Evaluation of Existing Capacities in WATSAN Sector…

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Foreword

There are indications that the Water Supply and Sanitation Millennium Development Goal (MDG) target is going to be missed. The majority of un-served people are in rural Asia and Africa. To accelerate the progress, getting skilled human resources in the WATSAN sector is critical. Many professionals, from varying disciplines, work on water and sanitation programs in the country. However, they have no special preparation other than on-the-job training and ad-hoc learning. In addition, the Water Supply sector is dominated by engineers often with limited social engineering skills, which hampers community led water and sanitation initiatives.

In order to map out the human resource gaps, Plan India undertook this nation-wide evaluation:- **Existing Capacities in WATSAN Sector** with the active support and involvement of WASH Institute. It becomes clear that a wider focus on human resource skill development in sector is urgently required. I am sure that the study findings will help to join hands for timely action in order to achieve sustainable water and sanitation services in the country and in the region.

Place : New Delhi
Date : 30th June 2009

Roland Angerer,
Country Director

WAter Sanitation and Hygiene Institute

Foreword

I am happy to introduce the national study report on **Existing Capacities in WATSAN sector**. The report highlights the importance of increased attention on capacity building needs in the field of WATSAN in both formal and non-formal sector. WATSAN practitioners need regular capacity building support especially on the emerging technologies. It is essential to attract younger generation to the sector to meet the present and future needs. I am sure that this study report will present a new paradigm in WATSAN programming to achieve the Millennium Development Goals.

Place : New Delhi
Date : 30th June 2009

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ACKNOWLEDGEMENTS

We would like to express our sincere appreciation and thanks to all the officials/ specialists, especially officials from Department of Drinking Water Supply, State Water and Sanitation Mission, Academicians, Researchers, Representatives from UN system, International Non Governmental Organisations, UNSE Water Community, WES-Net India and Civil Society Organisations for their valuable inputs and support for this study.

We also wish to thank the Country Director and staff of Plan India for their understanding and support during the entire study as well as the financial assistance to conduct this nationwide study.

Our heartfelt thanks to ORG-Nielsen Group and their research team for assisting us in carrying out this study successfully.

Governing and Advisory Committee
WASH Institute

30th June 2009

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction 1

The studies conducted by UNICEF/WHO indicate that the Water Supply and Sanitation Millennium Development Goal (MDG) target is going to be missed with most of the un-served populations in rural Asia and Africa. It is a hard truth that a number of organizations involved in addressing the water and sanitation issues in the South Asia are very limited as compared to any other development sector. The problem lies with the fact that there is no formal training or education which is designed to create specialized manpower for water and sanitation sector. About 99 percent of university education in India does not offer courses on social engineering aspects related to water and sanitation that are essential to be address the development related needs to promote water and environmental sanitation programmes (apart from the very basics of building water supply schemes and toilet construction). Yet, many professionals, from varying disciplines work on water and sanitation programmes in the country, with no special preparation other than on-job training and learning.

There are many different stakeholders deployed in the implementation of water and sanitation programmes. The involvement for water supply programmes and solid and liquid waste disposal programmes are more organized - usually through government and semi-government organizations. Sanitation – especially rural sanitation is less organized, and many different combinations of stakeholders are involved in its implementation.

The aspects of programme implementation includes complex aspects, which begin from its demand estimation and include subsequent processes of demand/generation/promotion, exploration and selection of suitable technical options, project planning (often participatory), design and costing, generation of user contributions for capital cost, involving the consumer in construction and operationalization, creating systems for repair and O&M, designing and levying tariff, motivation for use and contribution to O&M cost/tariff, etc.

At present, no single institute in India offers full fledged degree courses or short term courses on aspects of water and environmental sanitation programmes implementation, as is offered in selected universities in the western countries. The irony is that most un-served population who lack basic water and sanitation facilities lives in the rural and urban parts of countries like India, Bangladesh and Nepal, which need, but do not have, educational courses to provide trained manpower for the same.

In this context, Plan India wish to take a first step in developing a cadre of trained water and sanitation professionals, who would be deployed at different levels to support a more professionally driven approach to implementation, which would aim at increasing the effectiveness of the programme delivery, and coverage of water and sanitation services. But to do the above mentioned task effectively, it was decided to carry out a study analyzing the gaps in the different capacity building initiatives currently taken up at various levels and the need for capacity building in the sector, including requirement of specialized sector inputs. It was aimed that the findings of the study would be used to in designing, structuring and promoting relevant training courses and providing a platform for pooling the available expertise in the sector.

1.1 Objectives of the Study

The objectives of the study were as follow:

1. To review various capacity building initiatives being taken up in the country in relation to specific water, sanitation and hygiene issues presently facing the country.
2. To identify the capacities required at the ground for different stakeholders involved in the water supply, sanitation, solid and liquid waste disposal and management programmes.
3. To analyze the quality of trained manpower available and manpower related issues faced by stakeholders involved in implementing water supply, sanitation, solid and liquid waste disposal and management programmes.
4. Identifying the factors attributing to lack of enough human resources in the sector towards progressing millennium Development Goals.
5. Recommend broad areas of actions to be taken up to meet the gaps or issues identified through the study, if necessary.

1.2 Thematic Scope of the Study and Target Segments

The thematic scope of study included the following tasks:

Task 1: Desk research

a) Desk research

The research exercise started with a perusal of available documents on training materials and course content on specialized courses for water and sanitation to give the research team a contextual background for the study.

b) Interviews with national level stakeholders

Discussions were held with key national stakeholders in the Ministry of Rural Development and the Rajiv Gandhi National Drinking Water Mission (for Watsan inputs), various donor agencies like UNICEF, World Bank, WSP-SA who are involved in strategic partnerships with the government to promote the sector, and the Ministry of Health and Family Welfare (for related hygiene promotion).

The purpose of these discussions were to first understand completely the various water and sanitation programmes being implemented in rural areas of the country and under different institutional arrangements (supply-driven and demand-driven institutions). Subsequently, to elicit on the possible gaps in knowledge, skills and capacity for different kinds of manpower deployed in the sector through government, semi-government, and NGO organizations – in technical and non-technical capacity, and the kind of post recruitment HRD efforts that have been undertaken to bridge the learning gaps – the duration and content of these training courses.

Task 2: Preparation of research tools

The next task was to develop interview guidelines, checklists, and structured questionnaires for the demand-side interviews, and the discussion guidelines and semi-structured questionnaires for supply-side interviews.

The first step was to identify possible respondents for interviews at the state and district level, which formed the information source for the demand-side information. For each such type of respondent, the information needs were listed in a checklist form. The next set of tools was developed for the supply-side set of respondents, in a similar manner, by identifying possible institutions and organizations and the key information areas.

With the finalized information checklist, the development of research tools were initiated, and these had been pre-tested in 1 district of 2 states (developed and not developed) which is not selected for the study for the demand-side research tools, and in 2 institutes for the supply-side guidelines. After pre-testing and incorporating field level inputs, these questionnaires had been submitted for peer review, and finalized after discussion of inputs and comments.

The next step was to finalize the selection of states from each identified group, taking suggestions from sector experts, and the districts in these states.

Task 3: Assessment of training, education and orientation requirements of technical and non-technical manpower for implementation of watsan programmes (demand-side assessment)

In each state, interviews were held with the key officials to understand the macro perspectives of training requirements in the sector for people fulfilling different jobs in implementing the software and hardware components of water supply, toilet, hygiene, solid waste and waste water disposal programmes, the main institutes supplying manpower for jobs for different functions and different levels, the type of educational qualifications considered to be most suitable for the respective jobs, and the reasons for the same. The competent agencies contacted for such interviews were the State Water Supply and Sanitation Department, the State Water and Sanitation Mission, government or autonomous agencies who are the executing arms for the water and sanitation sector, State Water Resources Department, and any donor agencies implementing water, sanitation and hygiene programmes.

Similarly, in each selected district, the concerned department/organizations have been contacted to explore the following issues:

- Identify the different kinds of personnel – both technical and non-technical staff deployed at different levels in the implementation of water, toilet, hygiene, solid waste and liquid waste disposal programmes.
- Recruitment criteria (including minimum and most popular qualifications) for each such personnel, including knowledge expectations, roles and responsibilities expected to be performed.
- Main organizations/institutions supplying professional manpower for jobs at different levels.
- Current manpower requirement for each such personnel and current deployment, and reasons for shortfall if any.
- Current HRD and capacity building courses and contents organized for each such personnel, and the objectives for undertaking the same.
- Perceptions about the gaps in training and education for different personnel involved in the implementation of the programmes.

To understand the above, in-depth interviews had been organized with the CEO of Zilla Panchayat, the District Development Officer, the key office bearers of the PMU or DWSSM, as well as with the officers involved in training and recruitment. Interviews were also

conducted with engineer, NGO representatives (community development officers, gender specialists, training officer, IEC officer, Community mobilizers and community organizers) who were involved in the implementation of water and sanitation programmes.

Task 4: Identification of training, education and orientation gaps between demand and supply of technical and non-technical manpower for on-going Watsan programmes (demand-side analysis)

The second task was to compile the information generated from the demand side survey and analyze the same to identify the gaps in training, education and orientation.

Thus, areas where no additional learning is required, and the subject areas which need further learning input or orientation has been identified for technical manpower deployed at various levels and with varying qualifications varying from diploma, to bachelor's degree and master's degree. Additionally, the orientation about the user needs and participation requirements at different phases of project implementation was also analyzed to make the training requirement robust and comprehensively defined.

In a similar manner, the training-learning gaps for the non-technical manpower, (social scientists, community development experts, gender specialists, community mobilizes and organizers) has also been identified.

Along with the identification of training needs, a list of institutes/organizations providing degree/diploma education courses, and other academic institutes in which the respondents have got related training has been generated, and this list was segregated for institutes within the state, and outside the state, and from the latter, premier national institutes has been identified.

This task, therefore, provided the basis for assessing the suitability of the courses provided by various institutions that have provided basic or advanced education to manpower deployed in the water and sanitation sector.

Task 5: Identification of gaps between existing education and training courses on water supply, sanitation, solid and liquid waste disposal and management vis-à-vis the assessed demand for the same (supply-side assessment)

This task was undertaken in a two steps.

Step 1: Interview of 4 – 5 academic/professional/research institutions suggested by state

officials to be providing maximum manpower to the WATSAN sector, validated by the list of organizations generated under the demand side survey of persons deployed in the district and sub-district level.

Step 2: Interview of a maximum of 15 premier national level academic/professional/research institutions with the help of sector experts and inputs from the demand-side survey.

The Interviews focused on the following issues:

- Whether the course coordinators are updated on the major water and sanitation programmes implemented in rural areas of the country, and the sector expectation of manpower choosing to join the WATSAN sector for jobs.
- Suitability of provision of education with ground reality - whether any of the teaching staff has on-job experience of implementing different kinds of water and sanitation programmes.
- Whether courses have options for practical training in parts of the country which most require water and sanitation infrastructure.
- Whether the current courses address the gaps identified under the demand-side survey.
- What alternative solutions are available for bride courses, further specializations o address learning gaps.

In each institute, interviews were held with the Chairperson/Dean, and the course coordinator of water supply, sanitation (toilets, solid and liquid waste disposal) and hygiene aspects.

Task 6: Analysis and recommendations on broad areas of action

The findings emerged from the supply-side have been measured against the demand-side output, to validate and finalize training-learning gaps, and possible solutions to impart education/training to mitigate the same. The final outcome of this research has been used to draft suitable policy recommendations.

1.3 Sampling

In line with the objectives of the study as outlined above, the study adopted the qualitative research design, which mainly involves the interviews done using the semi-structured questionnaire that captures responses in a descriptive manner. Hence, the design does not aim to generate figures or data in quantitative numbers.

This study has been undertaken in four states, representing differing levels of accomplishment or coverage of water and sanitation infrastructure. The data on percent population having access to improved water supply and sanitation facility as per NFHS-3 is considered and states were combined into four distinct groups:

Group 1: High improved water supply and toilet coverage

Group 2: High improved water supply and low toilet coverage

Group 3: Low improved water supply and high toilet coverage

Group 4: Low improved water supply and low toilet coverage

The groups have been segregated into high and low coverage using the median coverage value for each indicator (access to improved water supply and access to toilets). The state highlighted is selected to be covered for the study, considering that each of these represent sufficient large populations, and could therefore be taken to represent the group.

High water, low toilets	**High water & toilets**
Jammu & Kashmir Arunachal Pradesh **Assam** Manipur Meghalaya Mizoram Nagaland Sikkim Tripura Goa Kerala	Delhi Punjab **West Bengal**
Rajasthan Chhattisgarh Madhya Pradesh Orissa Jharkhand	Haryana Himachal Pradesh Uttaranchal Uttar Pradesh Bihar Gujarat **Maharashtra** Andhra Pradesh Karnataka Tamil Nadu

85% HH with improved water supply

Low water & toilets	56% HH with toilets	**High toilet, low water**

It was proposed to cover one state purposively from each group, and two districts in each state to understand the demand aspects of the study, by covering all stakeholders at district level in charge and critically involved in the implementation of water supply, sanitation, solid and liquid waste disposal and management programmes.

To understand the supply-side aspects it was decided to visit educational and academic institutions providing education and training inputs related to water supply, sanitation and public hygiene. It was anticipated that these would be key engineering and public health institutions.

The sampling has been explained elaborately in the research tasks. The summary of the sample size achieved is as follows:

S. No.	Respondent Group	Sample Size
1	Number of states covered	4
2	National Level Stakeholders	9
3	State Level Stakeholders	8
4	District Level Stakeholders	9
5	District Level Staff	28
6	NGOs	6
7	National Level Institutions /Research Organizations	12
8	State Level Institutions /Research Organizations	9
	Total	**81**

However, the detail of the sampling has been enclosed in **Annex 1**.

2 Review of WATSAN Programs

T In the last 50 years, the Government of India (GoI) has put significant efforts to outreach all habitations and provide them access to safe drinking water and sanitation facilities through various centrally and state sponsored programmes (Figure 2.1).

The approach of providing water supply and sanitations services to rural areas has undergone a major paradigm shift in 1999. Till 1999, the approach was to evolve a government made delivery system i.e. PHED, to provide services to the rural habitations, referred to as "supply driven approach". Post 1999, it was felt that the water supply and sanitation schemes should be demand-responsive in nature, wherein, the government's role should be limited – only to build infrastructure on the cost-sharing basis, whereas, the responsibility of entire operation and maintenance should be rest with the local community.

While most of these programmes have been able to have greater penetration into rural areas and coverage of habitations, but a considerable number of them have still remained uncovered. Till date, 74 percent of the rural habitations have been declared as fully covered with drinking water facilities, whereas, sanitation coverage in rural areas is only 20 percent (Planning Commission 2007). The situation is particularly inadequate for sanitation, since only one of three Indians has access to improved sanitation facilities including improved latrines.

Even though a three-fourth of the habitations are covered with drinking water supply but a sizeable proportion of them yet suffer from the water quality problem, depletion of water table due to excessive extraction, problem of defunct sources, slippage from fully covered to partially covered, etc., posing greater challenge for the sustainability of supply. Similarly, knowledge and usage of safe hygiene practice are some of the critical issues to be tackled in the sanitation sector.

How such programmes have evolved in the country has been discussed in detail in the following sections. The chapter reviews each of the programmes and provides a systematic understanding of the delivery mechanism for water supply and sanitation sector in the selected states. The review of programme and delivery mechanism would enable to comprehend the issues discussed in the subsequent chapter.
In this context, Plan India wish to take a first step in developing a cadre of trained water

Figure 2.1 Programmes in Water Supply and Sanitation Sector

WATSAN Programme – A Paradigm Shift

1951-56	1972-73	1986	1999	1999	2002	2005

Supply Driven Approach *(Government driven & Centralized in nature)*	**Transition Phase**	**Demand Driven Approach** *(Community driven & decentralized in nature)*

No mission progra	**Accelerated Rural Water Supply Programme ARWSP)**	**Central Rural Sanitation Programme (CRSP)**	**Sector Reform**	**TSC**	**Swajaldhara**	**Bharat Nirman**
Initially the approach was to create a widespread institutional delivery mechanism called PHED across hierarchy of administrative units Allocation of funds was made five year plan wise to prepare health plan	The ARWSP was introduced in 1972-73 by the GoI to assist the States and Union Territories (UTs) to accelerate the pace and coverage of drinking water supply In 1980sentire programme of providing water to villages was given a **Mission approach**, with the formation of the Technology Mission on Drinking Water and Related Water Management (also called the National Drinking Water Mission (NDWM)	The CRSP strives to provide sanitation facilities to the rural populations to generate awareness about use of toilets and safe sanitation by providing individual household latrine, women complex and school sanitation and garbage disposal system	**Launched in April 1999** **Operated in 64 districts** **Expanding to 75 districts** **$400 million project outlay** **$117 million already released** **70 million beneficiaries**	TSC is a comprehensive programme to ensure sanitation facilities in rural areas with broader goal to eradicate the practice of open defecation. TSC as a part of reform principles was initiated in 1999 when CRSP was restructured making it demand driven and people centered. It follows a principle of "low to no subsidy" where a nominal subsidy in the form of incentive is given to rural poor households for construction of toilets. TSC gives strong emphasis on **Information, Education and Communication (IEC),** Capacity Building and Hygiene Education for effective behaviour change with involvement of PRIs, CBOs, and NGOs etc.	Under this scheme, a MoU was singed between GoI and State Governments to ensure their commitments to carry further the reform principles. People's contribution is an important component of Swajaldhara, as the users will implement the Scheme and undertake its O&M, only when they contribute towards the project cost	The scheme was launched by GoI in 2005. It has an important component of rural water supply, since this program cater to the development of rural infrastructure

2.1 Review of Specific Programs in WATSAN sector

Water is listed as a State subject, i.e. state has a constitutional right to formulate and execute laws, schemes for the people. The first national water supply and sanitation programme was started in 1954, during the first Five Year Plan (1951–56), albeit as part of the government's health plan. The approach of the government at that time was to initiate the process of building the institutional system across administrative units to deliver the water supply and sanitation services to the rural areas. Hence, in each subsequent five-year plan, the adequate funds were parked to develop and strengthen the state Public Health Engineering Department (PHED). Although, this was an important move from government to outreach and provide services to the rural areas, but over a period of time it was realized that a considerable number of habitations remain unserved.

