and food hygiene
- personal hygiene
- environmental hygiene

In terms of what is to be offered, sanitation envisages a package of facilities and services involving the home, the community and the society as a whole.

Contribution of Voluntary Agencies

The voluntary movement in the field of sanitation has been largely a byproduct of the freedom movement, particularly inspired by Mahatma Gandhi. It embodied to a large extent the same essential components of the freedom movement such as genuine voluntarism, concern for the scavengers as the lowest strata of the society and a desire to involve the community in constructive work. During the pre and post independence period, a variety of experiments in the field of sanitation were undertaken with different technologies, varying costs and diverse target groups. Some of the significant efforts and experiments, based in the NGO sector, are briefly described below:

Harijan Sevak Sangh

Harijan Sevak Sangh owes its birth to Mahatma Gandhi's resolve to fight against the decision of the colonial rulers to drive a wedge between the Hindus and the so called untouchables by granting separate electorates and the epic fast undertaken by him in Yeravada Jail, Pune. The decision was reversed and this was an important step in the war against untouchability. In a meeting in Bombay in November 1932, under the presidentship of Pandit Madan Mohan Malviya, it was resolved that untouchability in any form would be eradicated from Hindu society. The 'Anti-Untouchability League' was formed in October 1932. What started as an innocuous move later became a national movement under the leadership of Mahatma Gandhi and Thakkar Bapa.

It was felt, and rightly so, that illiteracy was at the root of social discrimination and economic exploitation of members of the Scheduled Caste communities and, therefore, on the call of Mahatma Gandhi, a countrywide mass campaign for eradication of

untouchability was taken up. The Harijan Sevak Sangh also constructed schools and hostels throughout the country for boys and girls belonging to this community and thousands of them were given scholarships.

The most pioneering initiative for which the Sangh will be remembered, is launching a movement for liberation of scavengers known as 'Bhangi Kasta Mukti' that was intended to launch a countrywide awareness of the abject poverty, gross social inequality and appalling and inhuman conditions under which the scavengers worked and lived.

Maharashtra Gandhi Smarak Nidhi

The Central Gandhi Smarak Nidhi was established in Delhi in 1956. The Maharashtra Gandhi Smarak Nidhi - MGSN, which had been established in 1950 was registered in 1962 and has been working in close unison with the Rashtriya Nidhi to abolish scavenging by conversion of dry latrines into pour-flush sanitary latrines and by constructing new latrines that do not require the services of scavengers.

Appa Saheb Patwardhan had carried out a number of experiments on the technology of sanitation in his Gopuri Ashram in Ratnagiri district. On the basis of his experiments, the Nidhi decided to encourage the construction of two types of latrines, one the 'sopha' type, in which the pan is not water sealed but is provided at the delivery end with a hinged metal plate. The other is the 'Naigam' latrine, which is a modified aqua privy that provides for collection of the effluent in containers for use as organic manure. The activities of the Nidhi were multifaceted, encompassing propagation of the message of sanitation, persuasion and motivation of the users, spread of technology and application by actual construction and installation of sanitary latrines. All these activities involving both the hardware and software of sanitation were coordinated by the group called 'Bangi Mukti Yojana'. Additionally, the MGSN designed the curriculum and course content of training in different areas (awareness building, latrine construction, construction of biogas plant) for different categories of workers (social workers, municipal workers, Zilla Parishad staff).

The MGSN has an illustrious record of performance in the field of sanitation for three decades in Maharashtra. It has constructed 70,000 latrines and 500 biogas plants apart from organising a large number of training camps for social workers, masons, technicians and government officials. The contribution made by Dr. S. V. Mapuskar, Honorary Adviser of the Nidhi in construction of biogas plants based exclusively on human excreta and propagation of this technology has been commendable.