Accelerated Rural Water Supply Programme – Supply Driven Approach

Despite the fact, that rural water supply is a state subject, in 1972-73; the GoI launched a programme called the ***Accelerated Rural Water Supply Programme (ARWSP)***. The programme aimed to assist States and Union Territories to achieve the following objectives:

1. To ensure coverage of all rural habitations with access to safe drinking water
2. To ensure the sustainability of drinking water systems and sources
3. To tackle the problem of water quality in affected habitations
4. To institutionalize the reform initiatives in rural drinking water supply sector

In 1980s entire programme of providing water to villages was given a Mission approach, with the formation of the T**echnology Mission on Drinking Water and Related Water Management** (also called the **National Drinking Water Mission (NDWM))**. The objectives of the National Drinking Water Mission were:

1. To cover 1,37,155 villages left from being benefited by earlier water supply schemes and projects
2. Evolve an appropriate mix of technology
3. Improve the performance and efficiency of other on-going programs
4. Creating awareness among people about safe drinking water
5. Taking conservation measures for the sustainability of water supply

Later, in 1991, the Technology Mission was renamed to **Rajiv Gandhi National Drinking Water Mission (RGNDWM)**, and continued to be with the Department of Drinking Water Supply, which was under the then Ministry of Rural Areas and Employment (now called and Ministry of Rural Development).

Although the programme has been able to penetrate into rural areas and increased coverage for water supply and sanitation services, but it could not completely reduce the number of uncovered habitations. The reasons identified for such a mismatch were: rampant cutting of forests for agriculture and expanding cities, led to drying up of ground water sources, as recharge of water table decreased; rapidly declining water table, aggravating the problem of water quality due to arsenic, fluoride, iron etc.; supply driven approach focused on construction, and neglecting the maintenance component of the infrastructure; lack of community participation in operations and maintenance; overlooking traditional practices of water conservation and ground water recharge; slippage of habitation from Covered habitation to Partially /Uncovered habitations; high breakdown rate of systems.

Sector Reform – Transition from Supply Driven to Demand Driven approach

Water is perceived by the rural public as a social right, to be provided free by the Government, rather than as a scarce resource which must be managed locally as a socio-economic good in order to ensure its effective use. This perception has grown out of the fact that the present rural water supply systems are designed and executed by the Department/Boards and imposed on end-users. Demand preferences of the people are not taken into account while executing the schemes. In other words, rural water supply programme has adopted a supply driven approach. Experience has shown that the present approach has led to the failure of a large number of water supply systems/schemes due to poor operation and maintenance.

An investment of over Rs. 40,000 crore has been made in the sector and huge infrastructure and systems built up since independence. It is paramount that the systems so created are made functional to a great degree to achieve sustainability. There is a general recognition that a transformation from a target based, supply-driven approach which pays little attention to the actual practices and/or preferences

of the end users, to a ***demand-based approach*** where users get the service they want and are willing to pay for is urgently required. Implementation of a participatory demand driven approach ensures that users obtain the level of service they desire and can afford to pay. Further, full cost recovery of operations and maintenance (O&M) and replacement costs will ensure the financial viability and sustainability of the schemes. The conditions under which people would be willing to maintain and operate water supply schemes are: if they own the assets; if they have themselves installed the handpump, or being actively; involved throughout; if they have been trained to do simple repairs; if they know the government will not maintain the asset; if they have sufficient funds for maintenance, and if they have to pay for O&M.

In this backdrop, the ***Sector Reform Project (SRP)*** was launched on pilot basis in 1999-2000 with the objective of institutionalizing community participation and demand responsive approaches in order to ensure sustainability of drinking water systems and sources in the rural water supply programme. The SRP covered 67 districts in 26 States. Later projects in two districts in the State of Sikkim have been closed due to lack of progress in implementation and now 65 districts in 25 States are covered under the project. The Sector Reform Project was to be scaled up to cover the whole country from the Tenth Plan. In December 2002, the reform initiative was scaled up to cover the entire country and was named Swajaldhara. Detailed instructions have been issued to the States regarding the mode of transition of Sector Reform Projects to Swajaldhara.

Swajaldhara Programme – Demand Driven Approach

Swajaldhara programme was launched in 2002 to scale up the reforms of Water supply sector throughout the country. This programme has the key elements of demand–driven and community participation based approach, wherein the Panchayats / communities would plan, implement, operate, maintain and manage all drinking water schemes. It incorporated basic reform principle:

1. Community led and demand responsive schemes;
2. Panchayats/communities to plan, implement, operate, maintain and manage all drinking water schemes

3. Ten percent capital cost and Operations and Maintenance cost borne by users.
4. Freedom to gram panchayat to levy tariff, and full ownership of water supply scheme assets with gram panchayats.

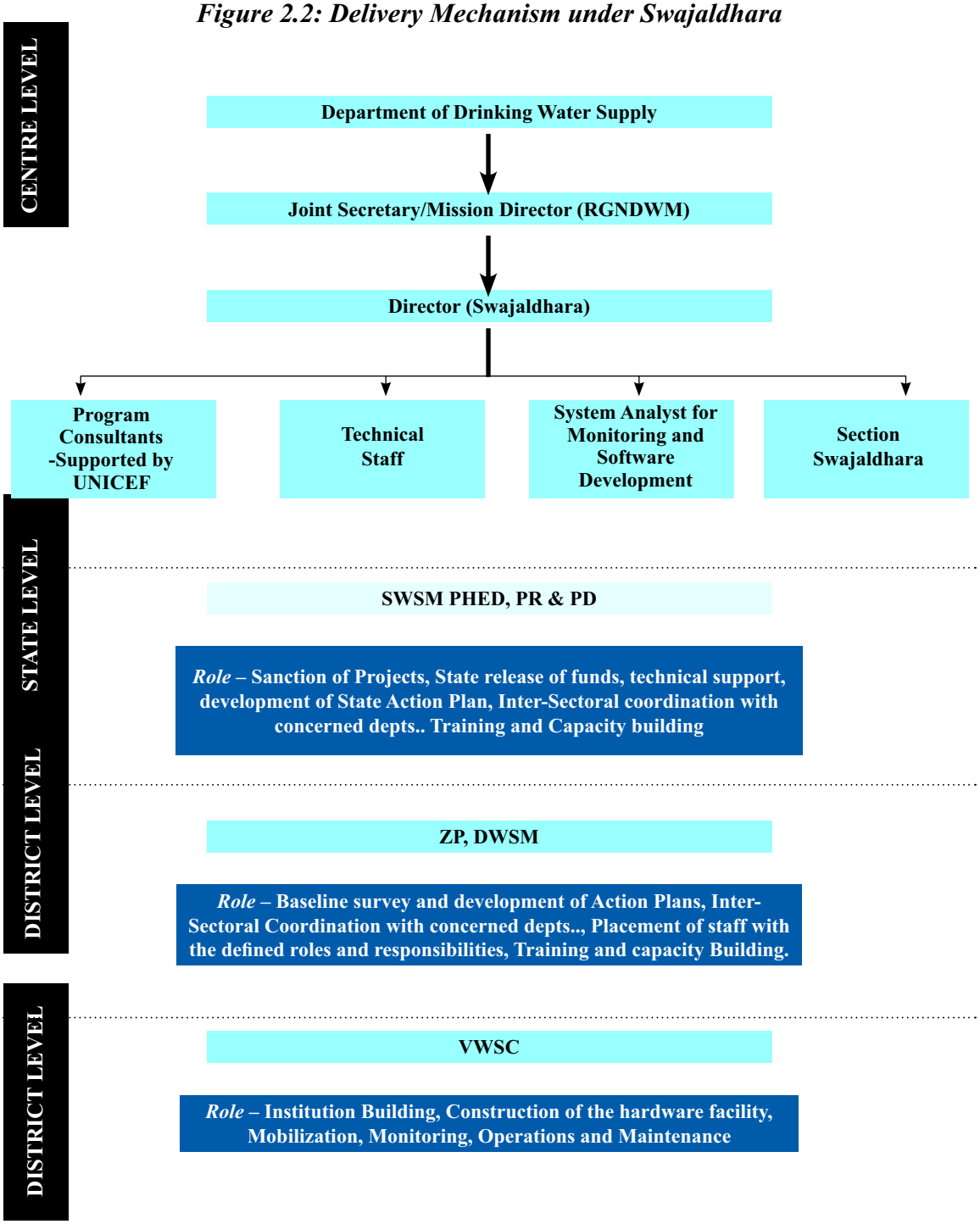
Under Swajaldhara scheme, a MoU was singed between Government of India and State Governments to ensure their commitments to carry further the reform principles. In this new approach, the Government's role is primarily as a facilitator. People's contribution is an important component of Swajaldhara, as the users will implement the Scheme and undertake its O&M.

It is important to note that the applicant Gram Panchayat / Block Panchayat shall open a separate and exclusive savings bank account in a nationalized or Cooperation Bank. All the community contribution shall be deposited in that account. The District implementing Agency shall also have separate account to receive funds under Swajaldhara from the GoI. This scheme is meant for taking up only simple community oriented schemes, not for capital intensive projects which cost in lakhs of rupees. Providing the water supply facilities in schools, uncovered habitations can also be implemented under Swajaldhara. The programme also entails the revival of traditional water sources to ensure drinking water sustainability. As a general rule, capital intensive schemes costing Rs. 25 lakhs or more, for a single village can be taken up under Accelerated Rural Water Supply Programme

Swajaldhara being a public participative programme requires prolonged IEC activities to be implemented besides conducting trainings for Human Resource Development (HRD). Continuous and effective efforts are required to develop the feeling of 'ownership' in the rural community. This gradually enhances and strengthens their capacity of decision-making. Therefore, the implementation of these schemes takes longer time upto thirty six months.

The figure 2.2 presents the delivery mechanism through which the water supply facility can be provisioned to the Gram Panchayat under Swajaldhara model. However, it may be noted that to get the benefit of Swajaldhara, the scheme has to be demand-responsive in nature. The local community through their Gram Panchayat can demand for better scheme or technological option.

Figure 2.2: Delivery Mechanism under Swajaldhara



Bharat Nirman Scheme

The scheme has been launched by GoI in 2005, to be implemented during four year period. It has an important component of rural water supply, since this program cater to the development of rural infrastructure. During Bharat Nirman period, 55,067 un-covered and about 3.31 lakh slipped-back habitations are to be covered with provisions of drinking water facilities and 2.17 lakh quality-affected habitations are to be addressed for water quality problem.

To achieve drinking water security at village/ habitation level, conjunctive use of water sources i.e. judicious use of rainwater, surface water and ground water is promoted.

Norms for coverage under water supply component of Bharat Nirman are:

1. 40 liters per capita per day of safe drinking water for human beings;
2. 30 liters per capita per day additional for cattle in Desert Development Program Area
3. One hand pump or stand post for every 250 people
4. The water source should exist within 1.6 kilometers in plains and within 100 meters elevation in hilly areas

The scheme is funded on a 50 percent basis by the GoI and actual requirement of funds worked out by the centre on the basis of name of habitation supplied by states.

Central Rural Sanitation Programme – Supply Driven Approach

A direct relationship exists between water, sanitation and health. Consumption of unsafe drinking water, improper disposal of human excreta and lack of personal and food hygiene have been the major causes of many diseases in developing countries like India. High infant mortality rate is also attributed largely to poor sanitation. It was in this context that the **Central Rural Sanitation Programme (CRSP)** was launched in 1986 with the objective of improving the quality of life of the rural people and to provide privacy and dignity to women. The concept of sanitation was earlier limited to disposal of human excreta by cess pools, open ditches, pit latrines, bucket system etc. today it connotes a comprehensive concept, which includes liquid and solid waste disposal, food hygiene, personal, domestic as well as environmental hygiene. Proper sanitation is important not only from the general health point of view but it has vital role to play in our individual and social life too. Sanitation is one of the basic amenities people must have as it has a

direct link to food hygiene. Good sanitation practices prevent contamination of water and soil and thereby prevent diseases. The concept of sanitation was, therefore, expanded to include personal hygiene, home sanitation, safe water, garbage disposal, excreta disposal and waste water disposal.

The CRSP strives to provide sanitation facilities to the rural populations, generate awareness about use of toilets and safe sanitation by providing individual household latrine, women complex, school sanitation and garbage disposal system. Significant activities under this scheme include construction of individual sanitary latrines with 80 percent subsidy to the poor below the poverty line, stress on school sanitation, encourage other households to have facilities on their own, launch intensive awareness campaigns, establish sanitary complexes exclusively for women and promote total sanitation of villages. Implementation is done through the State Government Department, namely Public Health Engineering Department / Panchayati Raj Department and Rural Development Department with the active involvement of NGOs through campaign approach.

Total Sanitation Campaign – Demand Driven Approach

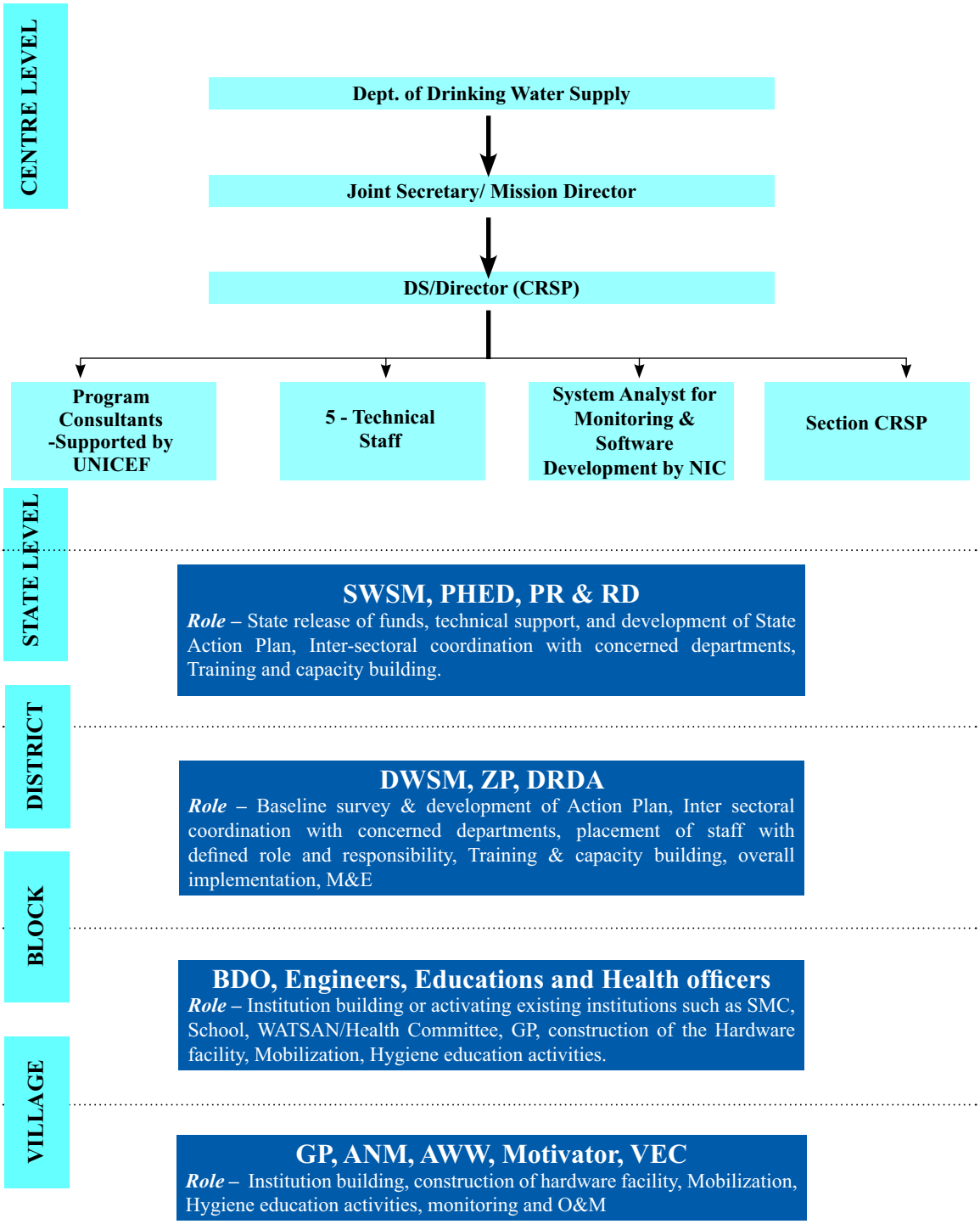
Total Sanitation Campaign is a comprehensive programme to ensure sanitation facilities in rural areas with broader goal to eradicate the practice of open defecation. TSC as a part of reform principles was initiated in 1999 when CRSP was restructured making it demand driven and people centered. It follows a principle of "low to no subsidy" where a nominal subsidy in the form of incentive is given to rural poor households for construction of toilets. TSC gives strong emphasis on Information, Education and Communication (IEC), Capacity Building and Hygiene Education for effective behaviour change with involvement of PRIs, CBOs, and NGOs etc. The key intervention areas are Individual household latrines (IHHL), School Sanitation and Hygiene Education (SSHE), Community Sanitary Complex, Anganwadi toilets supported by Rural Sanitary Marts (RSMs) and Production Centers (PCs). The main goal of the GOI is to eradicate the practice of open defecation by 2010. To add vigor to its implementation, GOI has launched an "Incentive Scheme" for fully sanitized and open defecation free Gram Panchayats, Blocks and Districts called ***Nirmal Gram Puraskar***. In this regard many Panchayats such as Gram Panchayat, Intermediately Panchayat, and district Panchayats send their applications to the state government for the award.

The figure 2.3 presents the delivery mechanism through which the awareness generation and capacity building of the functionaries who in turn motivate the local community in making sanitation service more demand-responsive. The role of center is to look after the entire management, whereas, state level SWSM, PHED, and PR & RD departments'

responsibility is to maintain the flow of funds and provide technical assistance to the concerned departments at the lower level administrative units in the preparation of their schemes.

The task assigned to the departments at the District, Block and Gram Panchayat level is to collaborate with the Panchayats at each level and devise effective strategies to inform, educate and communicate the local community about the importance of sanitation and domestic hygiene, in turn, generating demand for better sanitation services.