**Environmental Sanitation Institute - ESI (Safai Vidyalay),
Sabarmati Ashram, Ahmedabad**

The Safai Vidyalay was established by the All India Harijan

Sevak Sangh, Sabarmati Ashram in 1963 under the direction of Ishwarbhai Patel, with a view to translating the recommendations of the Malkani Committee, to impart training to sanitation workers and officials under Bhangi Kasta Mukti and Bhangi Mukti programme with the ultimate objective of securing the liberation of scavengers.

The Institute conducts training and orientation programmes in low cost sanitation sponsored by UNICEF, WHO and the Government of India. The categories of personnel who receive training are sanitary inspectors, engineers, overseers, masons, technicians, students, policy makers and implementors.

Rural Sanitation is introduced through health education along with practical demonstrations in constructing simple sanitation devices, i.e., technique of conversion of dry latrines into water using types, construction of new hand flush sanitary latrines needing no scavenger service, modification of bylaws of local bodies and use of improved implements of sanitation. Materials such as folders, posters and other educational materials have been produced for this purpose. The curriculum and course content of training include methods for improvement of working and living conditions of sweepers and scavengers, their all-round development, etc. The Institute has a demonstration plot with various types of sanitary latrines and biogas plants.

ESI was appointed by the Gujarat State Water Supply and Sewerage Board (GWSSB) to implement the rural sanitation programme in Gujarat. ESI convened a workshop in January 1989 in which 85 NGOs participated and subsequently training programmes were organised by ESI for NGO representatives.

GWSSB adopted a grant-in-aid policy for its rural sanitation programme. The net cost of a twin pit pour flush latrine was about Rs.2,300 in April 1991, plus a total administrative charge of Rs. 409, i.e., 17.85%, making up a total cost of Rs. 2700. The subsidy levels were 75% grant to SC/ST/OBC households, 50% grant to other households, towards the net cost of a latrine, and a lumpsum of Rs.125 per latrine towards administrative costs.

The sequence for implementation of the programme required three preparatory steps, identification of target households by participating voluntary organisations, obtaining consent letters from these households and training at least one mason from each voluntary agency in construction of latrines. The NGOs received a sum of Rs. 100 per latrine as their share of management costs of the programme. Field workers of ESI supervised the construction of the early latrines and certified completion, after which subsidy funds were released by ESI to the NGO, which in turn, paid the beneficiary. ESI facilitated centralised procurement of latrine components, maintained all records and monitored the programme.

By November 1994 when the total number of latrines constructed was just below 70,000, the total cost of the project

was about Rs. 304.5 million with a contribution of about Rs. 62.05 million, or 32.75%, from beneficiary households.

During the period of April 1989 to June 1995, ESI and 135 participating NGOs had constructed over 76,000 latrines in 2553 villages spread over 19 districts of Gujarat.

Lok Shiksha Parishad, Ramakrishna Mission, Narendrapur - Intensive Sanitation Project in Mednipur West Bengal State

Ramakrishna Mission's (RKM) Lok Shiksha Parishad has a large educational complex at its core in Narendrapur, on the southern outskirts of Calcutta. From this base, it also has a history of involvement in integrated rural development for over 30 years.

In 1987, RKM and UNICEF collaborated to begin implementation of the Intensive Sanitation Project in Mednipur district, in the south-eastern part of West Bengal. Mednipur is the most populous district in the country, with 6.7 million people and about 1.09 million households accounting for nearly 1% of India's population. The district covers a little over 14,000 square Km, has 54 Blocks and 7 administrative Sub-divisions.

RKM chose to work in this district because of the organisation's long standing and extensive contacts with Youth Clubs in most villages of the district.

In formulating its overall strategy for the programme, RKM considered the experiences available from other similar projects and arrived at the following conclusions :

- most sanitary facilities in rural households remain unused since sanitation is not perceived as a need.
- sanitary facilities provided to the poor are very negligible and so have no overall impact.
- there was no awareness generation and education activities related to sanitation accompanying programmes and emphasis was on target oriented physical achievement of construction of latrines.
- the well-off families, who could afford to install their own facilities, were not approached with an education effort targeted at them.
- there was low level of awareness towards environmental sanitation.
- the financial allocations for a subsidised programme were inadequate for achieving great degree of coverage.
- a subsidy reduced the initiative to pay for, use and maintain the resultant assets, in this case a latrine.

With the above conclusions in mind, RKM formulated a strategy where the major emphasis was to be on awareness creation, demand generation and education, introducing self-financed latrine construction through social mobilisation. Village Youth Clubs were to be responsible for awareness creation and demand generation and would provide the delivery mechanism for easy availability of hardware components. In view of the socio-economic heterogeneity, twelve models of latrines were developed to suit individual preferences and affordability. Since sanitation is not household latrines alone, smokeless 'chullas' (cooking stoves), bathing cubicles and garbage pits were also introduced with the latrine models.

The programme was implemented in a decentralised manner with built-in mechanisms for coordination at different levels. Youth Club representatives, at village level, were trained to motivate households and create a demand. At the middle level, a consortium of youth organisations formed the Cluster Organisation, supervising operations of Production Centres, coordinating supply of latrine components, monitoring progress of Youth Clubs in their cluster and administering the flow of funds from beneficiary households, from RKM for revolving funds for Production Centres and to Youth Clubs as incentives for demand creation. RKM as the core organisation, provided the training to Youth and Cluster groups, formulated awareness creation and health education material, coordination with elected Panchayat and Government officials and overall project management and direction.

The main project components were :

- strengthening of infrastructure of RKM at central, cluster and club levels.
- training of all categories of participants at all levels.
- development of appropriate advocacy materials and messages for awareness creation and motivation.
- alternative low cost technology using locally available materials considering the economic priorities of common people.
- decentralised production of components of sanitary facilities at cluster level.
- creation of construction capability of sanitary facilities.
- motivation and awareness creation on a house-to-house basis.
- funding and recovery of loans for construction of sanitary facilities.
- base-line information collection.

- supervision of construction, use and maintenance of sanitary facilities.
- promotion of other health related activities such as oral rehydration, immunisation, nutrition education, etc.
- monitoring of all aspects of the programme with systematic record keeping and reporting.

The major emphasis of the project was on advocacy to create a demand for sanitation and to develop a reliable decentralised delivery system. This resulted in a very high investment for the creation of a human resource base through a variety of training programmes. By June 1994, fifteen different types of training courses had been held, some of which were repeated over 30 to 70 times for total numbers of participants ranging from 2,000 to 5,000 (e.g., 71 courses for 2,274 Motivators, 72 courses for 1,885 Youth Club leaders, 53 orientation courses for 5,098 Panchayat Members, 28 courses for Smokeless Chullas to 659 people, to name a few courses).

In June 1994, the project was operating in 45 blocks of the district, through 11 Cluster Organisations and 780 Youth Clubs. A total of 15 Production Centres were being operated by the Cluster

Organisations. The project's Progress Report of 1994 reports physical achievements as :

household latrines	60,717
soak pits	210
garbage pits	2,572
bathing platforms/ bathrooms	282
smokeless chullas	6,121
tara hand pumps	361

The impact of the project has been felt at many levels. In West Bengal, the CRSP subsidy has been substantially reduced from Rs. 2,000 to Rs. 200. In Mednipur, the project directly generated about 3.6 million man-days of work with total a wage payment of Rs. 7.9 million. Where more than 60% of the households in villages have latrines, a significant health impact is now evident. The rural sanitation programme's social mobilisation activities have substantially reduced conflicts and tensions in many villages. A new partnership has grown between the Panchayats and voluntary organisations.

On the basis of the Mednipur experience, the Government of West Bengal decided to implement the State's rural sanitation programme using the same strategy on a self-financing basis, with a very insignificant subsidy of Rs. 200 only to families below the 'Poverty Line'. Initially the decision was to implement the programme through the elected Panchayat bodies, and an attempt had been made in two districts during 1994-95 with financial assistance from UNICEF. Recently, however, the State Government has decided to implement the sanitation programme throughout the

State through voluntary agencies as the first preference and through the Panchayats as a second alternative.