Figure 2.2: Delivery Mechanism under Swajaldhara


CENTRE LEVEL
Dept. of Drinking Water Supply
Joint Secretary/ Mission Director
DS/Director (CRSP)
Program Consultants -Supported by UNICEF
5 - Technical Staff
System Analyst for Monitoring & Software Development by NIC
Section CRSP
STATE LEVEL
SWSM, PHED, PR & RD
Role – State release of funds, technical support, and development of State Action Plan, Inter-sectoral coordination with concerned departments, Training and capacity building.
DISTRICT
DWSM, ZP, DRDA
Role – Baseline survey & development of Action Plan, Inter sectoral coordination with concerned departments, placement of staff with defined role and responsibility, Training & capacity building, overall implementation, M&E
BLOCK
BDO, Engineers, Educations and Health officers
Role – Institution building or activating existing institutions such as SMC, School, WATSAN/Health Committee, GP, construction of the Hardware facility, Mobilization, Hygiene education activities.
VILLAGE
GP, ANM, AWW, Motivator, VEC
Role – Institution building, construction of hardware facility, Mobilization, Hygiene education activities, monitoring and O&M

Quality of Human Resource in WATSAN Sector 3

The study primarily focuses on the human resource dimension of Water Supply and Sanitation (WSS) sector in India. This chapter being the central of the report analyzes various aspects related to human resource in WSS sector. The chapter is divided into three broad heads. It firstly, establishes the ***conceptual framework*** of 'skill-continuum' and 'demand and supply side' of human resource. Under the second head, the chapter presents the analysis on ***demand-side***[1] based on the qualitative discussion with the senior level government officials, policy makers and other stakeholders. The issues covered during discussions focused human resource aspects at different levels across government and non-government institutions in this sector. Thus, a broad scenario under these institutions has been built regarding existing capacities, type of and adequacy of manpower, the continuum of skills set required for the sector, sources of manpower, channels of entry in the sector, recruitment and selection process, post HRD measures in vogue, Career planning and the like. The third head brings under it a detail analysis related to supply-side[2] presenting issues of the providers of the manpower to this sector.

Flow of Chapter

Conceptual HR Frameworks
(It deals with the Continuum of skills set available in the sector and the concept of Demand Side & Supply Side)

Demand Side
(It first discuss the stakeholder-wise deployment of manpower at different level in the sector entailing the existing capacities and emerging gaps, sources of manpower, channels of entry in the sector, recruitment and selection process, post HRD measures, Career planning, etc.)

Supply Side
(In this section an attempt has been made to analyze the Colleges/ institutions providing manpower with reference to the nature and scope of training they offer, linkages with the industry, etc)

1. Defined as the work places which engage the manpower working in WSS sector. Such places may be the government departments, ESAs, NGOs, etc.
2. Referred to as the sources where the supply of manpower comes from. They are Research Institutes/Universities / Technical Degree Colleges, etc.

3.1 Conceptual HR Framework – WSS SECTOR

Infrastructure for safe drinking water and sanitation has been provided to about 85 percent of India's urban and rural population[3]. Not only this infrastructure but the subsequent Operation and Maintenance (O&M) of this infrastructure has been take care by various government institutions across the country. Both laying down of the infrastructure and adequately maintaining it for sustainability requires lot engineering technology, usually civil engineering. The key skill being the engineering, majority of the manpower in the sector are from the engineering background. However, there are few professionals who are not hard core engineers but come with diverse backgrounds such as public health, economics, social-work, etc. and are employed with various donors, NGOs, CBO, Private organizations. Thus, the sector engages manpower ranging from hard core engineering to social/ development experts.

3.1.1 Continuum of Skill-set in WSS Sector in India

The continuum of skills pictorially depicts the concept about the range of skills that are currently deployed and also the ideal range that is required in the sector (Figure 3.1). The two end of the continuum indicate the two extremes of skill-set, where the left end is represented by purely technical skills while the other end purely non-technical skills (Technical in this continuum has been defined as engineering and non-technical means non-engineering). Between the two ends are varying degree of combination of non-technical and technical skills for instance as one moves from left to right on the continuum, the manpower would be increasingly non-technical and decreasingly technical in nature. Parallel to this skill continuum is present the type of manpower and the type of organizations/ institutions they are engaged in.

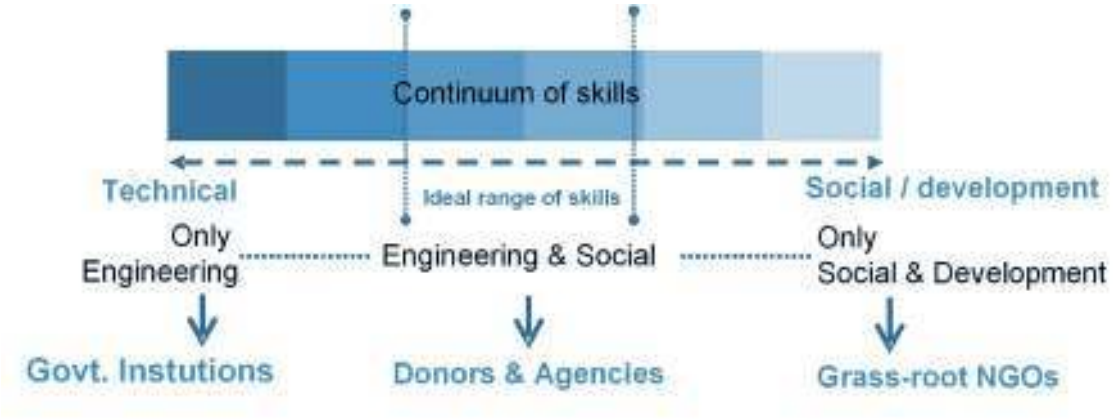
(a) ***WSS sector is dominated by manpower purely technical in nature***

In WSS sector, the majority of manpower deployed at different levels across various types of organizations is having purely technical skills i.e. majority of human resource hail from the technical background having degrees or diplomas in Engineering, Agriculture specialists, Geologists/Hydro-geologist, etc. And, it is mainly government institutions that employ such technical staff. These government institutions are State Public Health and Engineering Department (PHEDs) or as in case of some state, Panchayati Raj Engineering Departments, Rural Development Engineering Departments and Water Boards.

3. India Assessment 2002: Water Supply and Sanitation; WHO-UNICEF, 2002.

According to a **Lecturer, Dept. of Civil Engineering,** *Engineering College, Pune,"… Background of the staff in the water supply and sanitation sectors is mainly technical in nature – whether diploma/degree holder, engineers are dominating the field. Professionals and experts from other fields just complement/ support them through indirect channels…"*

Figure 3.1: Continuum of Skill-set in WSS sector



Beside the government institutions dominating the sector, there are various non-government players and they are the ones which usually engage non-technical staff that are not hard core engineers. Among such non-government players are very important organizations such as Donors, International NGOs/CBOs and agencies which are provide technical, strategic, consultancy inputs and also some financial assistance to the programmes/ schemes to the WSS sector in India. These engage professionals with engineering and development background. On the other extreme of the continuum of skill in WSS sector is purely non-technical manpower with sociology/ development background that are deploy by some research agencies, consultancy firms and by local NGOs and village committees at grass-root level.

(b) Existing capacities of manpower and skills engaged in WSS sector

As stated above, government institutions like PHED implements WSS programmes by laying down the construction and undertaking civil works require engineers. Engineering graduates join these government departments and institutions as Assistant engineer/ Executive engineer at block/ district level, and then migrate to higher positions mainly through promotions. It may be mentioned that there is no mechanism of direct recruitment at higher position even if the candidate is experienced and competent for the post. Currently,

almost all engineering courses lack subjects and modules on social/ development and hence majority of the engineering graduates continue to lack understanding of this softer aspect of education pertinent for WSS sector. However, after joining these government departments they get some exposure to social/ community related issues, although it continues to remain inadequate.

> *In the words of **Professor, MNIT, Jaipur**, "…the trend has been the requirement for civil engineering as the only academic criteria for applying for position in PHED…"*

The experienced lots who join new positions in the WSS sector are the ones who have developed some understanding of social/ development mainly through on-job experience and occasionally through some training. Similarly, experts feel that regarding the professionals engaged in donor agencies, consultancies, international NGOs come from diverse backgrounds of sociology, community development, public health, etc. but they constitute a very small sections of human resource engaged in the sector.

> *The **Director, WaterAid** holds a similar opinion when he says that, "…WSS aspects being taken care by mainly government institutions, the recruitment system has been attracting freshers holding minimum academic requirement of engineering degree. The experienced professional who have worked in these departments, and then have moved to organizations like Unicef, World Bank, etc. and again come back to government departments are not many…further professionals beside engineering degree directly joining the sector have rare opportunities except at that at the local grass-root NGO level"*

On the implementation side, there is wide range of manpower below the district level onwards. Besides, both government and non-government stakeholders at the district level, there are various capacities that are working even at individual level such as consultants and people on contract for certain programme or component of programme. Where they are located and how they would be available is not certain as they are not registered or attached with any forum such as portals or society of WSS professionals. This phenomenon is more pronounced in case of soft component such as IEC/ training/ consultancy in this sector. Similar problem is encountered even at the village level, too.

> *"…sometimes it becomes very difficult to get the required professional for various software related issues like advocacy, consultancy, training or undertaking various IEC related activities"*

Hence, it is felt that the experienced professionals carry some advantage of their job related exposure compared to the freshers and those at junior positions and who still constitute the major chunk of manpower in WSS sector.

(c) Inadequate range of skill-set in place in WSS sector

Regarding adequacy of current skills-set with the manpower, it is felt by both the policy makers and implementers that there is lack of adequate mix of technical and non-technical skills in the sector. Although the nature of work in WSS sector does require majority of the workforce to be technical (i.e. engineers) in nature but it lacks the required exposure to the community/ social/ development related non-technical aspects.

> *As expressed by Sanitation specialist,* **World Bank** *"…the sector does require engineers simply because there is so much of construction that goes through it but at the same time these engineers should have adequate knowledge of public health, sociology, and community development…they should know that how community is going to be benefited most with the type of water or sanitation delivery system being laid down, adequate interface with the community is missing…"*

> *Similarly, the* ***Program Officer, UNICEF,*** *Jaipur felt that, "…manpower in WSS sector is not adequate for bringing in reforms that is professionals are technically trained but do not know how to handle the soft sociological issues of the sector…"*

With shifting focus from supply driven to demand driven approach, the community perspective becomes an integral part of service delivery that includes planning, designing and implementing any programme or laying down any construction in WSS sector. Thus, in contrast to current capacity of hard core engineer professionals, what is also required is a set of human resource with adequate social/ community development knowledge while engineering being their core skill.

> *As per as the* ***Assistant Engineer, PHED****, Kalyani Division, "…..we have enough number of skilled and technical manpower in our department…but the basic problem is that skill of a technical person has to be used in the right manner…lot of our staff entered the department long time back when supply driven approach was the key focus. Hence they are purely technical in nature, but they have rich experience which can be utilized if they are put to proper orientation and formal training on social/ development issues to help them perform their jobs better"*

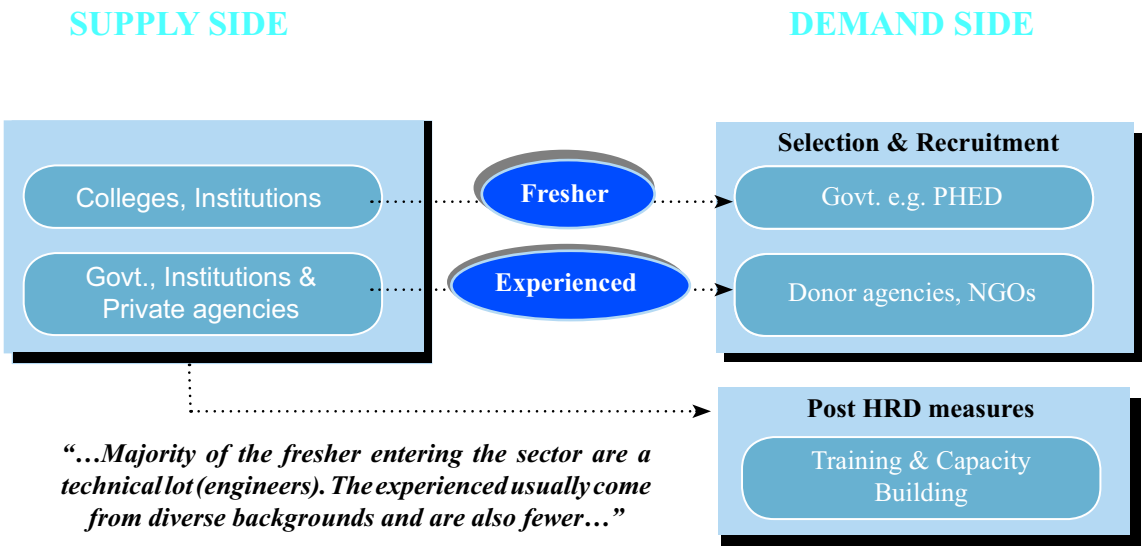
3.1.2 Demand-Supply Dynamics of Human Resource

As part of conceptual framework, there have been two terminologies frequently used in WSS sector – one being the ***Demand Side*** which includes the organizations and institutions professionally engaging various types of human resource in the sector, and another is ***Supply Side*** from where this trained/ skilled pool of human resource usually comes from (Figure 3.2).

Though figure 3.2 depicts general linkages between demand and supply sides but it may be described that the two sides are not formally connected through well-defined direct channels facilitating an easy flow of manpower between the two sides except in case of freshers entering the PHED and other similar government departments. To conclude, the interface between the demand and supply side is not adequately structured and there is a need to establish missing links between the two in order to facilitate exchange of information regarding the required manpower from the demand side and providing of the same from the supply side.

> *"There are various types of people who are working in WSS sector but there is no common forum or agency facilitating the jobs or positions being filled by the right person at the right time…"*

Figure 3.2: Demand and Supply sides of Human Resource in WSS Sector



With this backdrop, the following sections present a detail disaggregated analysis on demand and supply sides. Study of demand aspects pertained to issues such as existing capacities at different level in the entire chain of manpower deployment, current roles & responsibilities, adequacy of skills set, training prior to deployment on job, additional training requirements, key learning on job, etc. And, hence for this state level and district level stakeholders along with manpower involved at different levels and different capacities in implementation of rural and urban components of programme in WSS sector were interviewed. Supply side consists of academicians and trainers providing education and training inputs related water supply, sanitation, and public hygiene. For study of supply-side issues, key engineering colleges and pertinent academic institutions were approached.

3.2 Demand Side of HR

As outlined above, demand side in this study has been used in context to the institutions demanding / requiring the relevant human resource for implementing / executing various WSS activities. On demand side, it's the government which is the major employer of the manpower in WSS sector simply because Water and sanitation is the state subject[4], more specifically; the sector requires lot of engineering input and creation of large scale physical infrastructure both in urban and rural areas which has been traditionally being done by the government created bodies. Though in most of the states it is PHED which has been created to provide the service, but in other states there are similar types of government institutions which work on a same mechanism.

3.2.1 Central level institutions in WSS sector

At present, States generally plan, design, execute (and often continue to execute) through their State PHED and water boards, which are the most important players in the sector. However, to have some coordination and harmonization of standards, the Centre has been taking its responsibility through various Five Year Plans. It has taken a lead in guiding much of the investment in the sector, recommending styles of water supply and sanitation organizations, in promoting the need for training and research, and most recently in promoting water quality monitoring and human resources development programmes. Thus, there exists a variety of different central institutions involved directly or indirectly with water supply and sanitation.

(a) There exists wide range of institutions and capacities at the central level

Under Ministry of Water Resources (MoWR), Central Water Commission has responsibility for regulating the use of surface water for drinking water purposes, irrigation and industry

4. Water supply and sanitation is a State responsibility under the Constitution of India and following the 73rd and 74th Constitutional Amendments, 1950.

(Table 3.1). The CWC also mediates in inter-state water allocation disputes. The Central Groundwater (CGWB) of the same Ministry has an overseeing responsibility for the monitoring of groundwater levels and rates of depletion, as well as production of water resource inventories and maps. Under Ministry of Environment and Forests (MoEF), the National Rivers Conservation Directorate (NRCD) oversees implementation of Action Plans to improve the quality if nation's rivers. The Central Pollution Control Board (CPCB) within the same Ministry promotes basin-wise pollution control strategies and also liaises with State Water Pollution Control Boards (SWPCB) laying down standards for treatment of sewage and effluents.

Table 3.1: Central Government Institutions in the WSS sector

Ministry	Institution	Responsibility
Planning Commission	**Planning Commission**	Planning and allocation of Central govt. funds through Five Year Plans
Ministry of Water Resources	Central Water Commission (CWC)	Central Policy Making
	Central Ground Water Board (CGWB)	Regulatory activities of ground water concerning quality and over-exploitation
Ministry of Environment and Forests	National River Conservation Directorate (NRCD)	Responsible for river bodies
	Central Pollution Control Board (CPCB)	Pollution Watch
Ministry of Urban Development (MoUD)	Central Public Health Environmental Organization (CPHEO)	Standards setting and harmonization between states
Ministry of Health and Family Welfare	National Institute of Communicable Diseases (NICD)	Research and Advocacy, particularly with Civil Society
Others	Housing and Urban Development Corporation (HUDCO)	Funding for housing and infrastructure sector
	Life Insurance Corporation (LIC)	Development Funding

The Ministry of Urban Development (MoUD) is the nodal Ministry for policy formulation and guidance for the Urban Water Supply and Sanitation Schemes (UWSS) in the WSS sector. The Central Public Health Environmental Organization (CPHEO) is the technical

wing of MoUD, which advises the Ministry in all technical matters and collaborates with the State Agencies about water supply and sanitation activities. It plays a central role in setting standards and norms for urban water supply and sanitation. The Accelerated Urban Water Supply Programme (AUWSUP)[5] is being administered by CPHEO at the Centre.

The Ministry of Health Family Welfare (MoHFW) and the department of Health and Family Welfare continue to play important roles in the area of health and hygiene in India. National Institute of Communicable Diseases (NICD) under the Directorate General of Health Services provides training, services, and operational research in the field of communicable diseases.