Conclusions

The national rural water supply programme has to be finally judged by whether the technological choices resulted in a cost effective and a sustainable programme and whether the investment priorities were correct. The extent of community participation and involvement in the other testing stone. Cutting through all the verbiage that the 'Decade' generated, the basic objective of the RWS programme could be simply stated as:

To supply safe drinking water to rural communities over a sustained period of time

On the positive side of things, the fact remains that the extent of physical coverage of villages with drinking water sources has been very impressive indeed. Out of the total of 1.3 million habitations in the country, 57% have been fully covered in quantitative terms, 33 % are partially covered, leaving 10% of the habitations uncovered. Over the years, the norms have been gradually liberalised, starting from one well and hand pump per village in the mid-1970s, to the current yardstick of one well per 250 people. The gradual change in the definition of a problem village and consideration of the habitation rather than the village as a community unit, has also increased the extent of 'coverage'.

Certain problems are now clearly evident from reviews and evaluations of the rural water supply programmes in the country.

These are:

- failure of sources due to inadequate scientific survey of sites and lack of water quality verification.
- location of sources at extremities of habitations.
- excessive withdrawal of groundwater resulting in failure of once-successful sources.
- poor quality of platforms and inadequate waste water drainage resulting in creation of new environmental sanitation hazards.
- non-involvement of local people in programme implementation resulting in alienation.
- absence of health education and awareness creation prior to implementation of water supply.
- duplication of sources.

- large scale absence of institutional or community based operation and maintenance systems.
- an almost exclusive dependence on ground water sources for rural water supply.

While most of the above problems need Government action for providing solutions NGOs can play a substantial role to minimise these problems and help rationalise Government policy towards this end. However, it needs to be kept in mind that projects executed by NGO's also sometimes suffer from similar weaknesses.

In the context of the above lessons, where issues of quality, quantity and sustainability of sources have become major questions, some soul searching is necessary to address the questions as to what is 'coverage' and what is a 'sustainable source'.

- Is a sustainable source ...
- ...a hole in the ground which struck water?
 - ...which delivered water?
 - ...which delivered 'safe' water?
 - ...which delivered potable water as per the national standards ?
 - ...all of the above and for a 'sustained' period? for 2 years? 5 years? 10 ?

Consequently additional questions that need to be faced are: whether a well has met certain minimal technical standards of construction, has the hand pump been installed properly and, more importantly, do villagers look upon the pump as their own source of water? Or do we just have an alarming number of mere holes-in-the-ground ?

There can be no question about the extent of the contribution of the voluntary sector in the country's rural water supply programme. The actions of voluntary agencies have often influenced the direction of national and state policies. But there is no room for complacency and the questioning has started once again within the voluntary sector.

In the paraphrased words of Anna Hazare :

The Comprehensive Watershed Development Programme started in Maharashtra in 1982 and has worked in 6,500 watersheds, spending of the order of Rs.25 billion (Rs. 2500 thousand crores). Yet, in 1995, 17,000 villages of Maharashtra depended on tanker-borne supply to meet their drinking water needs. Yet in Ralegaon Shindi, Ahmednagar, there was no water scarcity, though the rainfall was 150 mm in 1994 and 75 mm in 1995.

Vilasrao Salunke illustrates the paradox more clearly, Tasgaon Taluka of Maharashtra produces about 50% of the best grapes of this country - the Thompson Seedless. Groundwater of this area is exhausted and farmers now grow grapes, irrigated by

water brought in by tankers, since the profits from grapes are still of the order of Rs 1 lakh per acre. In this area, Government of Maharashtra is implementing a World Bank assisted regional piped water supply scheme, bringing water from a source about 40 Km away, spending about Rs. 50 lakhs per village.