Among the others, Rajiv Gandhi National Drinking Water Mission (RGNDWM) under the Department of Drinking Water Supply, Ministry of Rural Development (MoRD) formulates guiding policy, set standards and provides funds and technical assistance to the states for rural water supply and sanitation schemes (RWSS). It allocates funds under the Centrally sponsored Accelerated Rural Water Supply Programme (ARWSP) and supervises the Restructured Central Rural Sanitation Programme (RCRSP). Housing and Urban Development Corporation (HUDCO[6]), is also very active in supporting the sector. Similarly, Life Insurance Corporation (LIC[7]) has been advancing loans to local bodies and state level water supply and sewerage boards within the amount allocated by Planning Commission for each state every year.

(b) Neither skills nor the number of manpower, but frequent transfers is the only HR issue that needs to be addressed at the central Government level

The various departments, discussed above, at the central level are staffed by Indian Administrative Service (IAS) officers who are selected after qualifying competitive exam conducted by Union Public Service Commission (UPSC) or local Pradesh Service Commissions (PSCs). Such staff is generally undergoing thorough training as soon as they are selected. Hence, they are well trained and aware of the issues and challenges. As far as pertinent skills are concerned there is no problem as such, however, these IAS officers change department every three or four years and hence there is issue of pursuance of one approach that remains consistent over a significant period of time.

5. In 1993/94 MoUD launched the AUWSP to implement water supply schemes in towns with population below 20,000 (as per 1991 census).
6. HUDCO was set up by the GoI in a Bill passed in the Indian Parliament in 1970 with a mandate to assist the various government and semi-government organizations in implementing housing and development programmes in the country.
7. LIC (owned by GoI) has, as part of its statutory requirements, to invest 25% of net accretion from its controlled funds in socially oriented schemes such as housing, education, water supply and road transport. Loans are advanced at concessional rates of interest on the security of the concerned state government guarantee.

> *"The departments at central level are adequately staffed with well-trained and intelligent IAS officers guiding the design and execution of various policies and reforms, but the biggest challenge is there own transfers that keeps taking place often… each new such officer come with their own vision and approach which rarely continued by the new officer who comes in his place…this spoils the strength that naturally comes by developing expertise on one subject after a long period of time…"*

It would be beneficial to the WSS sector if at higher levels where policy designing takes place, transfers are less frequent or if they could be placed in a similar sector. Further, the managers and decision makers should have more access to independent roundtables and workshops to discuss the political economy of reform. In that sense, India currently lacks an independent, credible institution which could act as the voice of the "WSS industry" to foster reform[8].

3.2.2 External Support Agencies (donors, consultants, implementers, etc.)

Besides the above central government institutions providing inputs to the sector, there are several external multilateral and bilateral agencies providing assistance to the sector. Some of the External Support Agencies (ESAs) include the bilateral agencies of Japan, United Kingdom, United States, Denmark, Sweden, Germany, Australia, Netherlands, etc. and the multilaterals such as UNICEF, World Bank, WHO, Water and Sanitation Programme – South Asia (WSP-SA), UNDP, DFID, Water-Aid, the European Union, etc.

(a) Rich pool of Human Resource available from ESAs

The ESAs make invaluable contribution to the sector in terms of providing wide range research and consultancy support. They support demonstration and experimentation at the project level, research, introduction of technological innovations, etc. They mainly provide technical assistance by employing highly qualified specialists professional with diverse backgrounds including engineering. Even the professionals with engineering background have very rich experience in community development and other social issues some such as professionals could be 'Rural Water Supply Specialists', 'Sanitation and Hygiene Specialists', 'Utility Management Specialists', 'Water Economists', 'Public Expenditure Specialists', 'Water Finance Specialists', Communication/ IEC specialist' or 'Water Institutions/Governance Specialists', etc.

8. India Water Supply and Sanitation, Bridging the Gap between Infrastructure and Service, The World Bank, January 2006.

Such professionals joining these ESAs usually have an advanced technical degree or professional qualification with between 5 to 15+ years of relevant experience and are recognized leader in their area of specialization. They come with well demonstrated senior level experience of the water sector including thorough understanding of water programs on local communities. The recruitment of such staff is generally done through newspaper advertisement or posting jobs on the website or on relevant job portals.

In countries like India, such professionals have rich developing country experience, multi-region experience, and local language skills. Such professionals provide guidance and technical assistance worldwide throughout frequent operational travel and prospective field assignments. The experience gained from almost all donor assisted projects also show the importance of capacity building of stakeholders and other actors in the sector. The donors not only bring their own pool of qualified professionals but also impart training to other manpower involved in the programme, further building rich human resource in the WSS sector.

3.2.3 State-level Government Institutions

(a) PHED plays the central role on demand side at the State level

With the exception of some of the northeastern states and union territories, which have either public works departments or irrigation departments handling rural water supply, most state have separate public health engineering departments charged with planning, design and implementation (Table 3.2).

Table 3.2: State Government Institutions in the WSS sector

Key Agencies	Key Agencies
Public Health Engineering Department	Andhra Pradesh, Assam, Haryana, Madhya Pradesh, Punjab, Rajasthan, West Bengal
Water Supply and Sewerage Board	Gujarat, Maharashtra, Rajasthan
Zilla Panchayat Engineering Department	Karnataka, Maharashtra, Rajasthan
Panchayat Raj institutions	Karnataka, Maharashtra, Tamil Nadu, Rajasthan, West Bengal
Water Authority	Kerala
Groundwater Survey and Development Agency (RD Department)	Maharashtra
Water Supply and Drainage Board	Tamil Nadu
Jal Nigam Corporation	Uttar Pradesh
Jal Sansthan (District Engineering Section)	Uttar Pradesh

Source: Rural Water and Sanitation, World Bank report, January 2006

In some states (such as Gujarat, Kerala, Maharshtra and Tamil Nadu) the WSS boards have been constituted to handle urban and rural water (and on state, Uttar Pradesh, formed a corporation). The state level organizational matrix is quite complicated in state like in Maharshtra, the "Groundwater survey and Development Agency" is responsible for hand pump programmes, the "Maharashtra Water Supply and Sanitation Board" is responsible for piped water supply, the district is responsible for O&M, and the "Irrigation Department" is responsible for drinking water sources downstream of command areas. Despite of organizational complexity and variations across different state, the national trend is to decentralization and shifting of the responsibility on the states for bearing the cost and other capital investments. This responsibility at the state level should be borne by "Zilla Parishad Engineering Departments" at district and block levels, and O&M activities to district and, in many cases, "Gram Panchayat" levels. Andhra Pradesh is the only state in which water supply and sanitation is the exclusive responsibility of the "Panchayat Raj Engineering Department".

> *"…government is mostly responsible for WSS sector and it is the government machinery which is actually doing everything is PHED…other stakeholders are providing the support of various sorts but PHED is the central pillar in WSS in India"*

Since PHED is the most important institution in this sector, majority of the manpower in WSS sector today come from PHED or similar institutions. Thus, analysis of various human resource aspects of PHED would, by and large, represent all the institutions across the sector. Hence, this study covered a wide sample across different positions engaged with PHED in the four survey states.

(b) PHEDs and other similar institutions are adequately staffed but need to have wide range of staff and should become much more efficient

PHED is responsible for drilling tube wells, constructing, laying of pipelines, distribution network for providing safe drinking water and proper sanitary conditions, conserving water resources, etc. It is responsible for maintenance thereof for providing drinking water to both rural and urban population of the state. PHED also collaborates with other agencies for creating public awareness on public and personal hygiene.

Executing primarily engineering related jobs PHED is staffed by engineers at all levels. The positions in the organogram of PHED are, more or less, same across different states with some variations in terminology and number as per the size of the state and its

administrative units. Typically, 'The Commissioner (PHED)' is the administrative head of PHED providing all administrative support while 'The Chief Engineer' is the executive and technical head. Thus, at the state level, Chief Engineer is assisted by Additional Chief Engineer, Surveyor of Works, Engineering Officer looking after Administrative matters, Accounts Officer who is in charge of the accounts. The state might be first divided into zones and then into circles thus at each zone there is additional chief engineer at the zonal level, Superintendent Engineer at the circle level. At the division/ district level, there is Executive Engineer while at the sub-divisional/ Block level there is Junior Engineer who is in turn supported by Assistant Engineer and other workers such as supervisors, surveyors, etc. at the grass-root level.

Thus, there exists a wide range of staff from top to bottom also running parallel to the three tiers of Panchayati Raj Institutions (PRIs) at the rural side. Dominated by PHED and similar institutions/ boards, the number of manpower is adequate in both urban and rural WSS sector in India.

> *"…the sector has adequate staff…PHED employs a whole range of staff across different state and that too at all levels"*
>
> ***Executive Director, CCDU, Jaipur**, "…since it is felt that PHED is overstaffed, the recruitment of new staff is on hold…no new staff is being recruited now"*

Mega-cities which have been implementing Performance Improvement Plans for many years, often as part of externally financed projects, still have significant excess staff[9]. Data available suggest that mega-cities have staffing levels much higher than international best-practice of roughly two to three time staff per 1,000 connections in developed countries and four to eight staff per 1,000 connections in developing countries (Table 3.3). The UP Irrigation Dept, to take one example, has 86,000 employees. Its professional staff consists only of engineers. While this is so, most personnel lack adequate training.

Table 3.3: Total staff per 1000 domestic connections[10]

	Bangalore	Calcutta	Chennai	Delhi	Hyderabad	Mumbai
Total Staff per 1000 connections	8	37	16	18	17	30

Source: India Water and Sanitation Report, The World Bank, January 2006

9. India Water Supply and Sanitation, Bridging the Gap between Infrastructure and Service, The World Bank, January 2006.

10. There is great variation in data reported for staffing - one example is for Delhi where DJB reports 18, the Asian Development Bank found it to be 21.4 (1997), and other estimations find numbers to exceed 25.

Although the adequacy of staff did not emerge as the central problem, yet there was some problem related to adequacy at least in programmes and schemes operational in rural areas. The nature of demand-driven programmes, such as Swajaldhara, is such that it not only requires wide range of soft skills but also a large number of manpower at the grassroots level and to mobilize that number and type of manpower across so many villages poses a big challenge.

Linked with the above problem is the issue of inadequate rationalization of manpower in WSS sector, engaged especially below district level. The deployment of staff is not in tandem with status of coverage of are i.e. villages which are completely covered has issues related to O&M, in comparison to, villages which are partially or not covered where sill some construction work needs to be done and hence would require more staff not only in numbers but also as far as type of manpower is concerned.

As a matter of fact, it is more difficult to assess the adequacy of the level of staffing in smaller non ring fenced WSS operations for which State Engineering Agencies usually carry out many tasks and that there exist many other players. Nonetheless, less number of manpower was not reported as the problem, the issue pertains more to the required type and efficient management of manpower engaged in WSS sector.

(c) Selection and recruitment criteria for positions in government departments/ institutions in WSS sector needs revision to bring professionals at all positions and also from diverse backgrounds

Freshers passing out from engineering colleges enter PHED and similar departments/ institutions through passing various State Public Service commissions. The entry into the system takes place only through the position of. The applicants to the position of Assistant Engineer or Junior Engineer, based at district or block level, are engineering graduates. The staff to higher levels is filled through promotions from this level onwards, without any requirement for additional qualification.

> *In the words of **Executive Director, CCDU**, Jaipur, "…as in many other government departments, the promotion to higher positions should require masters' degree which would equip them with additional knowledge that would be required in execution of their duties efficiently…"*

Further, it should have options and positions for recruiting staff from diverse backgrounds

such as management, behavioral science, personnel management, humanities, social and development, etc.

> ***Director, WaterAid*** opines, "As seen in the case of public health sector, it is high time that WSS sector widens in terms of human resource. To recruit professionals from diverse backgrounds, the selection criteria should change and become more flexible. Private HR consultants should be hired to bring in the best of the manpower…the recruitment in government institutions should now follow the trend seen in the corporate world…"

Although it is increasingly felt that the recruitment and selection needs revision in the sector, yet there are experts at the policy level who agree that changing the existing system would be very difficult and would require strong and united will from all the stakeholders in the system.

> ***Director, MoRD*** *expresses his concerns in this regard, "It's really difficult to change the recruitment system…professionals from required background could be hired as consultant for specialized jobs…"*

3.2.4 District and Block level Agencies and their Activities

The government institutions and departments at the state level have a primary role of planning and administration while that at the district and block level its execution role takes the lead. The execution and field oriented role increase from onwards from district to block and to village level. Again at the district and block level various engineering departments mainly emerge as the key players but they also start collaborating for achieving their targets at the grassroots level. District level agencies assist state water agency (either PHED or water board) in compiling a list of villages classified as 'not covered', 'partially covered' or 'fully covered'. Villages that are not covered or are considered problem villages receive first priority in the annual plans, while partially covered villages receive second priority

Under supply driven approach, at the block level the Assistant engineer provides inputs for planning by verifying installations in the field and the applying a population criterion to determine the level of service for any one village or hamlet. For example, a habitation with more than 500 persons might qualify for a small power pump scheme, while a population of more than 1,000 might qualify for a piped water scheme with standposts. This accounting is limited to public sources. This assessment is then translated into a proposal for a new scheme with associated costs, which is then passed to the executive or superintending engineer for administrative approval. At this point, financial and technical considerations take over the planning process.

It is important to note that in the entire chain of manpower deployment, it is at this level the maximum number of staff is populated and they are the ones who actually work at the trenches and prepare schemes. They work in close coordination with various grass-root level stakeholders and functionaries.

(a) Various jobs of demand-driven programmes shift on PHED staff that was not envisaged to undertake them

Although not reporting the problem of inadequacy of staff, the interviewed PHED staff put forth mixed views and held different opinion on this issue. While some said that the Department is adequately staffed, the others feel that the work load has increased although complaining about the staff inadequacy problem from this perspective.

> ***PHED engineer, Jaipur*** – *"…the number of staff was always adequate but now there is increased load on our engineers due to various demand driven approaches that in concept involves community participation, but ultimately it's the PHED staff that does everything…"*

The demand driven programmes envisage involvement of community for ownership of the community assents (hand pumps, pipelines, etc.) and their participation in bearing the O&M cost. These they are supposed to do by hiring the services of locally available manpower but many times it is seen that these hand-pumps or pumps, pipelines are not adequately repaired and maintained. And, hence the responsibility comes on the head of PHED staff that arranges for the same. Similarly, at the block and district level it's the PHED staff that proactively pursues the agenda of demand-driven programmes. Hence, many times they remain overloaded with additional work.

The community not owning their responsibility in the demand driven approach is a problem mainly related with water supply but as far as sanitation is concerned, the issue pertains more to household sanitation than community sanitation where from the view point of any construction being done. For household sanitation, comprising mainly latrines, the demand-driven approach relies on social marketing strategy, where government funds are used to create demand through a public awareness and education campaign, to strengthen private sector delivery mechanism; to support development of a range of affordable & appropriate technologies.

> *"…TSC campaign helps in increasing the demand for construction of the latrines but where is the trained manpower or adequate number of masons available…who*

would cater to these and other similar demands…off course it's the PHED staff, who is easily available, chips in for help and does some arrangement…demand driven approach is good in concept but a lot still needs to be done in it to make it practical and effective…"

(b) Overlap of human resource / roles & responsibilities between various institutions due to lack of coordination among them

It clearly emerged from the discussions with the experts of the sector that the manpower problem was not in terms of the numbers but more as far as management of workload and assignment of roles and responsibilities was concerned.

Their is not only additional workload but also duplication of work at various levels due to different schemes running for the same area with overlapping scope of work. Layers of institutional arrangements have been created that lack effective coordination among them and can potentially ruin the possibility of synergy[11]. Due to lack of this coordination among the programmes and institutions, they tend to engage manpower for similar types of work. The other side of this problem is that at times important jobs do not find any person deployed for looking after it. Hence, a better coordination among various departments and institutions would ultimately lead to better human resource application, utilization and management to increase per person productivity.

(c) Attitudinal issues among the staff of PHEDs / boards to comfortably accept demand-driven programmes

The actual task force implementing and executing the various programmes or schemes are deployed at district, block or village level. Hence, there attitude and motivational levels count the most for making execution of any programme/ scheme successful. It was reported during the course of interviews in this study that the motivation to execute the supply-driven programmes among the existing staff at PHEDs / boards is not akin to that of demand-driven programmes such as Swajaldhara. The reason mentioned for this was not only the increased workload due to increased roles and responsibilities but also pertains to their non acceptance of the philosophy under the demand driven approaches. They are not completely convinced and also do not have motivation to execute beyond supply driven programmes. Their existing skills and training pose limitation to their thinking and appreciating the community and social aspects of the programmes and initiatives in the WSS sector.

11. Drinking water and Sanitation in Rural Maharshtra: A Review of Policy Initiatives, Gujarat Institute of Development Research, September 2006.

(d) Inadequate post HRD measures

Since larger proportion of human resource in the sector is concentrated from the block level onwards, the need for structured training becomes critical from this level downwards, also because from this level onwards the work is more related to execution than planning or policy making. Regarding post HRD trainings, there seems to be lack of commitment to continually upgrade the existing skills as well as attracting new skills, especially in government departments like PHED or other Water Boards. The training is occasional in nature and takes place without specific planning and adequate budgeting in the beginning of each financial year.

Since the recruitment process in PHED / Boards does not incorporates the selection according to the range of skills, it is not able categorize the freshers into different grades of skill-sets and behaviour-profiles thus leading to inappropriate planning for training for different type of manpower entering into its system. It has a generalized training common for all. Thus, the trainings ultimately fall short in orienting the staff as per the requirements of the job they are expected to carry out.

It also emerged from the discussions during the course of interviews that there is lack of career planning for the existing staff although at all levels but more specifically at district and block levels. This was the case for the organizations employing both technical and non-technical staff. The staff should not only be given opportunity to discuss and plan their career with the help of supervisors but should provide conducive environment for the movement of staff from one level to another level and from one department to another department as it provides the much required opportunity to enhance the knowledge and exposure to various technical and social issues relevant to WSS sector.