Dr. M. A. Ghare of AFARM, Pune, points out that drinking water has its own distinct character:

- it is required in a definite location.
- it cannot usually be located on agricultural land.
- it has to have an assured quality and quantity.
- it is the first victim of overexploitation.

The problem of drinking water shortage is, therefore, not natural; it is man-made. And treating drinking water as a sector or an issue by itself has distinct drawbacks. It requires a holistic view of water, not only its conservation, but regulation to its access and of its use. Water has now be treated as a national, natural and scarce resource.

In the sanitation sector, the biggest hurdle facing a national strategy is the taboo against human excreta. One is not supposed to touch it. Whilst it is a healthy practice to wash hands and feet after going to the toilet, but to treat night soil as something which cannot be touched, has created physiological problems that come in the way of 'rural sanitation'. Further, sanitation receives different priorities in different parts of the country. Where there is space, scrub and tree cover, where there is a chronic shortage of water, where the general level of poverty is high, literacy and employment are low, household latrines will continue to be viewed as a luxury. Self-financed sanitation programmes where the institutional input concentrates on awareness creation, motivation and creation of infrastructural facilities will succeed in very special environments - one that has an apex NGO with a wide network of grassroots level organisations, where population density, literacy rate, urbanisation and politicisation of rural people are all high and where privacy is at a premium (such as in Kerala and West Bengal).

As formulated by UNICEF in India, it can be said that the sanitation programme must move:

From	To
Hardware	Software
Full Subsidy	Low/ No subsidy
Single Delivery System	Alternative Delivery System
Government managed	NGO motivated/community managed
Single-sector intervention	Multiple-sector intervention

Correspondingly, the future directions in the sanitation programme would be:

- develop social marketing strategies and promote alternate delivery systems in order to accelerate sanitation coverage.
- involve school and anganwadis as vehicles for expanding the outreach of the programme.
- empower women with knowledge of improved sanitary practices and the skill to construct low-cost sanitary facilities.
- expand CDD-WATSAN (Control of Diarrhoeal Diseases through Water Supply and Sanitation) strategy to a greater number of districts.
- expand the scope of the programme to include both rural and urban areas (with full emphasis on peri-urban).
- develop area-specific projects to promote sanitation in the context of PEC (primary environmental care).
- undertake research and development of technology, design and construction materials to bring down unit cost of sanitary facilities.
- institutionalise human resource development and IEC to facilitate sustainable development.
- develop state-specific projects on linking Panchayat Raj System with promotion of sanitation, on a pilot basis.
- undertake area-specific projects on parasite control (worm infestation).
- link up sanitation with vector control projects (malaria and filaria control).

In 1990, the National Drinking Water Mission published a book on 'People, Water and Sanitation - What they know, believe and do in Rural India'. It was a study conducted jointly by the Mission and UNICEF. The publication is based on a systematic and independent survey covering 7,900 individuals in 22 districts and 8 States. It brings out both the positive and negative perceptions of people about water, sanitation and health.

On the positive side, a close linkage is perceived between the three and on the negative side, is a bundle of misconceptions about sanitation. A summary of the findings that are quite revealing about the concept, technique and practice of sanitation is presented below:

Water Source:

- in almost all states (except West Bengal) open dug wells are the primary source of water.
- hand pumps are a close second.
- about 10% of people get water from lakes, ponds, rivers.
- many do not use hand pumps even if available in the village due to salinity or poor taste or distance. This is especially so if an alternative source is available.

Water Collection

- this is almost completely done by women in the age group 15-35 years.
- the average quantity of water collected is about 192 litres a day for a household of seven members.

Water Storage:

- water is stored in the same pot in which it is collected and often kept uncovered.
- hand contact with water occurs either during collection, storage or pouring.

Perception of Good and Bad Water:

- clean sweet water that cooks food well is considered good.
- turbid, coloured or water of salty, metallic taste or smell or water where grains and pulses take longer to cook is bad.

Knowledge of Water and Health Linkage:

- 88-95% believe that bad water cause health problems.
- only 10-18% are, however, aware of what health problems are caused.

Personal Hygiene:

- awareness is high and exists at the theoretical level.
- 99% wash hands after defecation and before eating.
- of these, 61% wash with water and ash or mud, 24% with water only and 14% with water and soap.
- about 50% bathe once in 2-4 days.

- importance of changing clothes at regular intervals is recognised but not practised.

Household Hygiene:

- importance is given to visible cleanliness.
- waste disposal (80%) is done with inadequate care.
- 81% households have domestic animals but no hygienic practice regarding animal dung or waste.
- 15 to 20% throw away dung.
- children's excreta is not recognised as dangerous.

Environmental Hygiene:

- few are able to establish linkage between health and environmental hygiene.
- environmental hygiene is perceived as the responsibility of the Gram Panchayat with no role for individuals.
- no linkage with personal and household hygiene is established.
- less than 20% are aware of the precise link between human excreta and diseases though 63% are aware that there is some link.

Sanitation and Latrines:

- 92% defecate out doors at common community sites.
- privacy is major concern for site selection.
- most choose outdoors out of compulsion but 31% feel it has advantages like fresh air, no unpleasant smell and even 8% think it safe. This is the perception of poorer and older persons.
- crowded villages and lack of privacy are main factors that contribute to a desire for latrines especially among women.
- only 52% have seen a latrine and very few have used it. Most have seen/used it only at public places, where maintenance is poor.
- only 5% of the people have access to community latrines but only 10% of them use it.
- most do not know its use as a manure.

- most want private latrines especially if personal expenditure is only about Rs. 570.

These findings, even though representing only 8 out of 32 States and Union Territories, give significant indications for reformulating future communication and extension strategies.

When considering water supply and sanitation together, the tendency has been to treat these programmes sometimes as separate entities and sometimes as integral parts of the same programme with the main objective of improving the health status. Both positions require that certain factors be recognised. An inter-sectoral approach combining water supply and sanitation can sometimes lead to problems of conflicting responsibility. There can be initial low output in relation to other conventional water projects largely due to the time-consuming process of conscientisation and HRD which is needed for sanitation. In India, the water supply programme is much older and well established. The need for new sources is relatively low and the main work area is in improving supply quality and quantity and establish decentralised community based maintenance of water sources. The nature of problems of large scale dependence on groundwater based sources for community-based supply is now clear but has not yet led to a significant change towards work on alternative and traditional sources. In comparison, the sanitation programme is relatively immature, is aimed at individual households, only a few successful experiences are available, the funds required for a subsidised programme are astronomical as is the man-power requirement for broad-based motivation campaigns. The diversity in sociological characteristics of communities, of geographic and climatic conditions in India, need to be understood much more deeply in a sanitation programme than in water supply programmes.

So while NGOs in future may feel that their work lies in the area of their traditional strength, working with the people, it needs to be recognised that the advocacy needs of water supply and sanitation are actually quite different.

NGOs generally favour that water resources development must be put in the context of total development in communities. There are many positive aspects of this approach. There are increased possibilities for real involvement of the target groups, in planning and decision making as well as in implementation, operation and maintenance. Potential for significant involvement of women, who were often completely excluded from past programmes, is increased, since the focus is on the whole community and not just its leaders. There is increased potential for development at the community level in the broad sense. This can encompass not just the successful provision of water, but provide an impetus for comprehensive development through mobilisation and conscientisation. There are real possibilities for basing development of felt needs in local resources. This broad developmental position makes sectoral approaches to drinking water and sanitation inappropriate to some extent, since if water is treated as a valuable resource by communities, its availability

for drinking is automatically a high priority as is its protection by means of a safer environment. Such a position relegates sanitation to a low priority activity and validates the wide spectrum of NGO involvement in water, from drilling wells to activist movements such as the 'Narmada Bachao Andolan', while the main body of NGOs seem to have focussed on human resource development and creation of cadres of grassroots level workers who will carry the conservation message through watershed development programmes.

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