3.2.5 Village-level stakeholders

Although village level agencies such as Villages Water Supply and Sanitation Committees (VWSCs), Solid Waste Management Committees (SWMs), etc and individual functionaries such as Auxiliary Nurse Midwife (ANM), Anganwadi Centre (AWC) member, Schools teacher, etc. do extend help in the planning phase undertaken by district/ block level staff but they are not directly responsible for construction related issues such as planning or mobilizing funds, management, etc. At the village level the issues that are taken care by them primarily relate to operation and maintenance. Thus, at the grassroot level the challenge is more in terms of operations and maintenance and its sustainability at the local level.

Despite the complexity in institutional arrangements, operation and maintenance arrangements can generally be categorized by type of technology: hand pump, small piped system or large piped system. The traditional public sources, such as shallow tube wells, dug wells, are generally maintained by the community, with government interventions limited to chlorination. Following enactment of the 73rd amendment, the responsibility for rural water supply (related to hand pumps and spot-source schemes) has devolved to gram panchayats[12]. Responsibility for management and operation of rural sanitation, including waste disposal in small towns and provision of latrine and environmental sanitation services, have also been devolved to the gram panchayats. Responsibility in this context is poorly defined, although it always includes O&M and only sometimes includes planning and implementation.

> *"…though local level panchayats are now responsible (with devolution of function) for operation and maintenance of commissioned schemes, they are reluctant to assume this role…Reasons for this vary but include lack of managerial autonomy, inadequate staff besides financial support form the state government…"*

In consequence, the state government continues to own the assets, supply the technology, and deliver the services. The panchayats continue to depend of state or centre and act as passive receivers rather active initiators to bring the change.

> *"…although limited autonomy has been offered to panchayats under the constitutional amendments but they do not take advantage of this…they have been historically relying on central and state guidance and funding…they have weak capacities, poor network of human resources…"*

Both the Panchayat Raj Act itself and guidelines issued by the Rajiv Gandhi Mission (1994), specify that gram panchayats are solely responsible for the O&M of hand pumps and spot sources. Not surprisingly, however, neither the Act nor the Rajiv Gandhi Mission assigns responsibility for large or regional piped water supply schemes to local administrations. Recent discussions suggest that responsibility for these larger schemes will likely be devolved to the block or district administrations.

To understand the existing capacities and the extent to which it would be further required after having adequate appreciation of the type of work that goes at the grassroot level.

9. Prior to the 73rd amendment, responsibility for operation and maintenance in each state was shared by either the water supply and sanitation board or public health engineering department and the engineering section of the district or block administration.

Publicly funded rural hand pumps are generally maintained by local administrations through on one-, two- or three-tier arrangement involving the state agency in routine and major repairs, the responsibility lies with different departments. The O&M of hand pumps is both technically and financially within the abilities of community to handle but has not been identified and put to use.

Even the simplest scheme Hand pump faces the problem inadequate operation & maintenance, the manpower for which is at times locally available but has not been adequately channeled for the same.
In 1996-97, the Programme Evaluation Organization (an independent organization under the Planning Commission) studied 87 villages in 29 districts of 16 states. For hand pump 87% villages reported breakdown in the year, out of which 43% repairs were undertaken. Local communities participated only in 20 out of 86 villages, mostly in identifying suitable sites and contributing their labour, however involvement in O&M was hardly observed.
In 21% cases panchayats looked after O&M, in 9% cases they supervised ad regulated water supply, only in 3 out of 87 villages water committees were formed.

Piped water supply in case of mini or small schemes are operated and maintained by local engineering departments only if ownership has been transferred to them. However, as far as existing capacities are concerned the situation is almost similar to that of hand pumps. Technical skills for its O&M are locally available but have not channeled for the same. Operation is a simple procedure turning the pump on and off at scheduled times. Although local mechanics and private contractors who service private irrigation pumps are available to undertake repairs and preventive maintenance, yet effectively collaboration with them needs to take place. Some times spare parts are available and some times not.

> *"…the manpower required for operation and maintenance of hand pumps and other small pipes is available at the village level as there are mechanics that have the required skills to repair broken taps, as well as leaks in the holding tanks and source pipe…but you need to identify them, put them in job properly and pay them adequately…but this is not all, more such manpower needs to be created locally who would required to be trained further…"*

Complications arise for large piped water schemes that rely on surface water sources and subsequently involve treatment processes. These schemes are technically challenging to operate and maintain, and skilled manpower to do such jobs is not easily available locally implying the need for building such skilled manpower at the village level.

Although decentralization under demand-driven approach is in principle good initiative, yet it has several challenges as far as availability of manpower for various jobs are concerned.

Decentralization to the district and block levels has posed the problem of accountability. With public health engineering departments conducting investigations and drilling, zilla parishad engineering departments planning and executing works, and neither of these being responsible for operations and maintenance, there is little incentive for these departments to ensure that what they design and construct will function reliably and efficiently. It is no surprise, therefore, that gram panchayats are typically reluctant to assume responsibility (as assigned them) for O&M of the schemes.

> *"…decentralization has positive impact only where the assistant engineer's subdivision has been strengthened and reoriented…even the financial powers of executive engineer at the district level are limited, necessitating the referral of many decisions to the state level…lower tiers can function effectively when decentralization and devolution is realistic in nature and that they are able to deploy manpower, outsource and contract out the work easily…"*

A community village water supply and sanitation committee (VWSSC) under the panchayat is desirable in several ways. It is seen that often, private contractors become panchayat members due to local level party politics[13]. And, thus there would be a need to countervail this by organizing user groups such as VWSSCs at the community level that have direct stake in maintaining a sustainable source of water, are ready to operate and maintain it and are resistant to political manipulations[14].

> *"…also in the supply-driven, but more in demand-driven programmes the VWSSCs play a very important role not easily done by manpower at the block or district level alone… VWSSCs play a very important role in assessing the status of existing installations, prepare a plan of operations, and compile a list of technological options. They are also instrumental in mobilizing funds for O&M besides keeping a network with local mechanics and other manpower available"*

These user groups are however very limited in number and not formed everywhere. Also, if they have to assume a greater role as envisaged in demand-driven programmes, they would require appropriate orientation and technical training besides adequate financial and management support from district/ state. This would be more effective with technical assistance available from private sector agencies and/or NGOs working in close collaboration at the local level.

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13. Some state government and some donor assisted projects, such as the World Bank project in Uttar Pradesh, have recognized the danger of politicizing rural water supply through panchayats.

14. In West Bengal the government is advocating the formation of VWSSCs around spot-sources, after having seen the merit of this under the UNICEF-assisted project in Midnapur. World Bank assisted projects in Karnataka have also demonstrated the utility of having VWSSCs.

3.2.6 Non-Government Organizations (NGOs)

NGOs have played a significant role in the WSS sector in India over the past three decades. The initial involvement of NGOs in the sector came in the sixties with the famines in Bihar (1964) and Maharashtra (1969) when several NGOs were formed to provide technical services for compressed air-driven drilling for hand pumps. In the early period, NGOs functioned as drilling contractors to state government and donor financed programmes. The efforts of these NGOs convinced the donor community and the government to invest in hand pump programmes for drinking water, especially in the chronically drought-prone areas of the country. Thereafter, their contribution has been increasing, further fostering collaboration with the donors and government for various activities in WSS sector.

(a) NGOs bring highly skilled manpower for wide range of activities in WSS sector

NGOs have comparative advantage that other organization lack in WSS sector. They render wide range of services by engaging professionals from diverse backgrounds. The strength lying with them, especially in context of human resource is unique because they have very flexible criterion for selection and recruitment. In contrast to government and to some extent the donors they engage the best professional available locally or at any level. Further, they are not burdened with long-term commitments with all the professionals they engage. Majority of their staff is on contract with pre-defined roles and responsibilities. With this, they are also able to bring in not only the required skill as and when required but also the attitude of the employed human resource remains very professional and responsible.

With such work force they make valuable contribution to the sector, which includes the capacity to: (i) reach the rural poor and remote areas, (ii) promote local participation; (iii) operate at low costs; and (iv) adapt and be innovative when needed.

> *"...NGOs have been able to penetrate remote areas, negotiate more favourable drilling prices because they are not encumbered by government procedures...they select sites without succumbing to local pressures, they mobilize users and raise contributions..."*

There are various NGO, both national and international, currently serving the WSS sector in India that bring even innovative technologies such as NGO Swissteco and ELC Water Development project introduced new drilling technologies and integrated drilling activities with geophysical site investigation, yield testing, water quality testing and data banking. The majority of the NGOs contracted by the government come under the umbrella of the Council for Advancement of People's Action and Rural Technology (CAPART), because

government financial regulations generally prelude direct contracting of NGOs.
On the less positive side, most NGOs have been small-time contraceptors with little interest in working with people at the grassroots level. There is not only the problem of their using sub-standard material but ethical issues and technical competency.

> *"…many NGOs have had little technical or management capacity and not well-defined work ethics…there is need to properly orient and instill ethical attitude among the NGOs at the grassroots level…also they need to be trained and capacity building NGO"*

Nonetheless, this sector has supported by NGOs and, overall, they play a critical however they need to bring together for encouraging easy availability of required type of NGO for the donors and also enthusing spirit of good ethical behavior among them. It would be worthwhile considering having network of processionals or platform for professionals connecting them together such as a portal or an agency for the same.

(b) The local level NGOs / CBOs play a critical role at the grassroots level

With the devolution of functions and functionaries at the local body level, the role of local NGOs / CBOs has become significant especially in various demand-driven programmes. The PHED or Water boards have limitation in recruiting the required number and range of manpower at the community level. However, both in demand and supply driven programmes they require a gamut of skills that is required in making not only supply driven programmes successful but also for making demand driven programmes operational at first place and for all these range of activities adequate manpower is still a problem.

> *According to the Principal, National Watershed Development and Training Centre, Ralegan Sidhi, Ahmednagar "…manpower is adequate at higher level, but dedicated range of staff is lacking at the grass root level…"*

Besides above, there are tasks related to operation and maintenance for which manpower is deployed locally, however, for all this local NGOs and CBOs play a critical role in networking among various type of stakeholders mobilizing the manpower and helping the existing manpower of PHED/boards in their activities, too.

> *As per a Technical Service Provider to Zilla Parishad, Mulashy Taluka, Pune"… No enough technical or non-technical manpower is available at the lower level for Sanitation sector especially…however engaging the NGOs help a lot in getting at least the required manpower"*

According to the Project Director (Planning), Sri Mayapur Vikas Sangha, "…instead of engaging technical professional to serve the sanitation sector of the district…we prefer to involve women from local villages to motivate the others for a healthy environmental sanitation…."

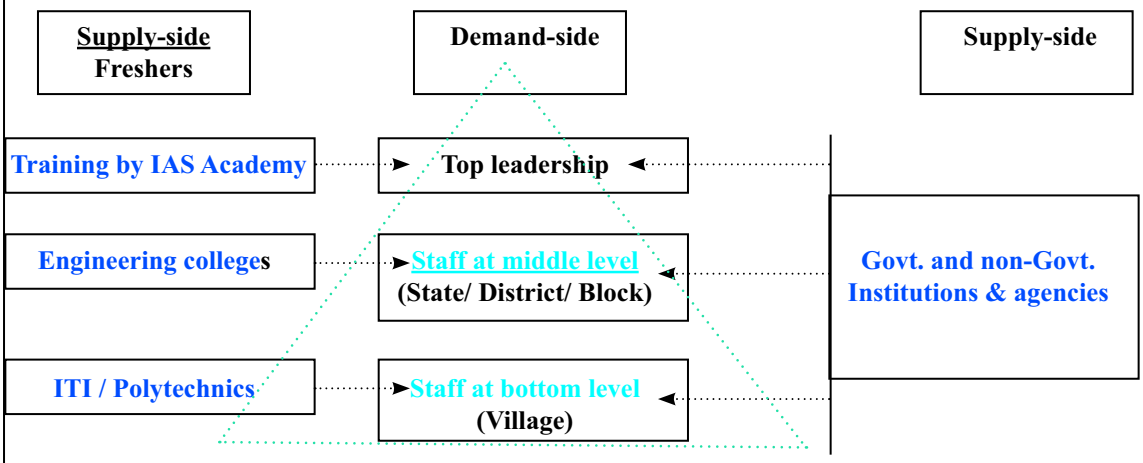
It is well established fact that local NGOs at community level play a central role, but there are various states, like villages in north-eastern states, where NGOs are either not present at all or their presence is minimal. Instead of NGOs, there are various forums and other type of societies that are operational in the WSS sector. Hence, there is also need for tying with national level NGOs and inviting them for local level activities especially in such states where NGO presence is poor. Tying with big national level NGOs also has an added advantage of brining the learning's they had in working in other areas and also avoiding unethical practices which is usually observed in case of small local level NGOs.

Although there has been enough evidence regarding the effectiveness of local NGOs and CBOs, the need for training the much talked about local NGO staff still remains unattended. Besides the problem of systematic and regular training programmes, there also remains the issue of appropriate trainers. The training to the local NGO staff is need-based arising as and when any programme or scheme is launched. There have only few agencies, mainly donors, funding such training and capacity building at the grassroots level. The need for a well-equipped institute networking with local NGOs for training and capacity-building and can also liaison with various donors and agencies for regular funding still remains unaddressed.

3.3 Supply Side of HR

The discussion on supply side pertains to the dynamics related to the providers of trained manpower in the WSS sector. These primarily include academic institutions imparting engineering degree and also other agencies that provide training and capacity building services to the existing staff engaged in the sector. Besides, these two prime sources of human resource building, the various organizations in the sector through their internal trainings of their existing staff contribute towards capacity building of manpower and enriching the human resource in the sector. Thus, the sources of human resource development (the supply-side sources) could be broadly classified into three types in accordance with three rungs of manpower deployment in this sector as depicted in the Figure-3.3 presented below.

Figure 3.3: Demand-Supply dynamics of Training & Capacity-Building in WSS sector



As discussed in the previous sections, it is mainly the PHED or other similar institutions that has engaged the manpower in this sector, hence it would be worthwhile to see from where this manpower comes to PHED at different levels, which are the institutions agencies providing them and what are the future requirements for increasing this supply of skilled manpower.

3.3. 1Indian Administrative Service

The personnel at the top levels in the PHED providing administrative support are secretary level staff. The Indian Administrative Service (IAS) trains and prepares them for various such positions such as Commissioner (PHED), Managing Directors of WSS Boards, etc. These professionals pass a very comprehensive exam of IAS and then undergo a rigorous, structured training to become the leaders of various department and organization under the government. They have all around knowledge and are fast in picking-up specific technical know-how's in short period of time. They are usually not subject experts but are visionaries and provide operational direction to the functioning of any department, institution or agency under their administration. They have high levels of management skills like planning, resource allocation, quick decision making, crisis management, etc. These professionals are very effective as far as their envisaged role is concerned but their transfers from one department to another is quite frequent which actually hindrances the consistent pursuance of one vision and one leadership. Handling quite a busy schedule, they at times miss the opportunity of being updated with latest innovations and developments.

(a) Need for increasing the awareness and support of top level staff (politicians, secretaries, main decision makers etc.)

This particular group, comprising of politicians at ministry level, secretary and prime decision makers, in the WSS sector plays a central role in the implementation of any programme. Capacity building for this group should include awareness and appreciation of the facts and figures in WSS operations within their domain of influence and decision, such as the value of asset management (both human and physical), the long term benefits of WSS improvement, and the consequences of no action. Thus, high level workshops of short-duration focused on discussion and exchange of knowledge and experience between decision makers would prove beneficial; the participation of decision makers from other countries having to deal with similar problems should systematically be considered. As there are very few Indian institutions currently conducting such activities in a programmatic, coordinated manner, the donor community should be encouraged to initiate this activity with the goal of identifying and strengthening local partners, which could in turn take over this function after the start-up period.

It was felt by the experts during the course of interviews in the present study that focused short-duration workshops with seniour level officials would be helpful in bringing them on common platform of understanding about the developments in sector besides orienting them with pertinent technical issues requiring their attention.

> *"…person sitting at the top…the visionary, the leader of the organization who captains the ship should be updated with all the developments in WSS sector…they are very busy hence at times an important information might not come to their notice…since they are the top decision makers they need to be made aware of everything…they don't require training as such but workshop kind of activity could work well. In such workshops updates could be shared and technical orientation could be imparted in an informal manner…"*

3.3.2 Engineering colleges/ institutions:

As discussed in the analysis of demand-side, the various engineering colleges and institutions are major source of supply of manpower in the sector. A detailed discussion in the context of this study proceeds in the subsequent sections.

(a) Entry of freshers and experienced manpower in the WSS sector

The engineering graduates passing from various engineering colleges enter in the sector, broadly, in two ways – (i) they qualify the service commission of various states and enter the concerned government department/ organizations such as state PHED or similar institutions, (ii) they join some private organization or NGO involved with construction or implementation related work in WSS sector. In the first case the academic requirement is purely technical in nature i.e. engineering (usually civil engineering) which is the case for majority of the engineering graduates getting employment in this sector. However, in the second case there might be requirement of some additional degree such as management or social science besides basic degree being engineering. But, such job opportunities are fewer, in comparison to, the former type. This flow of manpower from supply side to demand side is with respect to the freshers entering into the sector. But, the movement of the experienced lot in the sector is different.

The movement of experienced manpower in the sector can be analyzed again by categorizing them with respect to two broad engagers of manpower – (i) PHED or other similar institutions, and (ii) Non-PHED organization. In case of PHED or other similar institutions, there is hardly any defined entry channel for entry of experienced people, because recruitment takes place for freshers that join at the junior position. And as these freshers professionally progress they migrate to higher levels of positions in the department. There is, however, no provision for direct entry at the higher level positions for experienced professionals that might come from other private organizations or NGOs, etc. In case of non-PHED organization, there are exist wide range of organizations (both government and non-government) that take experienced staff directly through well-defined selection and recruitment processes. However, it would be worthwhile to mention that there are other government organizations, if not PHED, involved in the sector which usually absorb experienced professionals. Such government organization/ institutions undertake activities related to research, planning, designing and the like.

There are jobs at the grassroots level for which the type of manpower is usually mason, pump-driver, plumber, technician, etc. These come from ITIs and polytechnics to join the sector. They are also imparted job relevant trainings by the local NGOs and donor agencies as and when required.

Regarding the private organization involved in construction or civil works, direct recruitment of both fresher and experienced manpower for various jobs takes place. Similarly, donors and NGOs also directly take experienced professionals with even non-engineering backgrounds for undertaking various activities in the sector. Thus, there is no direct recruitment of full-time experienced staff taking place in the PHED or its similar institutions in different states.

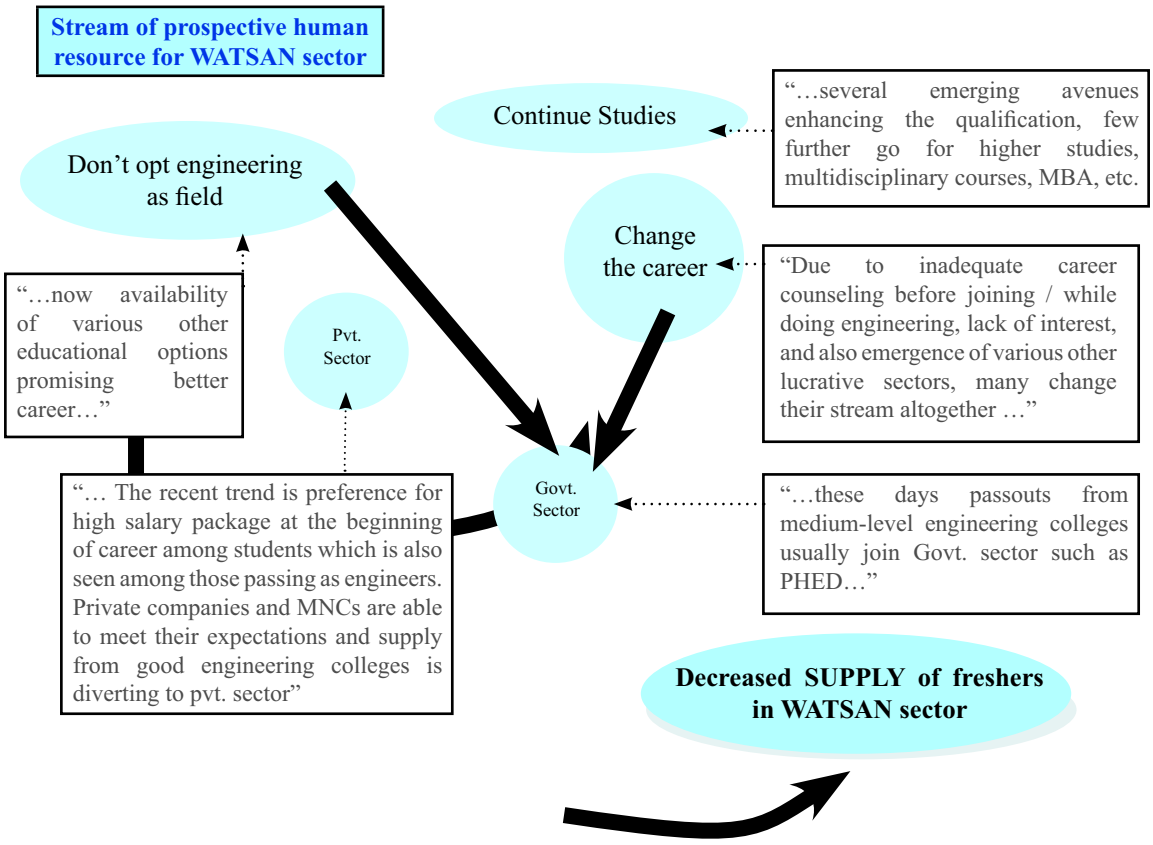
> *"…the lack of flexibility to hire new permanent staff has resulted in extensive reliance on contractual arrangements…there is lot of temporary or contractual staff appointments in utilities where majority of them are actually carrying out permanent staff functions"*

(b) Changing career options of freshers entering the WSS sector

The prospective pool of fresh engineering graduates passing engineering colleges/ institutions, which earlier use to join WSS sector, are now confronted with various types of emerging career options impacting their final choice to join PHED or other organization in the sector (Figure 3.4).

Firstly, to trace the change in career options in fact, goes back to the point where the choice of a particular specialization or education stream is made. With the emergence of various new types of disciplines and courses promising good job has reduced the number of candidates taking admission in the engineering colleges. For instance, jobs, requiring software, IT and MBA degree/ diploma as a qualification, have substantially increased in last few years leading to establishment of many colleges and academic institutions imparting education in these areas. Thus, the recent trend shows that many prospective engineers do not go for engineering instead opt for IT or management education[15].

Figure 3.4: Changing trend in career options for freshers entering WSS sector



Secondly, with the increased emphasis on the education sector particularly and privatization of Indian economy in general there has been emergence of many new disciplines promising attractive job opportunities. Thus, after completing their engineering many students now continue their studies, and again many such students join management colleges in order to enhance their chance of getting a better job. Thirdly, a new phenomenon is being observed leading to complete change in the choice of engineering as career. Many engineering graduates, for example, now join various BPOs promising quick job and attractive salaries at the beginning of the career itself.

> *"…some students who did not had a very strong will and motivation to do engineering… who join engineering colleges just because their parents wanted or they have seen others pursuing it…are usually from not very well know engineering colleges…they change their career to non-engineering and join call-centres that have attractive environment and easy money…many times most of them have also remained average performers in their academics…"*

The fourth important factor, deflecting the fresh engineers from entering this sector, is their perception about the glamorous work culture of the private corporate. The fresh engineering graduates don't want to join government sector even if they offer stable and good salaries. Such trend is more often observed among the engineering graduates passing from reputed colleges which are visited by various private organizations every year luring away a major chunk of the students that would have otherwise attempted for service commissions and entered the WSS sector through PHED or other similar departments.

> *"…these days there are many jobs available in the market, the job market has opened like anything…the engineering graduates have wide options and many private companies offer them attractive pay packages and a very comfortable and prestigious working environment and too just at the beginning of their career…"*

(c) Manpower in PHED/Water boards is skewed towards older and technical professionals

As discussed above the prime motivator for majority of the fresh engineering graduate is a high salary package followed by good brand name, which is usually accomplished by joining the private sector. The problem of supply of fresh manpower to the sector is further aggravated with the fact that after the increases in wage bills following the 5th Pay Commission (1996), most metropolitan boards and public health engineering departments have frozen recruitment and have relied on normal attrition to reduce staffing and cost.

As a result, rate of hiring and entry of new full-time dedicated WSS professionals has been very slow in the past decade. Consequently, the current staff profile (i.e., skill mix, training)

is highly skewed towards older professionals with experience, but without the modern skills and capacity needed to contribute to the shift from the development of infrastructure to the provision of service.

> *"…the main deciding factor for students is pay-package they join with in their first job and the secondary criteria is the name and fame of the company …after having served for two-three years they think for stability and might rethink government jobs as better and stable options vis-à-vis private sector jobs…today government sector is not perceived to be prestigious, especially in urban areas."*

(d) Inadequate course curriculum with respect to emerging needs in WSS sector

The workforce joining the WSS sector from engineering colleges is with the academic background of civil engineering, which is taught under both degree / diploma program of yeas years. Diploma has six semesters of which two semesters are covered each year where as degree program is of four years with eight semesters. Besides various types of subjects taught in civil engineering, there are some courses which have indirect association with WSS aspects. Theses mainly include 'Water & waste water engineering', 'Water resource engineering', 'Environmental engineering'. Under environment engineering, issues that are covered are – rainwater harvesting, treatment of waste water, sewerage system, low cost techniques of sanitation. But, there is wide variation in range of such WSS related subjects covered in various institutes with some hardly covering any such subject while other like IIT Mumbai covering all of these.

> *As per the Lecturer, Civil Engineering Department, Pune Engineering College, "… subjects like Environmental Engineering and Water Resource Engineering are taught in 6th semester and 7th semester, along with laboratory practical, which are directly linked with the Water Supply and Sanitation Sectors, later on students can choose to specialize in these subjects through M.Tech courses…"*

As per the Professor, Soil and Water Engineering Department, College of Technology and Engineering, Udaipur, "…subjects like Advance Soil & Water engineering, Rural Water Supply and Sanitation, Water harvesting and management are taught by the department, which make them capable to work in these sectors comfortably…"

There is not only need for having some focussed WSS related subjects across all engineering colleges but also introduction of some subjects providing community and social orientation in order to align their curricula with the emerging needs such as jobs related to demand-driven approaches that are increasingly being adopted in the WSS sector. Some institutes have already done that to great extent but these are the one which have had some working

experience or linkages with donors or other such institutes implementing demand-driven programmes. For instance, the professors in the civil engineering department in MNIT, Jaipur have been extending consultancy to Unicef, JBIC and other such agencies involved in WSS sector. Having better understanding of the sector and the emerging requirements MNIT, Jaipur has been able to modify their existing course curricula and could introduce new courses in each academic session since last few years. But, they also face certain limitations in modifying their course design to the fullest extent required by several positions in WSS sector.

> *In the words of Professor, MNIT, Jaipur, "…in last two years we have tried to modify the course structure to train the students to be able to fill the positions and jobs that require community interface…but we can not do that to great extent simply because there are not many such jobs in the market. Organizations like Unicef, World Bank prefer experienced professionals and also the jobs placed by them in the market are very few to be able to change the entire course curricula. With the existing course curricula, majority of the civil engineers do get good jobs…the changes in the course curricula are in tune with the demand in the market…"*

Thus, the institutes like MNIT, Jaipur have taken step to modify their course curricula to match the requirement of the job market. The courses have, reportedly, undergone the changes to the extent to which PHEDs and other similar institutes have adopted the community interface in their programmes. The academicians interviewed during the course of the study felt that the supply of human resource is not an independent phenomenon but always a response to the demand in the job market. As and when the demand changes, the supply also undergoes the change, the process of which might not be that smooth and might take more time than required. And, hence its here where need for a facilitator / agency arises that can take a lead role in linking the gap between the demand and supply of pertinent skills and human resource in the sector.

> MNIT, Jaipur, "…we as a institute have also undertaken training for the existing professionals of state PHED on various aspects including both technical and non-technical in nature…such short term trainings and are undertaken as and when some new WSS programme is being implemented with support from donor agencies… engineering colleges can provide such trainings but they are not regular feature and hence they can not lay down the formal infrastructure for this…however if there is an institute devoted for such trainings it would be better disposed in terms of both its prime objective thus bringing the required infrastructure and other support system…"

Some engineering institutes that have interface with various donors and implementers in the manner that they provide consultancy or some kind of support involve their students

and provide live learning exposure to the programmes being implemented in WSS sector. This gives a very good opportunity to the engineering students to orient themselves with the social / community aspects of the courses which otherwise are highly technical in nature. Such model of practical exposure in the field should also be included as a part of civil engineering education.

> *"…with the growing requirement for some social and development exposure, our college has been sending our students to field trip, wherein they go in the village, stay there, understand the need of the community, design and work closely with the department… but all this requires adequate funding, last time UNICEF sponsored some such activities but it would be more beneficial if there is regular source of funds available for this, only it can be a regular activity…"*

Besides the above, the comprehensive capacity building programs should also include institutional, financial, management, customer orientation, and corporatization modules in addition to the current technical modules. Specific courses should be developed in Non-Revenue Water (NRW), marketing, WSS assets (physical and human) management, tariff structures, credit worthiness, benchmarking, water audit, private sector participation, regulation; and monitoring and evaluation.

3.3.3 Training institutions / agencies:

Besides, the IAS academy and engineering colleges that primarily supply fresh manpower to the sector there are various training institutions and agencies that provide training to experienced manpower already engaged in the sector with some organization. There are both government and non-government such training institutes in WSS sector in India

Among the government institutions and agencies, there are dedicated agencies for WSS training and capacity building programs which work in coordination with MoUD, the Ministry of Health and Family Welfare and the Central Water Commission. Several major public training institutes that provide capacity building in the WSS sector (details presented in Annex-2) are as follows:

- CPHEEO
- CCDU
- The Engineering Staff College of India (ESCI);
- The Anna University;
- The India Water Works Association (IWWA);
- The Human Settlement Management Institute (HSMI);

- The Chennai Metropolitan Water Supply and Sewerage Board Resource Center;
- The All India Institute of Local Self Government (AIILSG); and
- The Society of Promotion of Area Resources Centre (SPARC)

(i) Government training institutes and HRD programmes at Central level:

The Central Public Health and Environmental Engineering Organization (CPHEEO), created in 1953, is the technical wing of MoUD that is responsible for setting technical design standards and urban water supply norms. CPHEEO also coordinates the provision of training as well as the syllabus of 31 local training institutions and the demand for skills enhancement by PHEDs and State Water Boards. Another major area of Central Govenremnt assistance to state in human resource development led to the initiation of Public Health Engineering (PHE) Training Programs starting in 1956 by CPHEEO. The program aims at training employees of States, ULBs, and mega-cities about Public Health Engineering components of WSS projects. Programs are for long term post-graduate level courses, short term courses, and refresher courses. It is training 108 in-service engineers every year through 11 postgraduate courses in engineering. Between 1989 to 2002, Rs 100 million (US$2.2 million equivalent) have been allocated to the programs, with approximately Rs 83 million (US$1.85 million equivalent) already spent. Over this period, nearly 16,000 PHE engineers have been trained.

In addition, the CPHEEO arranges Short Term Courses. Since 1985-1990, MoUD has also sponsored development programs targeted specifically at water extraction and treatment technologies as well as project implementation and management methods. The Ministry has also jointly sponsored a Management Programme for Senior Public Health Officials with DFID funding for the past five years. Beside the countrywide Human Resources Development programmes, the Ministry is also supporting the establishment of HRD & Training Cells for the water sector in each State with a one-third grant for capital costs where proposals are approved. There has also been a centrally supported water quality monitoring programme again with substantial funding for water quality laboratories and monitoring staff in each state.

Among the other central level institutes and programmes are The National Institute of Communicable Disease (NICD), under the Directorate General of Health Services provides comprehensive training and research in the field of communicable diseases through its multi disciplinary and integrated expertise. The All India Institute of Hygiene and Public Health (AIIH and PH), Kolkata, under the Ministry of Health and Family Welfare (MoHFW) continues to be the leader in pursuit of its mandate for HRD, research and support services in public health and its interface with WSS sector. It has undertaken

water quality surveillance programmes in five states of India and comprehensive capacity building, training and awareness generation programme to tackle the arsenic problem in West Bengal.

(ii) Government training institutes and HRD programmes at State level:

CCDU, the 'Communication and Capacity Development Unit' has been created to promote the reform initiatives in the field of drinking water supply and sanitation. CCDU works at state level. it is an institutional arrangement to carry out IEC, social mobilisation and human resource development to achieve the key objectives such as 'creating awareness', 'demand generation', 'behavioural change', 'capacity building'. CCDUs are present in almost all the states but in some states they are more active than others.

Effective set-up of Rajasthan CCDU…playing a important role in Training in WSS sector

To understand the role of CCDUs in the WSS sector Rajasthan CCDU was sampled in the study and a detail discussion with its seniour officials was undertaken. This CCDU is located at Institute of Health Management and Research (IHMR), Jaipur. A tripartite agreement has been signed among GOR, UNICEF, Jaipur and IHMR detailing different aspects of functioning of CCDU. The state level CCDU is supported by seven Regional Support Units (RSUs) at divisional head quarters. The programmes handled by CCDU are Swajaldhara, Total Sanitation Campaign and National rural drinking water quality monitoring and surveillance. CCDU was previously part of Indira Gandhi Panchayat Raj Sansthan and PHED for close to one Year. It was felt that the output of CCDU will be manifold if it is shifted to a private environment. CCDU was shifted to IHMR in April, 2006.

Executive Director CCDU is responsible for complete day to day working of CCDU. Director, IHMR is the administrative and financial head of CCDU. Executive Committee of CCDU has members from IHMR, UNICEF and SWSM. The RSUs are located at additional Chief Engineer PHED office. The RSUs are supported by UNICEF. The RSUs are under day to day supervision of Additional Chief Engineer, PHED. The units function under programmatic, administrative and financial control of ED, CCDU. They work as per the directives of ED, CCDU.

During the present study, CCDU of Rajasthan, which is running actively since last many years, was covered to understand the various aspects of training and capacity building activities undertaken by them. The Rajasthan CCDU is a unit of State Water and Sanitation Mission, Government of Rajasthan. It is supported by Government of India and UNICEF

(a) At the state level, CCDUs can be the missing-link between the supply-side and demand-side for capacity building of existing staff

The CCDUs play a very important role in capacity building and training of the staff engaged

in WSS sector, especially at the village level. They can also provide relevant trainings to the PHED staff at all levels.

> *"CCDU can play a very central role in building the capacity of the staff at the state level onwards…the advantages that CCDU bring is there understanding, through IEC activities, about the grassroots level issues and thus can help translate the required in need into action by properly orienting the service providers such as PHED about how they should go about in the village…CCDU can be the much required link for supplying of capacity building to the demand side"*

The discussion with the CCDU indicated high level of willingness as far as undertaking of capacity building and training of manpower currently engaged in WSS sector.

> *"…we have been providing various types of training to different level of PHED staff…I think PHED today needs several small and refresher courses to sensitize them with the emerging issues related to community development and social aspects…but what is required a structured training programme, adequate funds and most important, the commitment for building t*

Although CCDUs provide a workable and effective link between the demand side and supply side regarding the capacity building of existing staff, yet there are several policy related issues that would require necessary action to make these CCDUs operate efficiently in the manner envisaged. They would not only require adequate administrative support and funds but also adequate trainers to undertake the task of capacity building.

(b) PHEDs / WSS Metropolitan Boards generally have staff training programs for older staff and does not increases the efficiency of jobs

> *At the state level, PHED / WSS metropolitan boards also undertake training by hiring trainers from various government and non-government agencies but their trainings are not very effective due to inadequate range of audience covered by their trainings.*
> *"…the trainings are impactful when it changes the working style of the staff in the manner it increased their efficiency…it is impactful when correct participants are selected and trained…it should create fresh pool of skills…it should target both older staff and the freshers…"*

However, as discussed in the preceding sections, that the hiring of new staff in most metropolitan boards and public health engineering departments has been very slow the sector, as a result the current staff in the sector constitutes mostly older professionals with technical background. This has lead to a significant number of temporary/ contractual staff actually carrying out permanent staff functions. But, since trainings undertaken by

the department are for full time employees these contractual staff continues to perform critical functions and roles without access to proper training. It is the old professionals who continue to get trained time and again. They view it as routine activity and do not lay much importance to it. Their mindset continues to remain the same and there is no improvement in their working style not resulting to any increase in the efficiency of executed jobs.

> *According to Executive Engineer, PHED, Jaipur, "…PHED does not conduct training, being just a department, but is conducted by Officers Training School…"*

(iii) Non-government training institutes and agencies:

Beside the above government institutions, there are some non-government and private agencies that provide training in this sector. Among these are donors, implementers, international NGOs, private organizations and also independent consultants / trainers. These include UNICEF, World Bank, Water Aid, Asian Development Bank, UNDP, Gramin Vikas Trust in Rajasthan, IRMA in Ahemdabad, AFPRO, DANIDA, JBIC, American Water Works Association, Australian Water Association, etc.

AFPRO is collaborating with few State Governments (Andhra Pradesh, Maharashtra & Rajasthan) in water sector reform through variety of Projects, where major role is in creating awareness, motivation and capacity building of community to own, adopt and manage the natural resources including drinking and irrigation water. Similarly, UNICEF and World Bank have been providing lot of training and capacity building to the staff in the sector across various states in India.

> According to the Unit Manager, AFPRO, Ahmednagar , "…we send selected candidates for workshops and trainings announced by other agencies also…"

Among these are mostly imparting training at the grassroots level. Where as, in NGOs and SHGs which are engaged in this sector, training is imparted through collective efforts, whereby experts and specialists in vivid areas from this vast sector, address the needs of the audience staff working for different NGOs. Where as the soft skill abilities are drawn from the Civil Society, Support Organizations (small NGOs and SHGs) working at the ground level.

> *According to Program Officer UNICEF, "…various SHGs, NGOs and other grass root level agencies like gram panchayats, come up together and we extend training to these stakeholders together at District Support Unit, as through this they share their experiences and lowers down the cost also…"*

As per Technical Service Povider, Zilla Parishad, Ahmednagar,"…we received training by Zilla Parishad, taken up by senior officials and experts, and was held at Sabhagrah…"

However, the discussion with the experts revealed that there is lack of coordination among various such agencies leading to either duplication of on type of training or no capacity building at all for some type of skills. There was a need felt for an agency or institute that can take a lead role for uniting the efforts undertaken towards capacity building and training in this sector.

3.3.4 Other issues related to training and capacity building:

With a few exceptions, government training institutions primarily improve skills of engineers and technicians, with courses focused mostly on engineering and design issues. They seldom address the commercial, managerial and strategic aspects of WSS services. But there is slow movement towards a more comprehensive approach to capacity building in WSS: the AIILSG has introduced a customer service and consumer satisfaction dimension to its courses. The ESCI has initiated a holistic approach to capacity building in the water sector, including WSS through broadening faculty expertise base and revision of curriculum. Anna University has introduced training in digital mapping and applied research in WSS. However, topics such as sector reform, policy, tariff, utility corporatization, private sector participation, sanitation, do not appear in most programs. Staff of most institutes lack many of the skills required to develop and/or deliver comprehensive capacity building programs in WSS.

(a) Need to Scale up Capacity Building Programs in WSS

Training provided in the urban WSS sector is traditional in content and aimed at a rather narrow grouping of professionals. In order to keep pace with actions needed to bridge the gap between infrastructure and service, training programs would require major revisions to broaden both their contents and target audiences. Also, the current training rate should be significantly scaled up in order to meet demand, as utilities get progressively engaged on a reform path. The scaling up and the revision of the content of the training programs should be coordinated among training institutions. Fortunately, a great deal of learning and capacity building materials exists in the WSS community, both from the World Bank Institute (WBI) and water training institutes in other countries. The challenge is to identify material potentially relevant for the needs of India, and transform it for use in the Indian context.

(b) Need for having training need assessment exercises

A complete needs assessment and options analysis exercise should be carried out to fully evaluate the capacity of the public agencies described in the overview of the sector in order to provide the full range of WSS capacity building services required. Given the number of institutions and the broad range of topics, efforts should be made to distribute capacity building functions among the institutions according to their specific strengths and links to particular stakeholder groups. The capacity of key agencies such as the Indian Water Works Association (IWWA), the All India Institute of Local Self Government (AIILSG) and the CPHEEO to conduct needs assessments of target stakeholder groups, such as staff of the State Engineering Agencies at all levels, consumers, professional associations, NGOs, politicians, and decision makers should be evaluated.

(c) Need for focusing capacity building at the local body level

It is imperative to build the capacity of local-body level WSS service providers to make them more directly answerable to consumers. They would need to establish consumer service centers staffed with professionals trained in sector issues and with communication skills. These functions may include consumer help desk, problem-solving, consumer participation or consumer awareness programs. To prepare utilities to carry out these decentralized functions successfully, staff training programs would be needed in the following areas:

- Adoption of a demand driven approach based on empowerment of communities to ensure their full participation of expansion projects through a decision-making role in the choice of scheme design and management arrangement;
- Adoption of an integrated service delivery approach that streamlines the functions of agencies involved in project implementation;
- Application of conservation measures for sustained supply of water; and
- Development of alternative source options via rainwater harvesting and ground water recharge.

(d) Modern capacity building programs required

Such modern capacity building and training programs for WSS Service Providers to support a shift from provision of WSS infrastructure to provision of WSS service would be required. The institutional capacity of local body level WSS Service Providers must be strengthened through: (i) modern management approaches; (ii) human resources management (HRM) policies and action plans, including appropriate incentive systems and; (iii) appropriate staff

skill mix and flexibility, particularly at the management level; (iv) institutional flexibility for timely decision making and action; (v) Information Technology (IT) capabilities; and (vi) consumer relations. Most WSS Service Providers also face the challenge of securing bulk water for their service area, particularly during droughts. One way to assist the WSS departments and board to scale up their capacity building activities would be to establish twinning arrangements between Indian utilities, as well as with other water utilities in developed countries. The rate of delivery of staff training programs would have to be increased through recruitment and training of additional qualified staff and modernization of existing training facilities. Also incentives, such as certification of professional staff should be incorporated in the training programs to attract staff and retain them in WSS utilities.

(e) Use of the public service function of training institutions as a vehicle for extending capacity building to all stakeholders is required

These institutions should design targeted programs to include training of trainers (TOT) for increased reach and scaled up capacity building of the WSS professional community, consumer, and consulting firms. A potential approach to help those institutions update their curricula and scale up delivery to a broader audience would be to establish partnerships with training institutions in other countries (such partnerships could possibly be supported by bilateral donors funding).

(f) Developing Special Programs for Consumer Associations and NGOs Advocating Service to the Poor

Such programs should be developed to assist them with carrying out their mission effectively. In addition, these organizations require appropriate communication and training tools to better build the capacity of their own constituencies. These programs, in addition to the usual WSS learning materials, should include modules on subjects such as the rights and responsibilities of consumers; good practices in water conservation and WSS cost recovery and tariff issues. The training institutions are in the best position to provide this service to consumer associations and NGOs through their public service function. The TOT programs should be used to increase reach at the grass roots level. They should be coordinated with the State Boards delivering training to both the urban and rural communities.

(g) Needing for Expand the Role and the Scope of Professional Associations

Expanding the role of professional association could be done to include strengthening the capacity of their membership. They are in a unique position because of their access

to a wide spectrum of professionals in the sector. These include utility professionals, government staff (broad level), consultants, academics, and NGO members. The most relevant association in WSS is the Indian Water Works Association (IWWA). With some 21 local chapters throughout the country, IWWA could provide capacity building in WSS at all levels. The IWWA should compile and disseminate WSS guidelines, best practice, benchmarking, and M&E learning materials through its membership, seminars and its web site. The creation of a professional association of WSS Service Providers could help develop the .identity of the WSS industry that is currently missing, should be considered and that is where the proposed WASH institute can chip and make its contribution to the sector.

Leading Conclusions & Recommendations 4

This chapter presents the highlights of conclusions that emerged from the qualitative assessment of data gathered through in-depth discussions with the senior level government officials, policy makers, donors, academicians and other stakeholders at various levels (national, state, district and block) on issues pertaining to existing and required human resource in WSS sector. The chapter also makes important recommendations drawn from the findings and conclusions, presented in the subsequent sections.

4.1 Leading Conclusions

4.1.1 Demand Side – Stakeholders

Existing manpower in the sector

☞ The sector employs both technical and non-technical staff. In the context of this study the technical staff connotes to engineers and non-technical staff refers to non-engineers

☞ The study shows that major chunk of manpower working in WSS sector is technical (engineers) in nature, especially civil engineers, but many of them are also environmental engineers, water resource and management engineers, M. Tech in environmental science, etc. This corroborates with the fact that the nature of majority of the work in WSS sector has been construction related requiring engineering skills.

☞ The non-technical staff engaged in the sector is fewer in numbers. They are usually graduates in development sciences such as masters in social work / sociology, economics, etc. The less number of non-technical staff in the sector is again in line with the common observation that the non-technical jobs are usually part of demand-driven programmes, which are still smaller in magnitude, in comparison to, supply-driven programmes.

☞ The technical staff usually comes from national or regional level engineering institutions / colleges. These are usually absorbed by state government department such as PHED / Water and Sewerage Boards and the like. On the other hand, the non-technical staff comes from the state universities and colleges offering education in social / development sciences. These find jobs in various NGOs (international or local), donor agencies, private organization or also work as independent consultants/ associates to programmes.

☞ The government department such as PHEDs and Boards also engage non-technical staff, usually at the lower level. This pool of non-technical staff consists of pump driver, care-taker, mason, helpers, etc. They are not engineers but execute lesser technical jobs such as operational and maintenance works that require some specific skills. They either have ITI diploma or have attained a certificate course on such skills from government polytechnics. However, some of them might not even have either diploma or certificate. Such manpower was earlier hired on permanent basis by the PHED / Boards, but the recent trend show that they are now engaged on hire-contract basis.

☞ Of all the manpower engaged in the WSS sector, majority are employed in various state PHEDs and Boards simply because these departments are the largest player in the sector.

☞ The village level key stakeholders and functionaries comprises of local NGOs, CBOs, PRI, VWSSCs while among the important functionaries are ANM, AWW The role of these functionaries becomes more relevant in case of demand-driven programmes. For supply-driven programmes, it is usually the PHED / board staff such as surveyor, observer, etc. that play an important role. The less technical staff such as pump-driver, mason, helper, etc. are available locally for both supply and demand driven programmes.

☞ There also need for rationalization of manpower in WSS sector, engaged especially below district level. The deployment of staff is not in tandem with status of coverage of are i.e. villages which are completely covered has issues related to O&M, in comparison to, villages which are partially or not covered where sill some construction work needs to be done and hence would require more staff not only in numbers but also as far as type of manpower is concerned.

☞ Besides the above issue of rationalization of manpower, there is also inadequacy of manpower (both technical and non-technical) across all type of villages. The recent trend is to recruit the manpower at lower level on contract basis, which leads them not receiving any training (as training is only for permanent staff) and also remaining in their job for smaller duration being contractual in nature.

☞ The state CCDUs can play a very important role in linking between the supply side and demand side, however they are, reportedly, not adequately staffed. They have to cater for capacity building and various IEC activities for which they require a complete range of staff.

Entry in the sector – Recruitment and selection

☞ The technical manpower (engineers) enters the PHEDs or boards at junior position. The State Service Commission conducts the exam and recruits the freshers at junior level position of Executive Engineer. There is no direct exam and recruitment for the middle level or senior level position. Such higher positions are filled by virtue of promotion of staff from lower positions.

☞ While it is true that fresher enter the sector from various academic institutes but there are no defined linkages between institutes (supply side) and the job market (demand side). Except PHED / Boards, the freshers usually do not join the sector directly. Many join private organizations and few freshers join the local grassroots level NGOs. The donors and international NGOs take experienced professionals most of the time.

☞ The most important reason for freshers not finding a proper entry into the sector is twofold – (a) lack of adequate information about the job opportunities, and (b) absence of any common forum or agency connecting the graduates with the job market. The HR placement companies are still not operating in this sector specifically and in the social sector generally simply due to lack adequate profit margins that they usually get in operating with corporate sector.

☞ Regarding the technical freshers entering the PHED / Boards, the eligibility criteria for the selection of the candidate is basic diploma or degree in civil engineering. The selection process does not evaluate any other aspect of candidature that might be significant in performing the job efficiently after selection. The work expected from a person on the job is not inbuilt into the selection process thus leading to influx of a general human resource.

☞ For the non-technical staff entering the NGOs and donors the recruitments take place mostly through advertisement or referral system. However, the advertisements in this case do outline the expected job description and subsequent selection process does entail evaluation of candidature on various other soft areas such as attitude, behaviour, career aspiration, communication skills, fitness in the proposed role, etc. But, again in this case there are no defined channels of entry in NGOs or donors.

☞ The discussion with the sector experts also brought forth a trend showing that majority of the students which earlier use to opt for civil engineering as one of their career choices are now diverting into other streams of education such as management, software, IT, etc. in anticipation of better job opportunities which attractive work style and lucrative salaries.

This is also due to the fact that job opportunities related to WSS sector are very thin. There are limited numbers of private organizations operation in the sector.

☞ Another phenomenon recently observed is complete change taking place in the career after completing the education. Such engineering graduates although complete their course but select of non-engineering job and join BPOs again for the same reason of better salaries and work-culture. These changes have also imposed threat, to some extent, to the supply of required human resource in WATSAN sector.

Post HRD measures – training and capacity building

☞ Regarding post HRD trainings, there seems to be lack of commitment to continually upgrade the existing skills as well as attracting new skills, especially in government departments like PHED or other Water Boards. The training is occasional in nature and takes place without specific planning and adequate budgeting in the beginning of each financial year.

☞ Since the recruitment process in PHED / Boards does not incorporates the selection according to the range of skills, it is not able categorize the freshers into different grades of skill-sets and behaviour-profiles thus leading to inappropriate planning for training for different type of manpower entering into its system. It has a generalized training common for all. Thus, the trainings ultimately fall short in orienting the staff as per the requirements of the job they are expected to carry out.

☞ An important issue related to existing capacity, among both freshers and existing staff, was the lack of adequate knowledge, experience and skill sets required to implement projects under demand-driven approach involving community based methods of civil engineering. It also emerged that they lacks skills such as negotiation, liaisoning, coordination, etc. further highlighting the need for training and capacity building on these areas.

☞ The pertinent knowledge related to project planning, implementation, monitoring and management is also low among technical lot at the initial level of their career and most of them gained such experience on job after spending a considerable number of years. However, this gap was also observed among non-technical staff as well. The reason being the same. Importantly, none of these staff has got an opportunity to have training on such issues or given any field exposure while they were pursuing their academic career.

☞ The Post HRD measures also seem to be ineffective to bridge this gap. Training held occasionally at PHED and NGOs. Though, in donor agencies, it is done quite regularly and

systematically. One of the important activities is to do a training need assessment for the existing staffs at different level, which is not done at the PHED and NGOs. The training learning material was also reported to be most of the time old and common for all types of staff. The material also lacks visual comprehensions.

☞ The discussion with senior level government officials has elicited the fact that at times the junior engineer who works at the grass root level prefer to go by supply driven approach as it does not involve the long time and community mobilization activities which requires more skills and efforts. They also have attitudinal rigidity to change themselves. They are not yet geared up for the change and adopting community based models. The reason may be attributed that most of them are quite old and have been working in their sector since long. There are less attitudinal problems at the non-technical side. Notably, such issues are also not addressed sufficiently during their trainings.

☞ It was also gauged that there are two approaches through which the water supply and sanitation services are delivered such as supply-driven approach and demand-driven approach. While the former entail technical way of implementing scheme, the latter involve community based methods of civil engineering. However, the engineers at lower level are not geared-up for this change.

☞ It has been analyzed that there is no career planning for the existing staff at all level in both technical and non-technical side. The movement of staff from one level to another level and one department to another department is important as it gives person a leverage to increase his knowledge base and exposure to technical and social issues related to water supply and sanitation.

☞ Analysis shows that the employees who have got opportunity to move from one department to another department are better exposed to the both technical and non-technical side of the sector.

☞ They are more abreast of issues and appreciate the difficulties of both technical and non-technical side, thus, facilitate an enabling environment for better plan, design, execution and monitoring. They are better interface between the hardcore technical side and the community.

☞ It is also found that the frequency and duration of training programme for the government employees is very less or sometimes unsatisfactory, especially in the states like West Bengal, Rajasthan, Assam where Public Health Engineering Department is act as the nodal agency for Water Supply and Sanitation sector. Generally, senior officers

from this department used to get preference for capacity building training while the junior engineers need to be trained much more. A staff working at the community level is satisfied with their job but they reported the need for their capacity building training.

Regarding the solid waste management there appeared lack of adequate knowledge to implement various schemes and programmes among the existing staff. Need was felt for increasing the skills and capacity building on this aspect, too.

4.1.2 Supply Side – Academic Institutions

☞ The analysis on issues of supply side highlight that there exist various types degrees catering to similar issue in the engineering colleges at the national level or state level. This could be advantageous from the view point that they offer specialization on different specific areas under the same broad head or sector. For instance among the IITs one offers Masters in Environmental Engineering while another IIT have M. Tech in Water Resource Management or M. Sc in Environmental Science, etc.

☞ Although the above range of specialization might be beneficial, yet there is need for some degree of standardization of the course content within each degree across all colleges. This would ensure that some critical issues are at least covered as part of education and the passing graduates could make a better fit to the jobs in WSS sector. The issue related to design of degree again indicates the problems of inappropriate linkages between the supply and demand sides.

☞ Similarly, the syllabus also varies from one college to another. Importantly, there is no college which offers training on social engineering related subjects. The project management which entails exploration and selection of suitable technical options, project planning (participatory mode), design, costing, generation of user contributions for capital cost, involving the beneficiary in construction and operationalization, crating systems for repair and O&M cost, etc., also does not form the part of syllabus. Importantly, there is hardly any institution which provides training on social aspects of sanitation component

☞ The current courses do not adequately cover subjects and modules pertinent to WSS sector. There is a need felt for the specific subjects that would focus on rural and urban WSS programmes, environmental habitation plan, etc. There should also be subject areas focusing on implementation or delivery mechanism for both demand and supply driven approaches.

☞ The analyzed data also reveal that the supply side does not have any forum where they

can have an interaction with the demand side, thus, helping them in not only procuring the required manpower but also taking the first hand information on the latest concepts, approaches and technologies practiced by them. With current practice, the supply side also does not come to know about the expectations of demand side about their requirements of future manpower in water supply and sanitation sector.

☞ The colleges although have placement cells but they are more linked with job market in the private sector. There is no such mechanism that connects the students with the jobs and opportunities in social & development sector generally and with jobs in WSS sector specifically.

4.2 Key Recommendations

Considering the findings that have emerged from the above discussion, it is proposed to have a more integrated approach to deal with the issue of "trained manpower" in water supply and sanitation sector (Figure 4.1). Meaning thereby, a precise roadmap has to be devised to first develop the direct linkages between supply side and demand side, post that, certain reforms have to be undertaken to tackle the specific issues related to trained manpower in the sector.

4.2.1 Demand Side

Need for linking procurement of manpower from supply side with the demand side

☞ At stated in the findings, currently there is no mechanism formal or channels through which the government departments, NGOs, Donors can procure the manpower. The only method they use, as of now, is to hire manpower through posting the job on a portal or newspaper. It is assumed that if the demand side can identify and develop direct linkages with the academic institutions, engineering colleges, universities, etc., will help them in procuring required manpower faster. Though this method would only help them in targeting the right place where the pool of such manpower is available, but final selection may be done on the basis of merit or exam followed by an interview, psychological test, etc.

Change in recruitment policy to imbibe the relevant professionals at all levels

☞ At present, government department such as PHED does not do direct recruitment for the higher positions i.e. Chief Engineer, Additional Engineer, etc. The staff reaches at the higher positions through promotions after spending many years in the department. At the higher position, which requires a competent person should not be replaced by the junior

position, instead, experienced staff should come as filler through a direct recruitment. Hence, there is a need to have a different process of recruitment for different level.

Align eligibility criteria for recruitment with the job requirements

☞ It has been analyzed that in the government department there is a mismatch between the manner in which the recruitment is done and the skill sets which are expected from the staff. The expectation and the requirement of the job are not inbuilt into the system of recruitment. There is also ambiguity in the job description. At present, a candidate in the government department should be having either a degree or diploma in civil engineering or any such discipline. In other words, the only eligibility criteria set for the recruitment is having degree on the above mentioned discipline with some percentage achievement, which is not adequate. Hence, the eligibility criteria should be decided, keeping the view in mind that what any given position demands in terms of skill sets, competencies etc

Need for focused training for the existing staff under Post HRD measures

☞ The analysis presented above indicate that the training in the government departments is occupational and most of the time restricted to the senior level staff, hence, imparting training emerged as the need for existing staff at various levels, in all, government departments, NGOs and donors.

☞ The trainings should take place at the regular interval. There should be an annual training calendar for staff at the different level entailing different themes, aspects, etc., on which the trainings has to be imparted. Accordingly the training materials, modules and visual aids should be developed. In order to do this, there has to be a training need assessment done for the different level.

☞ The themes should be different for technical and non-technical staff at the different levels. The technical staff should be exposed more on the social issues and the non-technical staff should be given training on technical issues.

The relevant areas on which the training can be given is:

- Social engineering – programme specific
- Project planning, design, and process management – programme specific
- Pertinent knowledge related to latest concepts, approaches, technologies, etc. – programme specific
- Other areas such as community mobilization, capacity building, awareness generation using IEC approach – programme specific

Need for proactive career planning for the employees

To get a multi-facet exposure inter-departmental transfers and deputation in various non-government agencies might be possible but Exchange programmes of employees could be done from government office to donor agency like UNICEF or any Capacity Building Institutions like CCDU for increasing the exposure and the learning in the WSS sector.

4.2.2 Supply Side

Parity in the type of degrees could ensure coverage of pertinent WSS issues in academics

☞ As presented above that there are variations in the basic structure of the degrees offered by various engineering institutes, hence, there is a need to strike the parity in the structure among all such institutes so that the manpower which comes out of such institutes should have more or less equal standing. The non-homogeneity in the course structure may require different and more rigorous training.

Expanding the scope of degree could make better fit of freshers in their job

☞ There is need to expand the scope of engineering related degrees as the current structure is too technical and does not provide any knowledge on the current approaches followed in the country in the water supply and sanitation sector. Hence, it is proposed to have subjects on social engineering (awareness generation and capacity building initiatives), project planning, project implementation, project management, etc.

☞ Exclusive courses should be introduced subjects such as social aspects of sanitation, health and hygiene and more importantly IEC activities, etc.

Field exposure and interaction forums could help imbibing new skills, practices and knowledge

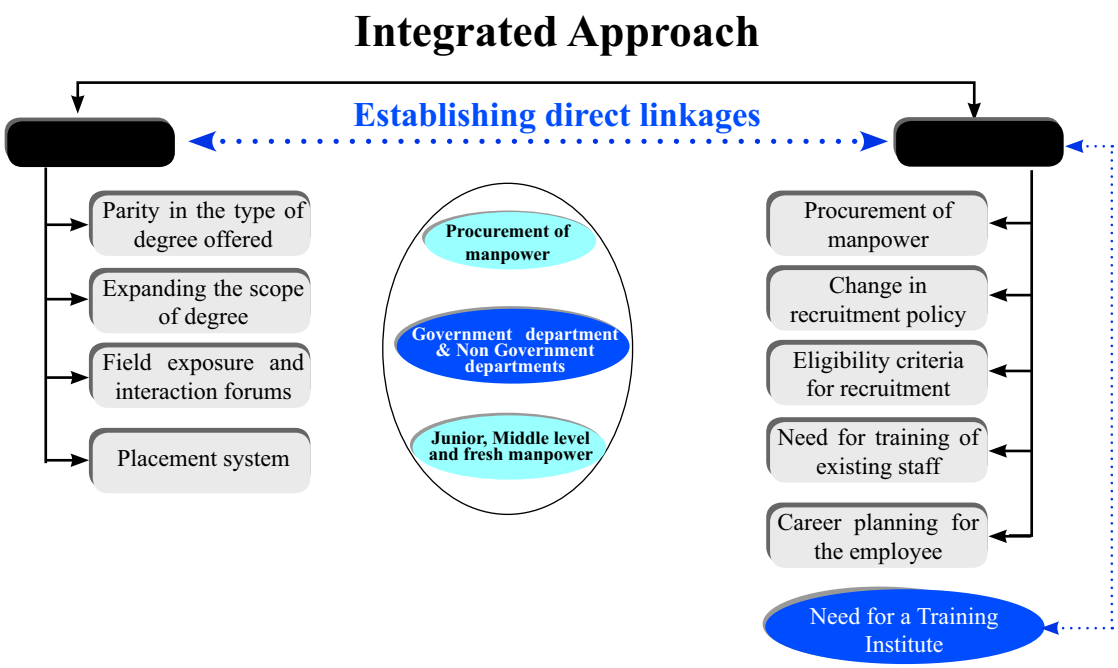
☞ While students are pursuing their academics, they should be given opportunity to do internship for government department or other private organization. This exposure would give students an experience and understanding about the work that they will be doing when they will come out of their college and join such departments. The feedback that they will take back to their college after the completion of their internship would enable the supply side to know the current management practices in the industry. This information can be further used to orient or reorient the courses.

Need for a focused training Institute that also act as link between demand and supply side in WSS sector

☞ The analysis established the fact that there exists a gap in the required knowledge and skill sets of technical and non-technical staff at junior and middle levels, in both government department and NGOs. Hence, it is proposed to have a separate specialized training institute to bridge this gap in a speedy manner to achieve the target of WATSAN Millennium Development Goal.

☞ The institute may decide the modalities such as to whom the training should be given, duration of training, course curriculum, fee structure, etc., through stakeholders' discussion.

Figure 4.1 Need for an Integrated Approach



Annexure 1

List of Professionals

National-level

Level	Demand & Supply	Departments/ Institutitons	Type of Organization/ Institute	Designation
National	Demand Side	Ministry of Rural Development (MoRD	Government Department	Director
		Ministry of Rural Development (MoRD)	Government Department	Director
		Water Aid india	Donor Agency	Director
		World Bank	Donor Agency	Sanitation specialist
		UNICEF, Delhi	Donor Agency	Sanitation specialist
		UNICEF, Assam	Donor Agency	Water resources specialist
	Supply Side	Jawaharlal Neheru University	National Level Institution	Professor
		Indian Institute of Technology, Delhi	National Level Institution	Professor
		National Institute of Hydrology, Roorkee	National Level Institution	Scientist (F Grade)
		Indian Institute of Technology, Mumbai	National Level Institution	Professor
		School of Planning and Architecture	National Level Institution	Professor
				Professor
				Professor

Assam

Level	demand & Supply	Departments/ Institutitons	Type of Organization/ Institute	Designation
Assam	Demand Side	Public Health & Engineering Department (PHED)	Government Department	Secretary
				Chief Engineer, Guwahati
				Additional Chief Engineer, Guwahati
				Executive Engineer, Guwahati
				Assistant Executive Engineer
				Executive Engineer, Tezpur Division (I)
				Assistant Engineer, Quality Control Cell
		Assam Urban Water Supply & Sewerage Board (AUWSSB	Government Department	Assistant Executive Engineer
		Irrigation Department	Government Department	Chief Engineer, Minor
		Water Resouce Department	Government Department	Chief Engineer
		State Sanitation Cell, PHE	Government Department	Chief Engineer cum Sanitation Cell Coordinator
	Donor/ NGO/ CBO	UNICEF	Donor Agency/ Capacity Building Institution	Water & Sanitation Officer, Guwahati
				Zonal Coordinator,Tezpur
		Tezpur Social Service Society	NGO	Coordinator
		Kokila Vikas Ashram	NGO	Secretary
	Supply Side	Indian Institute of Technology Guwahati	National Level Institution	Professor, Dept. of Civil Engineering
		Assam Engineering College	State Level Institution	Assistant Professor, Dept. of Civil Engineering

Maharashtra

Level	demand & Supply	Departments/ Institutitons	Type of Organization/ Institute	Designation
Maharashtra	Demand Side	Zilla Parishad	Government Department	Executive Engineer
				Technical Service Provider
				Gram Sevak
				Executive Engineer
				Deputy Engineer, Rural Water Supply
				Technical Service Provider
				Technical Service Provider
		Action for Food Production (AFPRO)	Capacity Building Institution	Unit Manager
				Engineer
				Senior Agriculture Specialist
		Confederation of Indian Industry (CII)	Consultancy	Consultant, Water Manageemnt
	Donor/ NGO/ CBO	Advanced Centre for Water Resources Development and Management (ACWDAM	NGO	Director
		Watershed Organization Trust	NGO	Manager, Social Section
	Supply Side	Shri Shivaji Memorial Society Engineering College	State Level Institution	Dept. of Civil Engineering
		Engineering College Pune	State Level Institution	Prof., Dept. of Civil Engineering
		Govt. Poly Technique College	State Level Institution	Principal
		National Watershed Developemnt Training Centre	National Level Capacity Building Institution	Principal
		Centre for Studies on Rural Development (CSRD)	State Level Institution	Principal
		Nasik Research & Training Centre, MJP	State Level Capacity Building Institution	Deputy Engineer

Rajasthan

Level	demand & Supply	Departments/ Institutitons	Type of Organization/ Institute	Designation
Rajasthan	Demand Side	Public Health & Engineering Department (PHED)	Government Department	Executive Engineer
				Technical Assistant
				Additional Chief Officer
				Executive Engineer
		Communication & Capacity Development Unit (CCDU)	State Level Capacity Building Institution	Executive Director, CCDU
	Donor/ NGO/ CBO	UNICEF	Donor Agency/ Capacity Building Institution	Programme Offcier
		Mahila evam Paryavaran Vikas Sansthan (MePVS)	NGO	Secretary
		Society for promotion of Wasteland Development (SPWD)	NGO	Senior Programme Officer
		Association for Rural Advancement through Volantary action and Local Involvement (ARAVALI)	NGO	Programme Offcier
		Action for Food Production (AFPRO)	Capacity Building Institution	Unit Manager
	Supply Side	Institute of Development Studies	State Level Institution	Retd. Prof.
		Malviya National Institute of Technology (MNIT)	National Level Institution	Dept. of Civil Engineering
		College of Technology & Engineering	State Level Institution	Prof., Soil & Water Engineering Dept.

West Bengal

Level	demand & Supply	Departments/ Institutitons	Type of Organization/ Institute	Designation
West Bengal	Demand Side	Public Health & Engineering Department (PHED)	Government Department	Chief Engineer, Planning & Quality Control
				Executive Engineer
				OSD, Monitoring Cell
				ADM (Development)
				Supernintendent Engineer, Western Circle
				Sub Assistant Engineer, Western Circle
				Draftsman, Western Circle
				Executive Engineer, Nadia Division
				Assistant Engineer, Nadia Sub Division-I
				Assistant Engineer, Nadia Sub Division-II
		Panchayet & Rural Development (P&RD)	Government Department	Programme Officer
		State Institute of Panchayet & Rural Development (SIPRD)	State Level Capacity Building Institution	State Coordinator
		Kolkata Metropolitan Water Supply & Sanitation (KMWSA)	Government Department	Chief Engineer
		Communication & Capacity Development Unit (CCDU	State Level Capacity Building Institution	Executive Director
	Donor/ NGO/ CBO	Sri Mayapur Vikas Sangha (SMVS)	NGO	Project Director, Planning Project Officer
	Supply Side	Indian Institute of Technology Kharagpur	National level Institution	Director, School of Water Resources
		Jadavpur University	State level Institutin	Director, School of Water Resource Engineering
				Professor, School of Water Resource Engineering
		Durgapur Regional Engineering College	State level Institutin	Prof., Dept. of Civil Engineering
		Bengal Engineering College	State level Institutin	Prof., Dept. of Civil Engineering

Annex 2

Water Supply & Sanitation Sector Training Institutions

ESCI (The Engineering Staff College of India), located in Hyderabad, has over 20 years of experience providing continuing education for engineers and managers as well as consulting services to industry and government. Its goal is to become a center of excellence for training technological and management personnel at all levels. ESCI offers a number of ongoing programs in water and sanitation services, including water treatment, wastewater treatment technologies, and sanitation and public health. In addition to the relatively small permanent staff in water, the College utilizes some 500 adjunct faculty drawn from the community of practice to help teach courses. ESCI.s water curriculum is being revised to better reflect the current and future needs in water supply and sanitation training.

Anna University has a long history of providing higher education in engineering, technology and allied sciences. The University also fosters cooperation and exchange between the academic community and industry. Its Centre for Environmental Studies (CES) provides a number of programs tailored to the needs of practicing engineers, including a 3-month course in public health engineering as well as courses on treatment and reuse of wastewater, groundwater recharge, and effective design of water distribution systems. Other departments, including hydraulics and remote sensing, collaborate in providing an integrated curriculum in water management and water supply and sanitation. The approach to learning is traditional and the main focus remains on technical training. However, the curriculum is being revised through introduction of new full courses and short courses to reflect the changing needs in capacity building. The newly developed materials in water supply and sanitation include legal and regulatory framework, rural sanitation, remote sensing for leak detection, operation and maintenance of water infrastructure, etc. The university is in a unique position to access and influence the political leadership, the NGO community and civil society through its public service activities. This particular aspect would be an important avenue to enhance for increased reach and scaling up in water supply and sanitation.

IWWA (India Water Works Association) is a voluntary organization of water professionals established to promote better municipal and agricultural water and wastewater management practices. Headquartered in Mumbai, IWWA has 26 local centers throughout India and over 5,700 members. IWWA provides a platform for individuals and organizations to share ideas and information about new and better technologies and approaches for effective water management. This organization provides a good mechanism for local-level capacity

building of its members, who include local government staff, academics, consultants, and concerned citizens. Within the context of the Action Plan for meeting the MDG in water and sanitation, this organization can play an effective role through preparation and dissemination of guidelines and manuals, lecture and seminar series, and public awareness campaigns at the local level. Its ties to India Water Supply and Sanitation BRIDGING THE GAP BETWEEN INFRASTRUCTURE AND SERVICE organizations such as American Water Works Association (AWWA) in the U.S. could provide additional access to the most up-to-date standards of practice.

HSMI (The Human Settlement Management Institute) promotes the development and dissemination of conceptual and practical knowledge in the fields of housing and housing finance, urban infrastructure, urban finance, and other issues pertaining to utility, social, and commercial infrastructure. It provides training and education in these fields, especially for professionals from State Housing Boards, Water Supply and Sewerage Boards, Urban Development Authorities, Municipal Corporations, Housing Finance Institutions, Private Sector organizations, and NGOs. It also provides institutional capacity building by establishing regular training programs at state level training institutes in various States and Regions in the country. The Institute focuses on state-level policy issues, including provision of services (e.g., water supply) to facilitate reform. The institute can be quite instrumental in training trainers as part of the overall scaling-up required to meet MDG in water supply and sanitation.

The Chennai Metropolitan Water Supply and Sewerage Board Resource Center provides training and technical assistance to improve water and wastewater management in areas such as operations and management, leak detection and water conservation, human resources development, financial management, and customer satisfaction. Originally established as a staff training center for Chennai Metrowater, the Resource Center has expanded its training and capacity building to serve government agencies throughout Tamil Nadu. The Center provides refresher technical courses in water supply to mostly engineering staff and has a relationship with Anna University to complement its training program.

AIILSG (All India Institute of Local Self Government) was established over 75 years ago to assist local government agencies to better meet citizen needs. Today the institute has over 20 branches and provides a broad range of services, including research, training, seminars, and conferences. The institute established the Regional Centre for Urban and Environmental Studies to better serve local authorities in the States of Gujarat, Goa, Maharashtra, and Rajasthan. AIILSG can help leverage resources to reach target audiences in these states.

SPARC (Society of Promotion of Area Resources Centre). This is a voluntary organization, which works in the areas of community learning and capacity building for urban poor in 42 cities across the country. It works in cities such as Mumbai and Pune, with the National Slum Dwellers. Federation. SPARC has been widely recognized (UN Centre for Housing and Services) for being instrumental in the design, construction, and maintenance of low-cost waste disposal systems and toilets and for sharing best practices with other countries. This Centre can be quite instrumental in grassroots capacity building and public awareness.